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# Linking Climate Adaptation: A Research Agenda

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## 1 Introduction

The objective of the Linking Climate Adaptation (LCA) Project was to ensure that poor people benefit from adaptation processes rather than bearing burdens by, for example, having the risks caused by climate change shifted in their direction. Research examined what kind of policy and institutional frameworks could better support community-led adaptation. This was studied through the six case studies of adaptations to recent climate variability included in this *IDS Bulletin*. The project also resulted in the establishment of the LCA Network which aims to link geographically dispersed communities in developing countries undertaking adaptation at the local level with each other as well as with those engaged in formal scientific and policy responses to climate change. The rationale, functioning and future potential of the Network are also set out in this *IDS Bulletin*.

A final additional output of the LCA Project was to identify the longer-term research agenda needed to support community-led adaptation. The purpose of this agenda was for us to identify current knowledge gaps and to set forth a series of researchable questions that might help us define a coherent programme of future research related to climate adaptation for the next 5–10 years. One aim of sharing this agenda here is to catalyse discussions among a wider group active in the climate change, development and disasters/humanitarian relief communities about how best to support community-led adaptation. As set out in the Conceptual Overview (Yamin *et al.*, this *IDS Bulletin*), one of the main conclusions of the LCA Project is to suggest strengthening research, policy and operational linkages between these three, currently quite separate, communities.

The identification of research issues and key questions, set out below, is based on a variety of sources generated by the LCA Project itself, such as the six case studies, as well as reports, research

literature and policy processes with which we were most familiar. This includes preparations for the Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC) and follow-up to the 2005 Hyogo Framework for Action 2005–2015. The subsidiary body meetings and “side-events” related to the United Nations Framework Convention on Climate Change (UNFCCC) Conferences of the Parties (COP), which is now focusing on a five-year programme of work on impacts, vulnerability and adaptation, was also an important source. In addition, we draw upon our knowledge of several exercises under way to elicit the views of developing countries, stakeholders and sectoral interests about research priorities in a more structured manner than the LCA project permitted. A list of the main sources of research-related documents we drew upon is set out in the references at the end of this article.

Inevitably, given the limits of our knowledge and the resources under the LCA Project, the final selection and formulation of research questions reflects a judgement on the part of the authors. We have tried to be comprehensive but realise our views are not the final word. For that reason, the researchable questions are broadly defined to allow elaboration, challenges, re-framings and add-ons, as we may have neglected issues outside our frame of focus: how community-led adaptation in vulnerable countries can be supported through the generation, dissemination and use of research. The lines of inquiry suggested here are interconnected and could be spliced many ways. There is no one “right” way. But for convenience, the research agenda that follows is structured around three overarching policy relevant areas:

- sources, nature and dynamics of vulnerability
- the costs and benefits of adaptation
- integration of climate change adaptation into disaster risk reduction and development.

A separate concluding section sets out cross-cutting methodological issues that are particularly germane to how future adaptation research should be conducted, by whom and across what time frames.

## 2 Who is vulnerable and how do sources of vulnerability change over time in response to multiple stressors?

The key research questions are:

- What is meant by vulnerability and capacity to adapt, and what are the implications of different conceptualisations for understanding vulnerability to multiple stressors in a dynamic, globalised context?
- Who is vulnerable, to what and why? What factors influence ability of the poor/vulnerable to respond?
- What determines the choice of scale for vulnerability assessment? How do different scales relate in terms of process and outcomes that impact vulnerability locally and nationally?
- What obstacles and opportunities exist for greater coherence/convergence of differing theoretical and methodological approaches to vulnerability reduction and enhanced adaptive capacity to economic, environmental, social and political risks, including large-scale changes and shock?

Understanding who is vulnerable to climate change and how vulnerabilities compare with other risks *over time* in a dynamic fashion is a critical area of research if adaptation policies and institutional structures are to be targeted wisely. But the meaning and measurement of vulnerability and of resilience/adaptive capacity, differs across and between the natural and social sciences. We lack a coherent body of policy-relevant knowledge about the changing dimensions and sources of vulnerability and the effectiveness of systemic approaches to vulnerability reduction. While the entitlement and livelihoods framework provide a robust point of departure in the context of food security and agriculture, little work has been done to examine differentiated vulnerabilities across multiple stressors on any significant temporal or geographic scale. There is a large lacuna about our understanding of how such approaches relate to

internationally induced vulnerabilities and shocks (whether they are natural or human-made). For instance, changes in international trade regimes have significant bearing on local and national vulnerabilities.

Adaptive capacity is itself poorly understood. It relates in a *broad conceptual sense* to factors such as wealth, technology, education, skills, information, entitlements to resources and management capabilities. There is little detailed empirical research; however, to determine the influence of these factors on how good or bad various groups are at adapting to specific climate change-related challenges – a key issue with respect to the design of climate-friendly vulnerability reduction strategies. Current metrics of vulnerability at the country or global level tend to mask the fact that vulnerability is highly differentiated locally and even within households (e.g. by gender/age) and overlaps but does not equate with poverty.

While research and policy connections between disaster relief, development and climate change are increasingly made (and have quite a long history), these three policy domains lack a common conceptual framework, vocabulary and methodologies. As a result, they often operate tangentially or diametrically – not in tandem. Efforts to align them to reduce vulnerabilities in a coherent fashion have not borne fruit, suggesting more research is required to understand the role of politics and governance.

## 3 What are the costs and benefits of adaptation to climate change?

The key research questions are:

- What are the information requirements of decision making and what contribution will better enable modelling efforts to focus on end-users and on outcomes as well as outputs?
- What is the impact of different kinds of uncertainty (economic vs. environmental, deterministic vs. probabilistic) for the action of different actors and their inputs to policy making?
- Which climate impacts can be avoided, with what probability? Is there a critical relevant timescale for preventative action?
- What are the costs and benefits of adaptation and the distributional consequences for particular groups (e.g. across class, gender, race and ethnicity lines)?

Adaptation needs a framework for informing decision on investment of scarce resources in an environment of information scarcity, uncertainty, complexity and risk. Notwithstanding large gaps in data and inherent modelling limitations, the next 5–10 years will see demand from many actors for more detailed research on the costs and benefits of adaptation as well as on avoided damages. Answers to these questions in specific sectors, countries and the distributional consequences for a particular group will be needed to conceptualise what role adaptation can play in averting or delaying impacts and the how the benefits and burdens of adaptation/mitigation policies might fall.

Research efforts that improve the collection, dissemination and further use of regional climate information are a high priority. This includes the use of Regional Climate Models but also other innovative techniques such as collecting traditional knowledge of climate variability and extreme events and documenting how communities have adapted to changes and through science-based stakeholder dialogues. Given the uncertainties and gaps in historical climate data in many parts of the world, research investigating how the limitations of information provided by GCMs/RCMs and other techniques can be incorporated into decision making, is also vital. This is likely to include the development of probabilistic climate forecasting similar to that used for decision making for other elements of uncertainty, and how to integrate the information requirements of specific national and local decision making contexts with the generation of regional climate information.

Research by and for developing countries on which impacts can be avoided and with what degrees of (un)certainly is necessary if policy makers and other stakeholders are to understand the significance of taking as well as delaying action. This may require policy makers to understand, and importantly, to have access to economic research to rebut estimates from powerful industries of the costs of taking mitigation action. Research into the costs of climate damages, for example, through valuation of ecological services and the social and psychological costs of climate change, will also strengthen advocacy for the mitigation of greenhouse gases (GHGs) as well as livelihood enhancing environmental goals. These issues beg research questions about the relative roles science and individual perception have on constructing the

perceived “net benefit” of certain resource decisions and about the institutional and cultural barriers that foster inaction and unresponsiveness.

#### **4 How can climate change adaptation be integrated into development/disaster risk reduction at multiple levels of governance?**

The key research questions are:

- What sorts of institutions and organisational structures are more likely to support the integration of climate change adaptation within their development activities and avoidance of mal-adaptation that inadvertently increases climate change vulnerability?
- How can household level processes of adaptation be fostered and how can the lessons of micro adaptation be fed into wider-scale processes aimed at adaptation to climate change?
- What role can action-orientated vertical and horizontal networks working on adaptation play in securing sustainable development?
- What is the shape and direction of global governance, including environmental governance, and how will developing countries, in particular the larger “anchor countries”, see their role in the international order?

Climate change has been seen as a “Northern” or “environment” issue that is of long term. It has been given low priority, treated separately and has had to compete for government time and resources instead of being integrated across all affected national interests and international policy domains. This touches on governance. How institutional structures can be managed effectively and coordination enhanced at multiple levels (local, national, international and through flows of policy, information and funding from international financial institutions, IFIs) is a critical one if policies and institutional frameworks are to work in an effective manner towards integration of climate change adaptation.

A crucial research gap here is the impact on developing countries of increased heterogeneity of the “South”. This is linked to the emergence of more diverse subregional groupings of the G-77 that operate as significant negotiating blocs in their own right (e.g. Alliance of Small Island States (AOSIS),

African group, Least Developed Countries (LDCs), Organization for Petroleum Exporting Countries (OPEC), Central Asian and Caucasus). Outside the climate change context, newer coalitions are also emerging such as the G20 which reflect strong bilateral ties among the larger developing countries: Brazil, China, India and South Africa, which are often thought of as “anchor countries.” Changes in the “mind set” and strategy of political/regional blocs have the potential to support or hamper the long-term development of poorer countries. Research is needed on the likely impacts of “anchor countries” on the adaptation needs of vulnerable countries which will require an understanding of how the more powerful developing countries, acting together or in coalition with developed countries (such as “G8 plus 5”), see their role in global governance.

While much of the focus for climate change adaptation has been on international and national action, the implementation of effective anticipatory adaptation will require coordination at the local level. Adaptation actions are site-specific and need to be tailored to local contexts, including structures and institutions of local governance. Linking the international and national frameworks for action on climate change with local governance systems is a crucial step in the implementation of adaptation. Attention is also now turning to the connections between micro-adaptation processes and wider-scale international and national processes to adapt to climate change impacts.

A related issue concerns how the citizens and civil society in developing countries come to participate in the climate arena. Thus far, environmental organisations, predominantly based in the North (but with a large number of offices now based in developing countries) have been most active in the climate regime countervailing the influence exercised by fossil fuel interests. The successful integration of climate change in national agendas will require vertical and horizontal alliances among and between developed and developing country organisations – not only from the environmental sphere but also those representing unions, faith, health concerns, women’s organisations and community-based poverty reduction and development groups. Whether and how these groups organise, the form of their advocacy (bureaucratic/technical vs. political) and their potential impact on the framing, design and

implementation of climate policy remains unknown, as little research has been carried out to understand their “voice” and how it might be articulated.

## 5 Recommendations and conclusions

The key recommendations are:

- Forms of participatory and action research would be particularly appropriate for climate change adaptation.
- Research is needed on how a broad range of actors, such as donors, governments and international institutions and local communities can assess the long-term effectiveness of climate adaptation programmes, policies and measures.
- Internal and external processes to commission and evaluate research should take into account that adaptation is going to be “messy” with researchers, regulators, donors and communities having to “muddle through” without a blueprint and with lots of mid-course changes *en route*.
- An assessment and early sharing of experiences of methodologies to assess vulnerability and adaptation by those active in development/disaster risk reduction and climate change may foster synergistic collaborations and learning about “best practises”.

Research, policy analysis and financial resources are gearing up to support adaptation mainstreaming and adaptation projects are being planned or are under way in many countries. The nature of the research we undertake to support climate change adaptation is as important as the scope and subject matter. Local communities, for example, have typically been the “objects” of development research, rising lately to the status of “subjects” as, for example, when their knowledge is mined and their perceptions collected. In the long term, participatory forms of research, such as action research, would better support community-led adaptation to climate change. This is because adaptation policy and interventions will always involve values and choices about context-specific responses to highly differentiated, constantly changing and for the most part, uncertain sets of risks. Enabling a wide range of actors to engage in setting research priorities and research design decisions at earlier stages of knowledge generation processes is likely to enhance the uptake, effectiveness and legitimacy of adaptation research.

The development of legally binding greenhouse gas reduction targets has provided a readily measurable yardstick against which mitigation progress (inaction) can be assessed. Conceptually, no clear targets or benchmarks have been determined for adaptation or the sustainable development components of climate change to which adaptation is closely related. The Millennium Development Goals (MDGs) provide the nearest proxy goals. Research is needed on how a broad range of actors, such as donors, governments and international institutions and affected local communities can assess the long-term effectiveness of climate adaptation programmes, policies and measures.

Until then, the series of research issues and questions set out above may require conceptual and methodological innovations as well as new forms of research partnerships and of research commissioning and evaluation processes. There is a great need to research the purpose of evaluations by different sets of actors and their relationship with mechanisms for accountability, transparency and performance. The way scientists, policy makers,

non-governmental organisations (NGOs) and community representatives learn from analytical deliberative processes requires attention, especially because few investigations have assessed the value and extent of knowledge transfer and the repercussions for social learning and the development of social capital. This can be remedied by ensuring projects incorporate monitoring and assessment components that work closely with stakeholder groups to evaluate the benefits or damage caused by participatory methodologies. But it implies a constant round of learning and unlearning about what works and what does not, and respecting value-dependent decisions even if these produce “sub-optimal” outcomes. In the light of these considerations, the articulation of research issues and questions set out above should not be seen as a concluding output, but rather as a “work in progress” aiming to generate discussions about how to lay down the foundations of more participatory forms of research on climate change adaptation.

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