



From the NDF-financed publication: *Climate Change Adaptation and Development - Transforming Paradigms and Practices*, Routledge 2015

Climate change and development Adaptation through transformation

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The climate is changing, and there is growing recognition that the social dimensions of vulnerability and adaptation must be brought to the forefront of development policies and practices. Until now, adaptation has most often been approached in an instrumental way, by promoting technical interventions and capacity-building programmes aimed at helping people to minimize the risks associated with specific climate impacts, such as higher temperatures, more frequent droughts, larger storm surges or greater flooding. Adaptation is being absorbed into prevailing approaches to development and 'mainstreamed' into every domain and sector, from health, education and governance, to agriculture, water resources, infrastructure and many others. In fact, the unprecedented risks associated with climate change – in the near term but especially in the long term – indicate that transformation of development itself may be required if we are to deal with climate change impacts, adaptation and vulnerability, along with other social and ecological challenges.

The lessons from this book show that integrating adaptation into 'development as usual' often ignores the real factors that drive vulnerability – like the interests, power relations and structural factors that systemically perpetuate uneven development, environmental degradation, resource depletion and growing global emissions of greenhouse gases. The cases presented in this book show that adaptation is a question of much more than a set of projects or interventions to reduce specific impacts of climate change: adaptation includes the dynamics of living with change while also transforming the processes that have contributed to vulnerability in the first place. Adaptation is a social process that involves empowering individuals, households, communities, institutions and states, not only to react and respond to the impacts of change, but also to challenge the drivers of risk and promote alternative pathways to development.

This broader view of adaptation does not mean that technical measures are unnecessary or unimportant. Drought-resistant seeds, flood barriers, early warning systems, water harvesting,

malaria control, drip irrigation and other such responses will remain critical to the lives and livelihoods of millions. Nonetheless, such measures are not sufficient for dealing with vulnerability in a world where development processes themselves often contribute to inequities and reduce response options, all the while moving the world along a trajectory towards dangerous climate change. The current high-risk situation means that it is time to consider how adaptation, mitigation and development can, together, contribute to shared outcomes that are equitable, ethical and sustainable.

In this concluding chapter, we consider what it means to transform paradigms and practices so as to enhance social equity, resilience and environmental integrity in the face of climate change. Synthesizing some key findings about adaptation from the chapters, we present a framework or 'roadmap' that can be used to navigate what Pelling (2011) refers to as 'adaptation as transformation'. We begin by discussing why transformative responses to adaptation and development are necessary. Focusing on three interacting spheres of transformation, we describe entry points for adaptations that reduce vulnerability and contribute to outcomes for global sustainability, of which social equity, resilience and environmental integrity can be considered key components. Finally, we offer some recommendations relevant to those working in bilateral and multilateral aid organizations, governments and in research, all of whom can potentially play key roles in promoting the transformation of paradigms and practices in support of global sustainability.

Transformative responses

Sustainable development is a challenging social goal in a world where planetary boundaries are being crossed, and where thresholds and tipping points threaten the stability of important Earth system processes (Lenton et al. 2008; Rockström et al. 2009). A new language of the Anthropocene is being developed to describe an era where human development pathways have had, and will continue to have, considerable influence on the conditions under which humanity may or may not thrive (Steffen, Rockström and Costanza 2011). Science has increasingly shown that the future climate will depend on the types of development pathways that are pursued (IPCC 2013, 2014a, 2014b). Within this context, climate-resilient pathways are defined as sustainable development trajectories that combine adaptation and mitigation to reduce climate change and its impacts (Denton et al. 2014). These are seen as iterative and evolving processes for managing change within complex systems. Importantly, they draw attention to the need for transformative responses, rather than merely continuation of 'business as usual' (ibid.). Thus, adaptation becomes part of a larger process that includes transforming development paradigms and practices alike to achieve global sustainability.

Adaptation may take various forms, from vulnerability and exposure reduction on the ground through development planning and practices, to transformation within the practical, political and personal spheres of change (IPCC 2014b). Transformative responses apply to all the actions, decisions, approaches or behaviours that contribute to systemic changes. They often involve questioning the assumptions underlying incremental, business-as-usual approaches and dominant paradigms (O'Brien 2012). However, the concept also introduces some confusion, as transformation may be approached in various ways: for example, there are two different but related facets of transformation currently discussed in the literature on adaptation to climate change.

On the one hand, there is a growing recognition that some impacts of climate change will call for transformational adaptations that will alter the nature, composition and/or location of activities or systems (Brooks et al. 2011; Kates, Travis and Wilbanks 2012; Denton et al. 2014). As described by Kates et al. (2012), transformational adaptations may involve actions or interventions on a larger scale, with greater intensity and over longer time-periods than previously experienced. Examples here may include large-scale resettlement of coastal communities, or a dramatic expansion of permaculture and agro-ecology to feed a growing population sustainably in a changing climate. They may also involve adaptations that are new or unprecedented in a given region or system, such as new types of risk-sharing arrangements. Finally, they may involve

adaptations that transform places or lead to a shift in the location of activities. Transformational adaptations are already evident in response to climate variability and change (Marshall et al. 2012). It is expected that they will be increasingly necessary in some locations and for marginalized or vulnerable groups. They may include, for example, a shift to pastoralism or agropastoral production systems in areas that become too dry for agriculture (Brooks et al. 2011), particularly if climate change mitigation efforts are unsuccessful (Denton et al. 2014). Importantly, this type of transformation is a proactive or reactive response to the impacts of climate change, which are more or less taken as a given.

On the other hand, however, a transformational approach to adaptation can also focus on reducing risk and vulnerability in the first place (Pelling 2011). This type of adaptation involves altering the very systems and structures, economic and social relations, and beliefs and behaviour that contribute to both climate change and vulnerability (O'Brien 2012; Denton et al. 2014). Rather than directly responding to the impacts of climate change, such transformations seek to alter the risks to global development and human security posed by climate change. As Pelling (Pelling 2011:86) puts it, transformation is concerned with the wider and less visible roots of vulnerability: 'These lie in social, cultural, economic and political spheres, often overlapping and interacting. They are difficult to grasp, yet felt nonetheless. They may be so omnipresent that they become naturalized; assumed to be part of the way the world is.' Such transformations are not politically neutral: they inevitably challenge or promote some interests and agendas over others (Smith and Stirling 2010). All the same, transformations of development pathways towards more equitable and sustainable low-carbon societies stand out as among the most important adaptations to climate change, not least because this approach can reduce the need for transformational adaptations to the impacts of climate change.

Attempts are underway to identify criteria and metrics for assessing transformation, and there is a frantic search for good examples of transformational adaptation. It is important to recognize that, like adaptation, transformation is more often a process than an event, and often takes place amidst uncertainty – as when old ways of doing things no longer yield the desired results but new ways of being and doing are not yet clear or firmly established. That said, conditions can be created to support transformations that are both equitable and sustainable, and these are often linked to learning, leadership, empowerment and collaboration within and across groups, sectors, organizations or institutions (O'Brien 2012; Denton et al. 2014). Recognizing that the concept of transformation can be difficult to operationalize, below we explore what adaptation can look like through the lens of transformation.

Adaptation through a transformation lens

The case studies in this book offer valuable insights for reducing vulnerability through adaptation. Many of them emphasize the importance of taking the local context and key features of local adaptive capacity as a starting point in designing interventions, recognizing that these contexts are situated in larger structures and societal processes that drive vulnerability. While this may seem an obvious point, adaptation planning has often been criticized for being delinked from local needs and vulnerability contexts, and for approaching community adaptation in a very simplistic manner (Pelling 2011; Vincent, Næss and Goulden 2013; Schipper et al. 2014; Nightingale, this volume). There have been calls for more integrated and holistic approaches to adaptation (O'Brien and Hochachka 2010; Schipper et al. 2014); the challenge now lies in putting such approaches into practice.

A broader and more holistic approach to adaptation involves viewing the vulnerability context from different spatial and temporal perspectives, but also through different lenses of abstraction. Below, we refer to three interacting 'spheres' of transformation to show how adaptation processes may be transformed to support climate-resilient pathways for sustainable development. These spheres – the practical, political and personal – can be considered as distinct yet related arenas or entry points for realizing change (Sharma 2007; O'Brien and Sygna 2013; Denton et al. 2014).

Underlying this conceptualization is the recognition that the technical and behavioural changes essential to successful adaptation are almost always facilitated or constrained by larger systems and structures, which are in turn influenced by diverse and often competing worldviews and paradigms (O'Brien and Sygna 2013). We now turn to each of the three spheres, and how the findings of the chapters in this book relate to them.

Adaptation through transformation in the practical sphere

Adaptation strategies and measures tend to focus on the practical sphere, where outcomes and benefits can be most easily measured and monitored. Adaptation in the practical spheres includes a wide array of technical responses, ranging from hard structural measures, such as infrastructure and technological projects, to soft policy measures such as climate services and behavioural changes.

Traerup and Christiansen (this volume) distinguish three types of technologies for adaptation: hardware, software and orgware. Their research acknowledges the importance of hardware (e.g. capital-intensive technologies), but also of software such as improved soil, water and crop management, ecosystem restoration, improved extension services. Moreover, orgware relating to the ownership and institutional arrangements, such as the creation of water-user associations and adaptive co-management schemes, is recognized as important to adaptation processes.

We have seen how adaptation in the practical sphere has been an important goal of many development interventions. This is exemplified by efforts in the Lake Victoria Basin to optimize timing for planting crops through the use of climate information accessed by mobile phones, develop drought- and floodresistant seed varieties, or improve carbon storage in soils (Gabrielsson, this volume). It can be seen in the Afar State Adaptation Plan of Action's emphasis on de-stocking herds, restricting free-range grazing, and introducing mixed farming and irrigation systems (Eriksen and Marin, this volume). Further, it can be seen in efforts to provide information about climate change and culturally sensitive institutional support to indigenous groups (Kronik and Hays, this volume).

Nonetheless, practical adaptations alone are insufficient to reduce vulnerability in the short and long term: indeed, in some cases they actually increase vulnerability, such as in the case of Afar pastoralists (Eriksen and Marin this volume). Wamsler and Brink (this volume) have shown how institutional assistance can reinforce existing inequalities and create barriers to adaptation: for instance, projects that depend on materials and technologies that cannot be locally maintained, or that deprive people of their livelihoods, or offer a false sense of security. Ochieng et al. (this volume) point out that the heavy promotion of environmental conservation measures often overlooks the significance of other activities, such as charcoal production, as important adaptive measures and livelihoods.

The success or failure of these responses in relation to the goal of achieving climate-resilient pathways for sustainable development often depends on the larger political, economic and cultural systems and structures in which these solutions are embedded. As Nightingale (this volume) argues, 'when absolute quantities and qualities of resources and services are assumed to determine the ability of people to adapt, it masks how those with greater social and political power can harness negative changes in resources for their own benefit'. Although many adaptation efforts claim to take the local context into account, taking the vulnerability context as a starting point for development actions demands a deeper understanding of how various structural processes and relations, such as gender and power relations, political processes and inequities, act to generate vulnerability.

Adaptation through transformation in the political sphere

The success or failure of actions in the practical sphere – including their feasibility and scalability – is influenced by systems and structures that constitute the political sphere of transformation. It is

here that decisions, rules, regulations, agreements, incentives and priorities are discussed, negotiated, decided or imposed, and where some interests and agendas are prioritized over others. It is in the political sphere that problems and solutions are identified and defined, and conflicts of interest may emerge; it is also here that collective action and social movements can make a difference by directly challenging the systems and structures that contribute to vulnerability.

Many of the chapters in this volume support the need for greater attention to adaptation within the political sphere. For example, Nightingale's research in Nepal shows that access to and control over assets and resources are primarily constrained by political and economic factors, not biophysical or environmental ones. The findings of Nagoda and Eriksen support this, as they show that food and seed distribution to vulnerable households and villages in Nepal does not reduce vulnerability in the long term, but actually reinforces inequities and vulnerability, particularly when poor or low-caste groups are barred from riskspreading strategies or pushed to lower-yield lands. Vedeld emphasizes that adaptation is a process, rather than an outcome. Central here is the capacity of cities and urban communities to act and deliberately change or adjust urban development plans. Participation is as much about having influence and taking ownership (both top-down and bottom-up processes) as it is about creating channels for exchange of adaptation knowledge.

Contributions in this volume also show how shifting the focus of adaptation to the political sphere is a way of facilitating inclusion and distributional justice. Gabrielsson draws attention to the need for increasing the political voice of women to enable them to influence future development, which means narrowing the gender gap in local political leadership. Limited room to manoeuvre in the political sphere undermines individual and collective agency and access to the practical adaptations that can directly reduce vulnerability, whether through loans, farming education, or access to and use of drought resistance seeds. Similarly, Kronik and Hays call for moving beyond improving technical adaptation skills, to include application of indigenous rights to land and resources, and to consultation and free and informed consent. This is particularly important in the case of extractive industries, which have put increasing pressure on livelihoods, access to assets and available options for adaptation. Securing rights to land and resources is critical to building adaptive capacity among indigenous peoples.

Adaptation through transformation in the personal sphere

It is important to recognize that actions in the political sphere are influenced by the subjective views and perceptions associated with the personal sphere of transformation. The personal sphere represents individual and collective assumptions, beliefs, values, worldviews and paradigms. These are often used to define the goals or objectives of systems, who can and should benefit, and in some cases even the role of individual and collective agency in making changes within the political and practical spheres. Although many assume that systems and structures are fixed or given, the personal sphere draws attention to the social and cultural constructions of rules, norms and behaviours that influence social-ecological systems.

Several authors in this volume show that beliefs and assumptions play an important role in how systems and actors are viewed. The beliefs that adaptation practitioners bring to the project can influence the types of responses and outcomes achieved. Challenging the assumption that the poor are passive victims and instead recognizing them as highly adaptive implies that their social innovation can play an important role in adaptation (Wilk et al.). Wamsler and Brink (this volume) emphasize the importance challenging such assumptions: The way that marginal at-risk settlements are viewed influences the types of solutions proposed for them. City authorities and aid organizations may choose to focus on how appalling conditions are, and therefore look for ways of clearing or replacing such 'eyesores'. Alternatively, they can recognize and tap into the wealth of knowledge, experience and capacities that people living in such areas possess and, within that perspective, their need for more disaster-resilient housing, water and sanitation. This second view

opens the way to a different path: one that can lead to sustainable transformation, not least by changing the power relations that dictate the management of risk.

Gabrielsson emphasizes the role of values, norms and traditions in defining the space for responding to climate change in the political sphere. Livelihood diversification plays an increasingly important role in communities in the Lake Victoria Basin, but gender-differentiated rights and responsibilities often limit the opportunities for women. She argues that empowerment has the potential to challenge the very norms and structures that contribute to vulnerability.

Moving forward: transforming paradigms and practices

The three spheres of transformation are relational and interacting, and indicate multiple entry points for adapting to climate change in ways that can contribute to climate-resilient development pathways. However, most development interventions to date have focused on the practical sphere, with responses often directly linked to current variability or observed and projected changes in climate conditions and associated impacts. This is not surprising, as the success of adaptations in the practical sphere can be readily measured and assessed according to a range of benchmarks and indicators, such as reduced flood losses, increased crop yields, lower morbidity and mortality during heat waves, or through lower air pollution levels, improved water access and quality, reduced carbon dioxide (CO₂) emissions or increased access to renewable energy.

However, overemphasis on adaptation interventions in the practical sphere is unlikely to address the underlying drivers of vulnerability to climate change that reside in the political and personal spheres of transformation. It precludes seeing adaptation as an opportunity for social reform or as a reason to question the values that drive social injustice and inequalities in development and an unsustainable relationship with the environment (Pelling, 2011). Most adaptation projects have preserved the existing structures and relationships, instead of challenging them and contributing to transformative change (Ireland and McKinnon 2013).

Development practitioners can play a key role in shaping the adaptation process – as mediators facilitating dialogue between the various actors involved in adaptation decisions including local communities, businesses and national authorities, and through their on-the-ground actions and identifying of entry points and specific tools for development work. The entry points for reducing vulnerability to climate change are not always obvious. Often, important leverage points for transformation in the political and personal spheres are overlooked in adaptation strategies and plans. In discussing systems change, Meadows (1999) has pointed out that most attention goes towards low-impact interventions, some of which counterintuitively exacerbate the problem at hand. In contrast, very little attention goes to the higher leverage points of increasing information flows, redefining the goals of the system, or transforming the paradigm from which the systems arises. In the following, we present six recommendations for adaptation interventions that address adaptation through all three spheres of transformation, again with reference to the findings in the chapters of this volume.

Recommendation 1: prioritize building contextual knowledge among development actors

This recommendation is perhaps the simplest and most obvious to emerge from the chapters in this volume, but is also one of the most challenging, for it has several implications for how development actors operate. First, prioritizing contextual knowledge requires that the policy makers and practitioners involved in adaptation efforts are 'close to' the local context: they must get to know and understand the local context well. This means understanding not just the day-to-day context of project work in the practical sphere, but also the systems and power relations in the political sphere, as well as the beliefs, values and worldviews in the personal sphere. This takes time and often builds on personal experience. Administering adaptation efforts through staff who are frequently rotated to new settings, or operating remotely through a set of standard procedures or project criteria, will not be adequate. The people themselves, and the way they relate to the local community and to other development actors, are what matter here. Community-based adaptation

has much to offer in terms of methods and approaches (Schipper et al. 2014). Second, and related to this, taking the local context as a starting point demands that development actors themselves reflect on their own position in political and social relations, including what they themselves see as ‘good’ adaptation and ‘good’ development. This may mean questioning individual and shared assumptions, and being open to new types of knowledge and new ways of thinking about adaptation and development. This means, in particular, that development and climate finance institutions need to strengthen their own social science capacity and knowledge of methods and tools. Without this, contextual knowledge is unlikely to contribute to the transformative changes needed to reduce vulnerability and promote global sustainability.

Recommendation 2: create spaces for engagement and negotiation between diverse interests and actors

As pointed out in several contributions to this volume, transformation of the political sphere will require development actors to shift their mode from focusing on implementation of practical actions to placing primary attention to adaptation as a process. This directs attention on negotiations creating spaces for the emergence of cross-scale relationships and shared power in communities with diverse formal and informal governance relationships. As Ensor et al. (this volume) point out, the focus of adaptive capacity needs to be structural, rather than technical, hence local politics must be taken seriously. Drawing on their case study from Mozambique, they underscore the need for flexible, adaptive governance systems that can foster adaptive capacity, showing how power sharing, knowledge and information, and experimentation and testing can contribute to greater resilience.

Engagement means much more than consulting and informing local communities in development efforts: it requires creating arenas for negotiation and promoting power-sharing relationships through collaborative actions, for example in adaptation experiments or tests of alternative livelihood or infrastructural approaches. Development actors can serve as mediators between government and community interests. For example, Wamsler and Brink note that government and development actors can support urban dwellers in negotiating their needs and rights, for example through shared learning dialogues. It also means addressing the politics of interactions that are important in the production and application of scientific knowledge, including the role of power relations and interests in planning for adaptation. Using a three-lens framework to examine actors, narratives and interests, Kulindwa and Mshale describe how social transformations may be promoted by conjoining research and policy processes. This underscores the significance of multi-stakeholder engagement through forums that enable actors to meet and exchange ideas.

Several of the chapters point out that these systemic changes may require a shift in individual and collective mindsets, including among development actors, as a means of increasing the ability of social actors to influence the long-term resilience of their social-ecological systems through changes in the social and political context. Here, transformations in the personal and the political spheres are closely related.

Recommendation 3: empower the most vulnerable into planning and decision-making processes

Although creating space for dialogue between diverse interests is important, it is seldom sufficient for empowering the most vulnerable. While most adaptation projects strive to include vulnerable groups, the processes of selecting who is to participate are often highly politicized. As pointed out in the chapters by Eriksen and Marin, and Gabrielsson, empowering vulnerable groups in adaptation processes means giving priority to the vulnerable in planning and decision-making processes, for example marginalized women over men, or pastoral groups over irrigation farmers. The voices of the vulnerable must be accorded political influence – not only in adaptation planning but also in development strategies, which includes choosing development futures (Eriksen and Marin).

The negotiating table is usually tilted against the most vulnerable through norms, customs, rules and social/political relations that determine who is included and whose interests are heard, and that often make the vulnerable invisible. Empowering those who suffer structural injustices in planning and decision-making processes is not only a way of strengthening their adaptive capacity; it can also tackle the structural causes of vulnerability, for instance by challenging the norms and structures that create vulnerability in the first place (Gabrielsson; Nagoda and Eriksen). As Kronik and Hays point out, empowerment is a deeper process than mere participation or inclusion of indigenous knowledge: it is about the basic ability to exercise rights.

Development models and approaches such as agricultural investments shape the vulnerability context, as West points out. Kronik and Hays show that development initiatives have tended to be based on the very developmental models that are part of the problem, such as economic growth led by extractive industries that undermine the human rights, resource access, livelihoods and adaptation options of indigenous groups. Instead of mainstreaming adaptation into development plans, development plans themselves may need adjusting based on the needs and strategies of the vulnerable – an essential point made. It is clear that development actors usually have to work within existing structures and institutions – sometimes the very same social and political structures that disempower vulnerable groups. Addressing social hierarchies and power structures directly may be considered outside the mandate of most development actors. However, as Nagoda and Eriksen point out, these actors can nonetheless identify how their interventions and processes exacerbate or alter such structures and strive to create situations and ‘safe spaces’ where the most vulnerable have a voice and conflicts can be aired.

Recommendation 4: extend the time frame for activities

The findings presented in this volume point to a growing need to accord greater weight to long-term perspectives and wider and multiple goals when planning and prioritizing adaptation. The chapters show that vulnerability-reducing interventions can be time-consuming and resource-intensive, which necessitates a wide and long-term focus that is participatory and process-oriented. As such, the time frames of development activities need to be significantly altered. This recommendation is in line with observations by Brooks et al. (2011), who note that since many aspects of climate change and adaptation unfold over long time frames, longer-sighted approaches are needed for planning, implementation and assessment of activities.

Extending the time frame also concerns the way sustainability is understood and approached. Adaptation processes can play an important role as a vehicle for transformation of development pathways to include enhanced equity, as well as in avoiding carbon and vulnerability lock-in and path-dependencies. A long-term commitment to the process by development actors is required if such long-term changes are to be realized. It may also call for new project goals that focus on a wider scope of impacts, both in terms of types and time-horizons. This will require some important changes in funding structures, as three- to five-year project cycles (currently the norm) are usually too short to accomplish long-term social goals. In short, development agencies and funders will need to consider longer time perspectives in their support.

Recommendation 5: include more social and process-oriented indicators in monitoring and evaluation

The importance of building contextual knowledge makes it inappropriate and inadequate to administer projects through a standard set of criteria. As pointed out by Brooks et al. (2011:14), ‘...there is no easily definable single metric for adaptation... due to the fact that the functions and goals of adaptation will be different in different contexts’. Also, there are no universally and neutral measures of success: ‘the question of success is not simply to be decided on scientific, rational, objective, or procedural grounds, but is in important ways normative, historically contingent, and context specific’ (Moser and Boykoff 2014:2).

Monitoring and evaluation systems, if expanded to include more social and process-oriented indicators and analyses, can provide a starting point for improved focus on social structures and sustainability. Yet there is a need to go beyond present tools, or to combine several types of tools, to capture interactions across scales, including national level structures and processes, qualitative and social aspects of the vulnerability context, and longer-term impacts of actions on social change and development pathways. Although cost–benefit analyses address the efficiency of a project in terms of the ratio of benefits to costs, they tend to have a narrow focus on climate as an isolated factor affecting a particular parameter such as water supply and demand (Nkomo and Gomez 2006). These do not capture the wider vulnerability context, nor other important aspects of success of a project, including feasibility, efficacy/effectiveness, acceptability/legitimacy, equity and sustainability (Brooks et al. 2011). Such approaches need to be complemented with other types of evaluation methods, such as social return on investment (SROI), to evaluate the impacts on stakeholders, identify ways to improve performance and enhance the performance of investments.

It may be necessary to develop more qualitative and participatory tools that contribute to creating arenas for raising and negotiating conflicting interests and perceptions, as well as new or expanded approaches to measure value and performance in an adaptation context. The latter might include building on multi-criteria analysis (MCA), which permits balancing among multiple, potentially competing objectives, including social, environmental, technical and economic objectives, or on flexible and forward-looking decision-making (FFDM) (see Jones et al. 2014). Several frameworks have emerged to guide the selection of adaptation projects, and the monitoring and evaluating of their outcomes, including the Pilot Programme for Climate Resilience results framework (Climate Investment Funds 2012). There are also a growing number of frameworks that focus on local vulnerability, risk management, adaptation strategies and livelihoods, such as the International Federation of Red Cross and Red Crescent Societies ‘Vulnerability and Capacity Assessment’ (VCA) and the International Institute for Sustainable Development (IISD)-driven ‘Community based Risk Screening Tool – Adaptation and Livelihoods’ (CRiSTAL).

While such frameworks often capture vulnerability at the local level and provide insight into the national institutional context, they seldom examine the political and social relations and processes involved in adaptation and the contribution of adaptation actions to transforming development pathways. Importantly, since adaptation as a social process is driven by changes in all sectors, not just by formal adaptation interventions, all development sectors need to systematically include analysis of underlying social structures and the vulnerability context of each project or investment. This means identifying the most vulnerable groups and individuals, the social and political relations that create such vulnerability, how practical actions may affect the intersectionality of relations of gender, caste, ethnicity and livelihood groups, as well as the contribution of the intervention to transformations in the practical, political and personal spheres, and to climate-resilient development pathways more generally. The chapters in this volume provide several examples of how this can be done.

Recommendation 6: challenge assumptions and introduce learning and reflexivity into adaptation processes

Perhaps the most important, yet also most difficult, entry point for transformative change is to challenge the beliefs, assumptions, worldviews and paradigms that influence adaptation processes and practices. As noted in several contributions to this volume, adaptation is a process that involves learning and reflection. For example, Nightingale points out that formal adaptation policy processes should include regular revision mechanisms in order to take account of the dynamic character of vulnerability. Further, Wilk et al. (this volume), argue that recognizing spinoffs from development that can support adaptive capacity ‘requires ongoing, conscious open-minded appraisal of new technological and socio-economic phenomena, and weighing of their advantages, disadvantages and potential uses’.

What does it mean for development actors themselves to engage in processes to build reflexivity about their own values and positionality relative to the structures, relations and development pathways that drive vulnerability? It may mean creating internal processes and discussion spaces to highlight different perceptions and interests, or to draw attention to the very lack of awareness and understanding of the vulnerability context within organizations. It may also require a reorientation of the way that development actors, including bilateral and multilateral agencies, non-governmental organizations (NGOs) and governments, carry out their work. By definition, these actors usually work in the practical sphere. However, their actions can and often do drive changes (deliberately or unintentionally) in the political sphere. An increased awareness of the relationships among changes in the practical, political and personal spheres is essential to transformations towards more sustainable development pathways.

Transformations in the personal sphere can serve as a catalyst for new approaches to adaptation in the political and practical spheres, but they are nonetheless challenging. Tearfund, a UK relief and development agency, reflects on the difficulties and challenges of their own internal transformation process: *Embarking on this transformative journey through a process of co-creation generated more ownership of the process amongst staff, but it also proved time-consuming and exhausting and created uncertainty that needed to be managed. While some members of staff were very committed to the cause from the beginning, others were unsure and needed more time to engage with the issues. Continuously questioning the status quo and engaging in system thinking is a complex and uncomfortable challenge that bears the temptation to fall back into old patterns of thinking and working.* (Tearfund 2014)

Conclusions: a new role for development

The complexity and urgency of climate change means that rather than sidestepping difficult issues, it is time to face them head on. Adaptation involves more than simply accommodating the impacts of climate change: it is also about confronting the societal context in which these changes are occurring. This means moving beyond impacts-oriented adaptation to tackle the underlying sources of vulnerability that are often determined by social, economic and political relations. Critically, it involves challenging the processes and conditions that are creating vulnerability and risk – including economic development models that undermine the cultural and material basis for community well-being and perpetuate reliance on fossil-fuel energy sources (Pelling 2011; Redcliff 2012). It also necessitates challenging the ways of ‘doing development’.

The chapters in this book offer insights on the types of social science analyses needed to better understand the relationship between adaptation and development. They also provide a range of frameworks and analytical tools that can be used to assess adaptation options. These include frameworks for analysing people’s efforts to reduce and adapt to urban risk (Wamsler and Brink), or for placing attention on multi-level, multi-sectoral analysis of the barriers and potential for risk management inherent in the governance and political context (Vedeld, Nightingale). Such frameworks recognize policy-process analyses of actors’ roles and power relations as a necessary part of more participatory adaptation approaches. Eriksen and Marin (this volume) outline principles of sustainable adaptation, showing that a focus on vulnerability contexts, political and social relations and empowerment in adaptation efforts can potentially transform development pathways. The frameworks and tools employed in adaptation practices will vary across contexts; what is most important, however, is reflection about what assumptions and understandings of vulnerability on which each tool builds, and which facets of it each tool and approach address and, more importantly, do not address.

Climate change may mean adapting to higher seas, more water/less water, stronger winds, more intense heat, ecological changes and so on. Yet the implications of these changes are not simply that society has to ‘adapt’ better. This, as Paulo Freire (1970) emphasized, translates into practice as taking the world as a given, without questioning the very systems and structures that drive climate change, vulnerability, inequality and poverty (O’Brien, St. Clair and Kristoffersen 2010;

Pelling 2011). As a phenomenon, climate change calls for questioning our collective assumptions about the continuity of energy-intensive economic growth, about availability and access to adequate water and food resources, about the permanence of coastlines, the security of livelihoods, the predictability of 'extreme' climate events, and many other aspects of ecology and society that have been taken for granted or considered 'manageable' within the dominant development paradigm. What these changes should be telling us is that it is time to rethink current development pathways, and to make stronger links between current actions and future outcomes. The need to move towards climate resilient pathways raises many important questions: What processes contribute to climate resilient pathways in different contexts, and how can such processes be catalysed and supported? Given that there is no clear blueprint for actions, what are the key aspects of adaptation and transformation processes that can be monitored and evaluated? How can adaptation trigger ethical change in development pathways, especially in relation to existing power asymmetries, and social inequities? These questions are likely to be answered through a combination of research and practice, which draws attention to the importance of reflexivity and learning. It is clear, however, that climate change and its impacts present considerable risks to development, and adapting to these risks without addressing the drivers of vulnerability represents a missed opportunity to pursue transformations to sustainability. Adaptation through transformation has the potential to become an inclusive, engaging and empowering process that contributes to alternative and sustainable development pathways.

References

- Brooks, N., S. Anderson, J. Ayers, I. Burton and I. Tellam. 2011. *Tracking Adaptation and Measuring Development*. London: IIED.
- Climate Investment Funds. 2012. *Revised PPCR Results Framework*. Washington, DC: Climate Investment Funds.
- Denton, F., T. Wilbanks, A.C. Abeysinghe, I. Burton, Q. Gao, M.C. Lemos, T. Masui, et al. 2014. 'Chapter 20 IPCC: climate-resilient pathways: adaptation, mitigation, and sustainable development'. In *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press.
- Freire, Paulo. 1970. *The Pedagogy of the Oppressed*. New York: Continuum.
- IPCC. 2013. 'Summary for policymakers'. In *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*, edited by T.F. Stocker, D. Qin, G.-K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley. Cambridge: Cambridge University Press.
- IPCC. 2014a. 'Summary for policymakers'. In *Climate Change 2014, Mitigation of Climate Change. Contribution of Working Group II to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press.
- IPCC. 2014b. 'Summary for policymakers'. In *Climate Change 2014: Impacts, Adaptation, and Vulnerability. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press.
- Ireland, Philip, and Katharine McKinnon. 2013. 'Strategic localism for an uncertain world: a postdevelopment approach to climate change adaptation'. *Geoforum* 47(4):158–166.
- Jones, Lindsey, Eva Ludi, Elizabeth Carabine, Natasha Grist, Aklilu Amsalu, Luis Artur, Carina Bachofen, Patrick Beutement, Christine Broenner, Matthew Bunce, Janot Mendler de Suarez, William Muhumuza, Pablo Suarez and Daniel Zacarias. 2014. *Planning for an Uncertain Future: Promoting Adaptation to Climate Change through Flexible and Forward-Looking Decision Making. Executive Summary*. London: Overseas Development Institute.
- Kates, R.W., W.R. Travis and T.J. Wilbanks. 2012. 'Transformational adaptation when incremental adaptations to climate change are insufficient'. *PNAS* 109(19): 7156–7161.

- Lenton, T.M., H. Held, E. Kriegler, J.W. Hall, W. Lucht, S. Rahmstorf and H.J. Schellnhuber. 2008. *'Inaugural article: tipping elements in the earth's climate system'*. Proceedings of the National Academy of Sciences no. 6:1786. doi:10.1073/pnas.0705414105.
- Marshall, N.A., S.E. Park, W.N. Adger, K. Brown and M.S. Howden. 2012. *'Transformational capacity and the influence of place and identity'*. Environmental Research Letters 7. <http://iopscience.iop.org/1748-9326/7/3> and http://iopscience.iop.org/1748-9326/7/3/034022/pdf/1748-9326_7_3_034022.pdf
- Meadows, D. 1999. *Leverage Points: Places to Intervene in a System*. Sustainability Institute Papers. Hartland, VT: Sustainability Institute.
- Moser, S. and M. Boykoff. 2014. *'Climate change and adaptation success: the scope of the challenge'*. In *Successful Adaptation to Climate Change: Linking Science and Policy in a Rapidly Changing World*, edited by S. Moser and M. Boykoff, 1–33. London: Routledge.
- Nkomo, J.C. and B. Gomez. 2006. *Estimating and Comparing Costs and Benefits of Adaptation Projects: Case Studies in South Africa and the Gambia*. A final report submitted to Assessments of Impacts and Adaptation to Climate Change (AIACC). Washington DC: The International START Secretariate.
- O'Brien, K.L. 2012. *'Global environmental change (2): from adaptation to deliberate transformation'*. Progress in Human Geography 36(5): 667–676.
- O'Brien, K. and G. Hochachka. 2010. *'Integral adaptation to climate change'*. Journal of Integral Theory and Practice 5(1): 89–102.
- O'Brien, Karen, and Linda Sygna. 2013. *'Responding to climate change: the three spheres of transformation'*. Paper read at Proceedings of Transformation in a Changing Climate, 19–21 June, Oslo, Norway.
- O'Brien, Karen, Asunción Lera St. Clair and Berit Kristoffersen. 2010. *'The framing of climate change: why it matters'*. In *Climate Change, Ethics and Human Security*, edited by Karen O'Brien, Asunción Lera St. Clair and Berit Kristoffersen. Cambridge: Cambridge University Press.
- Pelling, Mark. 2011. *Adaptation to Climate Change. From Resilience to Transformation*. London: Routledge.
- Redclift, M. 2012. *'Living with a new crisis: climate change and transitions out of carbon dependency'*. In *Climate Change and the Crisis of Capitalism: A Chance to Reclaim Self, Society and Nature*, edited by M. Pelling, D. Manuel-Navarrete and M. Redclift. New York: Routledge.
- Rockström, J., W. Steffen, et al. 2009. *'A safe operating space for humanity'*. Nature 461(7263): 472–475. doi:10.1038/461472a.
- Schipper, E. Lisa F., Jessica Ayers, Hannah Reid, Saleemul Huq and Atiq Rahman. (eds.) 2014. *Community-Based Adaptation to Climate Change*. London: Routledge.
- Sharma, M. 2007. *'Personal to planetary transformation'*. Kosmos Journal, Fall/Winter, 31–35.
- Smith, A. and A. Stirling. 2010. *'The politics of social-ecological resilience and sustainable socio-technical transitions'*. Ecology and Society 15(1): 11.
- Steffen, W., J. Rockström and R. Costanza. 2011. *'How defining planetary boundaries can transform our approach to growth'*. Solutions 2(3): 59–65. http://pdxscholar.library.pdx.edu/cgi/viewcontent.cgi?article=1036&context=iss_pub
- Tearfund. 2014. *Blog on Theory and Practice. Project Doughnut – How Tearfund's Advocacy Department Has Started a Journey from Single Issue Lobbying Towards Systemic Change*, 29 January 2014. (Accessed 25 May 2014.)
- Vincent, K., L.O. Næss and M. Goulden. 2013. *'National level policies versus local level realities – can the two be reconciled to promote sustainable adaptation?'* In *Changing Environment for Human Security: Transformative Approaches to Research, Policy and Action*, edited by L. Sygna, K.L. O'Brien and J. Wolf. London: Earthscan