

THE HUMAN DIMENSION OF CLIMATE ADAPTATION:

THE IMPORTANCE OF LOCAL AND INSTITUTIONAL ISSUES

COMMISSION ON CLIMATE CHANGE AND DEVELOPMENT

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The Human Dimension of Climate Adaptation: The Importance of Local and Institutional Issues¹

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Preface

Climate change is already affecting poor people and communities around the globe. They are used to handling adversity and risk, but climate change presents a burden that is likely to go beyond the historical experience of many of them.

When the Commission on Climate Change and Development was tasked with taking the perspective of the poor and the vulnerable, a natural point of departure was to develop a deeper understanding of the new situation through three lenses: the risks that vulnerable people face now and in the future, the elements of their capacity to manage these risks, and what they need from others to further strengthen their resilience. The Commission felt it needed this understanding to define and propose measures that governments and organizations should take to support adaptation to climate change in developing countries.

This meant breaking out of the limitations of a sector approach, which can hide the unity of lives and livelihoods. It also meant turning the climate change discourse “upside down” – that is, looking at people and climate change from the local perspective, not from global scenarios and models. The Commission thus set out to capture the human dimension of climate change impacts and adaptation.

For this purpose, several experts representing a range of disciplines and expertise were invited to produce a paper. They met in person three times and held a number of teleconferences to define and develop an approach that went beyond their individual disciplines. This paper is the result of their collective work.

The paper does not present new research findings; it brings together elements that are often separated in the compartmentalized way we tend to treat complex phenomena. In particular, it identifies a set of important issues that are often given insufficient attention in current development and disaster risk reduction efforts but that will be critical for poor communities’ adaptation to climate change. Three issues deserve special mention: the integration of risk analysis and assessment in development planning, the inclusion of targeted social protection measures as part of adaptation, and

the need for locally owned capacity-building processes.

The paper is an important outcome of the Commission’s work. In an abbreviated version, it constitutes the central Chapter 3 of its final report, *Closing the Gaps*.¹ In this fuller version, it makes an important contribution to the climate change discourse.

Johan Schaar

Director

Commission on Climate Change and Development

¹ The full report of the Commission on Climate Change and Development is available at www.ccdcommission.org.

Executive Summary

Climate change, conflicts, and the squeeze on natural resources due to population growth and environmental degradation are intensifying the poverty and vulnerability of many people. The poor adapt in diverse ways that are usually unnoticed, uncoordinated, and unaided by national governments, development agencies, or international agencies. This autonomous adaptation is often overlooked in international and national efforts to manage the impacts of climate change.

This paper presents a conceptual framework that turns the mainstream adaptation discourse upside down, with understanding and respect for autonomous adaptation as the starting point for a new agenda to manage the human dimensions of climate change. It suggests that adaptation should be built on efforts to more effectively support individuals, households, and businesses as they struggle to adapt to climate change and that this should be done with a deeper awareness of the social, economic, cultural, and political factors that frame their actions, incentives, opportunities, and limitations for action.

Climate change adaptation is part of the processes of human development and risk management that have been under way for centuries. Development has always been about how people manage many risks. Climate change is changing this landscape of risks, especially those faced by the poor and vulnerable. Adaptation needs to reflect a disaggregated perspective on the diverse ways that climate change affects the livelihoods, food security, natural resource management opportunities, and the health and energy security of individuals and local societies, and also how these impacts are mediated by institutional realities: struggling governments; changing markets for products, services, and labor; and strained social structures within and beyond their localities.

The paper examines the climate-related adaptive capacity of people, businesses, and ecosystems and discusses their interactions, complementarities, and competition. It also looks at adaptive capacity across scales – local, national, international – and how interfaces among these scales facilitate or stand in the way of adaptation. It describes how ef-

forts must start with recognizing the importance of adaptive capacity, and it then explores what decades of development experience have revealed about ways to effectively invest in the capacities of individuals and the organizations that poor people rely on. Such investment involves promoting structures of inclusive governance, locally and nationally, to ensure that the poor can gain access to services and social protection mechanisms and engage in effective natural resource management in order to deal with the hazards they face. This will only come about if adaptation initiatives include efforts to create an enabling institutional environment that facilitates ownership and ensures the accountability of states, donors, and other actors with regard to the impact of their actions on the changing range of risks associated with climate change. And it will only materialize if adaptation initiatives also address inequities and the political and economic structures creating them.

Much depends on the actions of local organizations, especially local governments. Decentralization is shifting heavy responsibilities to local organizations for adaptation as well as a range of other tasks. But few additional resources have been shifted to help them deal with these burdens, and their ability to use new funding is often limited, especially in the poorest and most risk-prone municipalities, districts, and provinces. Appropriate strategies must reflect the fact that enormous challenges exist in developing local capacities and engagement, given the structural realities and competing priorities that these actors face.

Inclusive governance helps reduce vulnerability through efforts to alleviate poverty, but it must do more than that. Vulnerability reduction depends on capacities to provide appropriate leadership, to engage actively as part of civil society, to get access to services (especially those related to information, technology, and capital), and to mobilize a dynamic business environment that creates opportunities to pursue more sustainable livelihoods. This will require action at local, national, and international scales and an awareness of the prevailing social, political, and economic power structures that stand in the way of such inclusive governance.

Efforts must focus on removing barriers to autonomous adaptation and must acknowledge that local ownership is the starting point for better interfaces between how adaptation works and sub-local policy formation. Adaptation by the poorest will require support from public funds that allow those facing the climate challenge to better demand relevant goods and services, such as cash transfers through social protection mechanisms.

Ecosystem services are fundamental for human well-being; thus the ecological impacts of adaptation policies must be taken seriously. This will require greater awareness of how environmental change will inevitably include surprises. Effective adaptation therefore demands better scenario planning and also the flexibility to respond to unexpected tipping points as well as to thresholds whereby negative changes escalate and hazards that were manageable in the past suddenly or gradually turn into humanitarian disasters.

Neither climate change adaptation nor disaster risk reduction (DRR) can remain obscure technical processes. Both should become integral parts of development while ensuring that adaptation priorities are set by those who must adapt and providing room for national and local politicians and communities to develop and coordinate their own agendas. Priority must be given to facilitating demand from those affected by climate change.

The new approach to risk-aware development called for in this paper will involve scaling up existing development approaches that reflect past lessons on how to promote growth and support local capacity development while remaining cognizant of vulnerability and exclusion. This new approach calls for caution in pursuit of many prevailing development objectives, notably those that undermine autonomous adaptation and may weaken local adaptive capacity. Revised approaches to monitoring and evaluating are also needed. This approach finally requires greater use of available climate information to achieve better climate foresight in local planning and development implementation.

The paper concludes by offering a set of principles to ensure a focus on the human dimension of climate change. It offers recommendations for and beyond the 2009 Copenhagen climate meeting. In Copenhagen, negotiators should make room for adaptation demands emerging from localities and recognize the learning experience of the National Adaptation Program of Action process while ensuring that

the nascent adaptation architecture is harmonized with existing aid and DRR structures and expanding programs to strengthen local institutional capacities. Beyond Copenhagen, adaptation efforts by the development community should support decentralized structures for improved market integration, consider social protection systems, and expand agricultural extension services while respecting the principles of the Paris Declaration on Aid Effectiveness.

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Climate change, conflicts, and the squeeze on natural resources due to population growth and environmental degradation are intensifying the poverty and vulnerability of many people. The diversity of these challenges and of how individuals, households, businesses, governments, and civil society deal with them are best understood through analysis of their local dimensions. “Local” here refers to the interface between households and grassroots organizations, on the one hand, and the meso-level structures of municipal, district, and provincial governments, of public and private service organizations (such as agricultural extension), and of nongovernmental organizations (NGOs) involved in actions affecting climate change.

This is not to say that the solutions are always there. The factors that determine vulnerability, impact, and capacity to respond are usually embedded in broader social, cultural, political, and economic structures. However, if analysts do not focus on the local dimensions of climate change adaptation, they cannot tell whether human vulnerability is being reduced. Tracking the process of change in people’s lives helps the world understand whether efforts to support adaptation really make a difference.

As it becomes clear that society is not going to quickly mitigate climate change, adapting to its local effects becomes more important and more urgent. This paper reflects this urgency in calling for strong action to facilitate action

at the local level while also providing a reminder of the need for due caution in ensuring that efforts build on local priorities. This conceptual framework carries with it a degree of uncertainty, since climate change has yet to become a priority for the vast majority of those who need to act. This ambiguity is problematic, but it highlights the reality of development practice wherein awareness and respect for the current perceived needs of people affected by climate change (people who are also dealing with other, more pressing risks) must be combined with efforts to help people expand their understanding of the changes that lie ahead. Analyzing and doing things that people want must be combined with investments in helping them to reflect and make informed decisions about a future filled with uncertainties. Dialogue is the tool with which these seeming contradictions can and must be reconciled.

Climate change almost always has a negative effect on people. First, it involves more and more-fierce weather-related disasters. Second, since human systems are closely tied to established climate systems, climate change creates societal stress. This is especially true for the poor, who have fewer resources to help them adapt to change and who usually rely more directly on local ecosystems than their wealthier neighbors do. The poor adapt in ways that are usually unnoticed, uncoordinated, and unaided by national governments, development agencies, or international agencies. People draw on resources and support from these sources, but they do it in ways that are rarely reflected in the formal mechanisms designed for poverty reduction and climate adaptation. This *autonomous adaptation is a core theme of this paper*.

This paper's focus on autonomous adaptation is an appeal for a new ethos on adaptation, wherein responsible governments and institutions ensure that adaptation priorities are at least informed by and where possible even set by those who must adapt. A new mindset is needed if room is to be provided for people to develop their own agendas, in concert with local and national governments.

This paper has been prepared as an input to the report of the Commission on Climate Change and Development.² It is intended to inform and advise the Commission and also the wider development community, including international organizations, bilateral donors, governments, and civil society organizations in industrial and developing countries.

It is not intended as a set of specific recommendations for aid programming but is rather a broad description of a new approach that can connect the concerns of those dealing with development and those designing the new architecture of climate change adaptation. The broad range of issues and conceptual frameworks covered in the paper form a vision of a different approach to development. The paper also suggests how to better situate disaster risk reduction (DRR) within both of these areas of intervention.

The paper was prepared by a multidisciplinary team of researchers and development practitioners with expertise in environmental management, climate negotiation processes, resilience, DRR, and capacity development processes in local institutions. We did not set out to develop an academic paper or a theoretical conceptual framework, but the approach proposed here builds on our fields of expertise. It is hoped that this vision will influence the process leading to the Fifteenth Conference of the Parties to the UN Framework Convention on Climate Change (UNFCCC) in late 2009, while providing a basis for rethinking development policies in the post-2012 UNFCCC framework.

The paper is organized into four parts. The first part shows how the changing climate is changing risk, how climate change is affecting lives and livelihoods, how institutions mediate climate risks, and how the vulnerable are kept vulnerable. The second part examines the adaptive capacities of people, businesses, and ecosystems as well as the interactions between them and across local, national, and international scales. The third part focuses on capacity development: it discusses which capacities need to be strengthened, and what works or does not work in terms of the sustainable development of capacities for governance and autonomous adaptation. The final part offers a list of principles from the analysis developed in the paper and translates these principles into recommendations for the development community.

² The Commission on Climate Change and Development is an initiative launched and financed by the Swedish government. The Commission is headed by the Swedish Minister for International Cooperation and Development, Gunilla Carlsson, but its membership is international.

1. Unpacking Climate Risks

Some see climate change adaptation as a new, emerging field of study and practice. Others approach adaptation through modeling to project future climate changes and secondary impacts and to formulate recommendations on how to adapt to the projected change. The limitations of this approach include the inherent uncertainty of predictions, the reliance on external technical expertise, the tendency to ignore wider factors affecting vulnerability to climate change, and the failure to consider the poorest and most marginal groups within adaptation options.³

This paper offers an alternative approach. It puts climate change adaptation in the context of human development and the risk management that people have been undertaking for centuries. It acknowledges that development has always been about managing many risks.

This approach focuses on the poor because they are more vulnerable to climate hazards than wealthier households. Poor people face a higher incidence of diseases that have been all but eradicated in most industrial countries (e.g., measles, tuberculosis, malaria). The poor also have fewer assets to absorb shocks and less access to formal risk reduction mechanisms. In response, they have developed some innovative and sophisticated coping strategies. Understanding the different types of risks, how risks will change, and the coping mechanisms of the poor is critical to supporting adaptation efforts.

Climate change is and will continue to be non-linear, inequitable, and dialectical. Dialectical theory helps explain how social entities respond to change. It demonstrates that change is constant and due to factors that can be considered internal (inherent) and external (contextual) to the social group under consideration, that incremental quantitative changes can lead to thresholds that precipitate larger-scale qualitative change (and vice versa), and that all social and other systems have inherent contradictions – internal opposites – that make their permanence impossible and make equilibrium and stasis exceptions rather than norms. Frederick Engels in his 1883 treatise “Dialectics of Nature” explains these three fundamental laws of dialectics: the transformation

of quality into quantity and vice versa, the interpenetration of opposites, and the negation of the negation.

Climate change can be interpreted as proceeding according to these laws. Climate varies across time and space. Relatively stable variability can be maintained for tens of thousands of years. However, transformations can occur within a few hundred years. Gradual directional changes build up within the existing climate until some tipping point is reached; quantitative changes are transformed into qualitative change and, for example, the rate of glacial advance or retreat changes significantly, reaching points where new effects are seen and new states entered. During the final millennia of a glacial period, negative feedbacks maintain the stability of the ice age while the warming factors are gradually building up within the system (the interpenetration of opposites). Eventually the negative feedbacks are themselves negated; positive feedbacks take hold and the system flips over to the interglacial state (negation of the negation). The process is reversed at the end of an interglacial period.

If it is accepted that adaptation refers to the adjustments in a system’s behavior and characteristics that enhance its ability to cope with external stresses, then from a dialectical perspective adaptation has to take place against a background of constant change related to processes of internal contradiction and to the impacts of external or contextual factors. Adaptation will happen in both incremental adjustments and step changes as responses to incremental changes in local environments and to accumulative impacts of changes bringing about the arrival of thresholds beyond which return to the previous state is not an option. Climate change may hasten or exacerbate the effects of society’s internal contradictions; it can already be seen that the impacts of some of the factors causing poverty are made worse by climate effects that reduce access to resources, worsen security, and threaten the livelihoods of the poor and those on the brink of poverty.

3 T. Tanner and T. Mitchell, “Building the Case for Pro-poor Adaptation,” *IDS Bulletin*, vol. 39, no. 4 (2008).

1.1 How the changing climate is changing risk

Risk literature frequently distinguishes between general categories of risk to describe its frequency and intensity: whether or not it is auto-correlated (independently distributed over time) and how it is distributed among individuals and groups (idiosyncratic versus covariate). Climate change is affecting all of these risk categories. The ability of individuals, households, and communities to adapt is being strained in different ways, as is that of the governance, social, and market institutions upon which they rely. This section briefly describes the main ways in which the changing climate is changing the risks faced by the poor.

Idiosyncratic and covariate risk

Idiosyncratic shocks are those that affect the individual or household (e.g., death, injury, unemployment); *covariate* shocks are those that affect localities or nations (e.g., epidemics, disasters, war). Several researchers note the imprecision in these definitions. For example, Fafchamps asks, “How many farmers must be affected by crop failure before it is called a drought?”⁴

Similarly, Cafiero and Vakis note the complexities of distinguishing between idiosyncratic and covariate risk:

In principle, idiosyncratic risk can be mitigated by risk sharing within a specific social group or network. As such, an idiosyncratic risk at the household level would only become an issue if that household’s social network failed to eliminate it by risk sharing. In this sense, a “community” is precisely the minimum required size of a group of people needed to effectively share the most perilous idiosyncratic risks. When risks are so systemic that they cannot be shared within the “community”, the need of external intervention (e.g., from within a more aggregated “community” level such as the state) arises.⁵

Climate change is adding further complexity to these categories, as it affects both the levels and the mix of idiosyncratic and covariate risks in several ways (see Box):

- ▶ Increasing idiosyncratic risk (e.g., increased mortality due to heat waves, increased occurrence of malaria and diarrheal disease, increased small hazard events);
- ▶ Increasing covariate risk (e.g., increasing frequency of large disasters); and

Idiosyncratic versus covariate shocks: an example

A practical example can demonstrate the difference between and the interplay of idiosyncratic and covariate shocks on an individual household. A family who makes their living from farming less than a hectare of land suffers a blow when the husband is killed in a traffic accident (idiosyncratic shock). His wife, mother to six children, uses the little savings they have to cover funeral expenses. As she must care for the children, she employs another person to cultivate her land on a crop-sharing basis, where each gets half of the harvest. An extended dry season causes extensive damage to the sweet potato crop (covariate shock), and the following season the crop sharer leaves for a better opportunity. The woman’s land is left bare of any root crops.

While a number of farmers in the area are affected by the extended dry season, many have sufficient food stocks and provide assistance to the woman and her children to ensure that they have food every day. The next harvest, however, is affected by an extensive drought, and food supplies were depleted the previous year. Many households are affected and are no longer able to provide informal support to the woman and her children. As she waits for relief assistance to arrive, she pulls her older children out of school and sends them to live with relatives in the city to look for work.

- ▶ Idiosyncratic risk becoming increasingly covariate (e.g., increasing severity of disasters, small localized hazard events becoming larger disasters).

Climate change adaptation discussions have focused on increasing levels of covariate risk and specifically on the increasing occurrence and severity of weather-related catastrophes. This in turn has focused attention on the humanitarian (not just human) impacts of climate change, and the need

4 M. Fafchamps, *Rural Poverty, Risk and Development* (Cheltenham, U.K.: Edward Elger Publishing, 2003).

5 C. Cafiero and R. Vakis, *Risk and Vulnerability Considerations in Poverty Analysis: Recent Advances and Future Directions* (Washington, DC: World Bank, October 2006).

for “harmonization” of the fields of disaster risk reduction and climate change adaptation. There is indeed an urgent need to develop national and local governments’ emergency management and risk reduction capacities. There are also decades of learning on adaptation within the disaster risk reduction community that should inform current policy formation related to climate change.

However, supporting capacity development for idiosyncratic risk reduction is of at least equal importance for two main reasons.

First, it is the increase in these smaller risks (idiosyncratic as well as idiosyncratic moving toward covariate) that have a larger impact on poverty. The accumulated impacts of small and medium disasters are equivalent to or exceed those of large disasters. These types of events are recurrent, and their impacts are felt locally. Risks of small disease outbreaks, local flash floods, and land degradation are usually invisible to the media and often to policy makers as well. Communities most often rely on informal risk-sharing mechanisms based on social capital. A report from the International Federation of Red Cross and Red Crescent Societies on their 2008–2009 plans for the Disaster Relief Emergency Fund cites an increase over the past few years in the number of smaller disaster events that do not trigger international disaster response but that are responded to locally or nationally.⁶ Thus the most important capacities for addressing idiosyncratic risk are within societies and local organizations.

Second, households and societies that are more resilient to idiosyncratic shocks are less vulnerable to covariate shocks. Different risks can compound one another (see later section on the interplay of risk) and increase a household’s overall risk level. However, developing capacity for community resilience and self-reliance bolsters capacity to manage covariate risk.

In short, climate change will add to the complexity of idiosyncratic versus covariate risk. Efforts to support capacity development for managing these risks will need to strengthen local institutions and social capital in addition to strengthening formal national and international mechanisms.

Sudden and gradual changes

It is also necessary to distinguish between the sudden versus gradual changes that climate change brings. What are

people going to need to adapt to: an increase in the occurrence of extreme events, or the slower and incremental impacts of rising temperature averages or sea levels? There is an obvious need to adapt to both, which requires society to address the false dichotomy between humanitarian and developmental approaches to climate adaptation. The gap between humanitarian perspectives and those of development actors is decreasing as development thinking comes to understand how risk is at the center of the human dimensions of poverty.

Climate change makes evident the need to recognize the risk inherent in development. It is not about “mainstreaming risk into” development but rather recognizing that development is risk management. It is about unpacking that risk, making it visible and transparent, and ensuring that households and societies have sufficient information to take decisions on how much risk they will accept and how they will manage it.

Large, sudden-onset catastrophes have dominated the attention of the disaster risk reduction community, particularly the humanitarian sector, for decades. Although it has long been recognized that drought offers more time to plan an appropriate response, the humanitarian system usually fails to intervene until the crisis stage. Development actors tend to ignore both sudden and gradual-onset catastrophes, as they see disasters as interruptions to development rather than indications that it is time to consider the effects of development on disaster risk. Countries that experience recurrent drought often fail to coordinate relief and development efforts, creating parallel structures to address emergency needs that contribute little to addressing the underlying causes of vulnerability to drought.⁷

6 The International Federation of Red Cross and Red Crescent Societies’ Plan 2008–2009 for the Disaster Relief Emergency Fund also notes three other trends: an increase in the overall number of disaster emergencies (with the biggest increase over the past two years in Africa), an increase in the number of floods and storm-related events, and an increase in health emergencies and epidemics related to flooding (especially in Africa).

7 ProVention and ALNAP, “Slow-Onset Disasters: Drought and Food and Livelihoods Insecurity,” Briefing Paper, 2008.

Ecological decline itself should be understood as the result of a combination of interacting multi-speed and multi-scale changes that defy binary classifications such as gradual versus incremental, slow onset versus rapid onset. Coral reef degradation and desertification, for example, are the result of multiple scale changes that are both slow (e.g., nutrient runoff, ocean acidification) and rapid (e.g., drought years, invasive species).

Surprises

Climate change contains the element of surprise. Approaches to support adaptation must provide space for unexpected change in the form of novel or re-emerging epidemics, invasive species, unforeseen and rapid negative ecosystem changes, or other occurrences. These surprises have at least three dimensions: the event in itself may be unexpected, the speed of change may be unexpected, and the geographical scale of change may be unexpected. Many such surprises have been documented for ecosystems and their related services (e.g., shifts in ecosystem states, plant diseases such as Ug99 that attack wheat fields, and invasive alien species that drastically modify ecological systems, such as experienced in Lake Victoria). Some of these surprises may have little effect on human societies, but others can be amplified through the mix of social changes and climate change and unfold in ways that seriously challenge the adaptive capacity of communities and institutions.

Infectious disease outbreaks in informal settlements – such as the dengue epidemic outbreak in Brazil during 2007–08 – illustrate the complex set of social, ecological, and climatic interactions that can trigger cascading surprises. The dengue outbreak and its impacts on vulnerable communities were driven by an array of factors: rapid and unplanned urbanization, habitat alterations, increased use of non-biodegradable products, and rapid growth in the movement of people and commodities via travel and trade. Local circumstances – such as unscreened housing, dense residential areas with large numbers of household breeding sites (such as containers and tires), and the absence of waste management – all produced ideal conditions for mosquito breeding and the rapid spread of disease.⁸ Once an epidemic unfolds, the crisis escalates rapidly and seriously challenges local control efforts, existing health infrastructure, and national responses.

The tendency to deal with natural disasters as surprise

interruptions to development demonstrates how poorly society has come to terms with surprises. The areas prone to droughts, hurricanes, and certain diseases are well known; there is knowledge available to make surprises less surprising and more manageable and to better control the conditions that cause them. Investments in knowledge management can enable society to integrate pieces of information often dispersed in different organizations. Local governments and national agencies need to improve their abilities to respond promptly and in a coordinated way to new events. Local societies need to build on their pre-existing skills to be more effective “early warners” and first responders to rapidly unfolding surprises. Societies need to decide what they perceive to be an acceptable level of risk. Otherwise, repeated surprising events will challenge local and national adaptive capacity, escalating social tensions and hindering human development.

1.2 How climate change impacts are mediated by institutions

The impacts just described do not happen in an institutional vacuum. They are mediated by institutional realities. It is not possible to understand how individuals and households are being affected by climate change without taking into account how their local and national governments are struggling, how the markets for their products, services, and labor are changing, and how the social structures within and beyond their localities are being strained (or perhaps reinforced) by increasing climate-related risk. Examples from past disasters – such as Hurricane Dean (see Box, p. 11) – illustrate this point.

Governance

Governance frames how states and subnational institutions interpret and fulfill their responsibilities to ensure the safety and well-being of those affected by climate change.

8 J. Spiegel et al., “Barriers and Bridges to Prevention and Control of Dengue: The Need for a Social-Ecological Approach,” *EcoHealth*, vol. 2, no. 4 (December 2005), pp. 273–90; see also Millennium Ecosystem Assessment, *Ecosystems and Human Well-being – Health Synthesis* (Geneva: World Health Organization, 2007).

The invisible victims of Hurricane Dean – the case of Pedro Santos

The residents of Mexico's Yucatan peninsula are all too familiar with hurricanes and tropical storms. Over the last several decades, five Category Five hurricanes have made landfall in the region, three of them within the last five years. Mexican authorities have made great strides in protecting residents from death and injury when hurricanes strike. On the municipal, state, and federal levels, greater emphasis is placed on preparedness and mitigation. In 1995 Hurricane Janet destroyed nearly every building in the coastal city of Chetumal and left hundreds dead, but there were no reported deaths when Hurricane Dean, a storm of similar intensity, made landfall in August 2007 – an apparent victory in the face of a catastrophe.

Despite the absence of fatalities, however, Hurricane Dean was indeed a catastrophe. The damage done to the tourist economy of the Costa Maya devastated the lives and livelihoods of thousands of families on the coast and also in communities far inland. These people became the “invisible” victims of Hurricane Dean.

One affected inland community was Pedro Santos, a diverse town of Mayan Indians and mestizos who were brought from the other parts of the Yucatan peninsula to populate the area after Hurricane Janet. In the late 1980s, Mexico's leaders withdrew state-subsidized credits for small farmers. At the same time, local leaders and businesspeople began

to develop Cancun and other parts of the Caribbean coast, and the tourism industry grew exponentially. The growth of the tourism economy could have provided a long-term economic solution to the farmers of Pedro Santos. The resort areas provide a huge market for tropical fruit. However, the small farmers lacked the capacity and technology to meet the demand of the market. As a result, most of the fruit eaten by tourists was imported.

After years of financial struggles, the communal farmers of Pedro Santos found a way to capitalize on their history and natural resources to promote their own tourism project. With government-subsidized loans for community-based tourism projects, they developed an ecotourism initiative and reconstructed part of the old town. The majority of the visitors to Uchben Kah (a Mayan word meaning “old town”) were to come from the cruise ship dock in Mahuhual, less than an hour away, through day excursions offered at the dock.

But only weeks after Pedro Santos signed the first agreements with local tourism operators to bring foreigners to the center, Hurricane Dean struck. The cruise ship dock was completely destroyed. The story of Pedro Santos demonstrates the economic and political causes of vulnerability and makes it clear that vulnerability is not a “natural” state.

This text is adapted from the video Dean's Domino Effect, directed by G. Berger and produced by the ProVentum Consortium.

Governance is not only a matter of how states manage the risks people face but also how they engage with non-state actors in implementing their responsibilities and how they act to maintain their legitimacy if they fail to adapt to climate change and provide opportunities for development. Climate change is creating massive new demands on governance structures amid unprecedented levels of uncertainty. Funding associated with climate change efforts is also creating opportunities to strengthen institutional, organizational, and human resources to meet these new demands. Yet so far it is unclear how governments (especially at provincial and district levels) can take advantage of these opportunities to meet these new demands.

Markets

The poor depend on markets for their products, their labor, and their services. These markets are in flux as climate change affects what the poor can produce, how they need to produce, and (perhaps most important) the terms of trade for their products/labor/services in relation to food, energy, and other basic needs. Markets are governed by both formal and informal institutional factors. Climate change adaptation involves this entire spectrum. The global food crisis is one of the strongest warning signals that the poor, even those who produce food themselves, are losing out in changing market relations. The informal and formal markets that determine who will and will not benefit from, for

example, new seed varieties include the institutional factors governing market risk for the poor in markets for agricultural products and labor.

Social capital

In addition to depending on what they can produce or their labor, the poor also rely on their reserves of social capital, especially when faced with extreme stress. In times of disaster, particularly smaller disasters, the most important sources of support are family, community, and local reciprocal relationships. The nature of these social structures is changing, with traditional community relations often being eroded. The picture is not entirely bleak, however. New forms of social support are emerging through international networks consisting of state actors, NGOs, and scientists. Increased flows of information, skills, capital, and ideas are creating new forms of social capital that are no longer limited by geographic boundaries.

1.3 Why vulnerable people remain vulnerable

Households and communities face many risks, with impacts that can compound one another and accumulate over time. Repeated disaster shocks have a range of cumulative effects, including drought reoccurring with such frequency that people have no time to recover in between events, leading to deepening poverty and chronic food insecurity. Also, exposure to one type of risk can increase vulnerability to other risk factors, such as when crop failure leads to malnutrition, which increases the risk of common illnesses. Climate change is adding another layer of risk. (See Box, p. 12.)

Vulnerability is mainly experienced locally, even though the phenomena are influenced by far larger factors. It is affected by age, culture, resource tenure regimes, and gender, and it is always determined by the local institutional, environmental, political, and market context. Thus it is important to analyze the variables of age, culture, resource tenure, and gender within an understanding of the local context. Clichés about minorities, the landless, women, and children being “vulnerable groups” are an obstacle to understanding how they may be vulnerable. Adaptation efforts must focus on responding to the “how” question. Understanding the unique challenges these groups face in different localities makes it possible to identify locally appropriate measures

to increase the resilience of different groups. Here are some examples of how climate change makes already vulnerable groups even more so:

Decreasing livelihood options:

- ▶ Farmers who are no longer able to produce traditional crops due to desertification or more frequent flooding and cannot afford capital investments (e.g., irrigation or drainage) to produce alternative crops; this particularly affects women, who are often excluded from credit programs due to lack of land titles
- ▶ Landless people who are facing greater competition in labor markets due to climate change–induced demographic change
- ▶ City dwellers who are forced into settlements far away from job opportunities due to rising sea levels
- ▶ Coastal communities dependent on marine resources for their livelihood (fish, seagrass, coral reefs) facing a rapid degradation of the resource base due to the combined impacts of climate change, land use change, and competition from industrial fishing fleets

Markets that exclude the poor:

- ▶ Semi-subsistence farmers who purchase much of their food and who face declining terms of trade
- ▶ People living in forest areas who are facing increasing shifts to monocultures, which constrain traditional methods for risk-spreading based on biodiversity

Non-inclusive governance structures:

- ▶ People relying on safety nets that are increasingly strained due to covariant risk
- ▶ Those living in poorer municipalities and districts where local government lacks the capacity to understand and access new adaptation funding mechanisms
- ▶ Those who are excluded from safety nets and other adaptive resources due to political, ethnic, or gender-related marginalization
- ▶ People unable to achieve the collective action needed to sustainably manage common-property natural resources such as forests, seascapes, groundwater resources, and food-producing landscapes

How climate change risks are tangled up with other risks

Livelihoods. Livelihoods are influenced in many ways, as climate change affects the values and utilities of the different “capital assets” held and the ability of vulnerable populations to take advantage of opportunities. Effects on natural capital are the most obvious. Changes are occurring in peoples’ ability to produce certain crops and in the viability of urban livelihoods where communities are located in high-risk areas. Access to markets and the livelihoods associated with them are changing due to rising transport and energy costs. There can be both synergies and conflicts in efforts to adapt livelihoods to changing climate conditions at the same time as mitigation efforts are creating new markets (e.g., for ecosystem services) and closing others (e.g., due to consumer bias against imported foods) for the poor.

Food security. Climate change plays a role in declining household food security, though there is controversy over the extent to which it was a determinant factor in the extraordinary rise in food prices in 2008. Food security is a central determinant of how poor households choose to deal with short- and long-term risk and how they address trade-offs between immediate survival and the need to manage natural resources for the future. Declining food security must be a major consideration in adaptation and DRR efforts.

Experience has shown that while concerns about famine and hunger evoke strong responses, they do not always motivate an informed and appropriate response. The poor

having less to eat is rarely due to declining national food stocks. The poor have increasingly diversified livelihoods that are integrated into local and global markets. Old assumptions about the poor being “peasant” or “subsistence” farmers must be replaced by an awareness of how urbanization, market integration, multifunctional rural livelihoods, and other factors affect food-climate connections.

Natural resource management. Ecosystems and existing ways to govern and manage natural resources are challenged by climate change as well as by additional changes such as shifts in land use patterns and rapid loss of biodiversity. Ecosystem services – such as purification of air and water, climate stabilization, erosion control, and food production – are fundamental for human well-being. They support livelihoods and provide the very foundation for food security, health, and economic development. For DRR, ecosystems can mitigate the impacts of natural hazards such as landslides and hurricanes and provide an important asset in the aftermath of a disaster.

Health. Climate change is creating new human health risks such as increased mortality due to heat waves, increased occurrence of malaria and diarrheal disease, malnutrition due to local food insecurity, and injuries due to violent weather. Most of these risks can affect entire communities, but individual health risks tend to affect the poor disproportionately and to have long-term effects on their well-being and ability to accumulate assets. Workers may be disabled by excessive heat or affected by re-emerging infectious diseases such as yellow fever and dengue.

New and intensifying forms of conflict:

- ▶ People experiencing conflicts arising from pressures on land and other resources due to declining productivity in some areas
- ▶ Those experiencing conflict over land due to displacement caused by both sudden-onset disasters such as floods and landslides and gradual changes such as desertification and rising sea levels

people have developed mechanisms for dealing with risk and adapting to change. Thus it is important to avoid blanket advice and solutions for adaptation but rather to understand the implications of climate change in different places and to build on past experience with risk management. Recognizing and building on these experiences is as important as understanding what makes people vulnerable to various shocks.

This section has unpacked the different kinds of risks associated with climate change, their impacts on human well-being and governance structures, and the way they affect vulnerable groups. This approach acknowledges that

2. Climate Adaptive Capacity

Climate adaptive capacity is “the ability of countries, communities, households and individuals to adjust in order to reduce vulnerability to climate change, moderate potential damage, cope with and recover from the consequences.”⁹ It is hard to measure adaptive capacity directly, but research shows that there are indicators with strong statistical relationships to successful responses to climate-related events. These indicators are the ones used in various human development indices.¹⁰ Adaptive capacity can thus be understood as an attribute of development: being wealthy allows resources for adaptation; being healthy ensures the capability to adapt; basic education and knowledge enhance the ability to judge how to adapt; and inclusive governance offers opportunities, freedoms, and the liberty to adapt.¹¹

This paper acknowledges the convergence of adaptive capacity building with human development in the climate change context. The understanding of adaptive capacity used here also borrows from Amartya Sen’s concept of agency: “the person’s ability to act on behalf of what she or he values or has reason to value.” Sabine Alkire argues that agency is instrumentally effective in poverty reduction, and here we concur and extend the causal link to autonomous adaptation.¹² Because agency includes effective power as well as direct control, the concept when applied to adaptive capacity reveals the importance not only of the choices that individuals and households make, but also of choices that are denied them because the actions are outside the scope of their power of agency. So adaptive capacity is related to the opportunity to make adaptive choices, whether those choices are made, and the results when adaptive choices have been made.

By stressing the importance of autonomous adaptation to the vulnerable and poorest compared with planned adaptation, this paper echoes Dreze and Sen’s capability approach in their analysis of development in India, which emphasizes human agency over institutions such as markets and governments.¹³ The blending of adaptive capacity with agency acknowledges the importance that power relations have on the ways that people either individually or collectively can

adapt. A dialectical approach to adaptive capacity both enables an understanding of how socioeconomics constrains and enables adaptation and indicates the importance of proactive engagement.

To take the analysis one step further, we look at the adaptive capacity of people, businesses, and ecosystems and discuss their interactions, complementarities, and competition. We consider adaptive capacity across scales – local, national, international – and how interfaces among these scales facilitate or stand in the way of adaptation.

2.1 How people, businesses, and ecosystems adapt

People

In considering adaptive capacity at the scale of the individual, household, or firm, it is important to distinguish between:

9 Tyndall Centre for Climate Change Research, *Research Strategy 2006–2009* (Norwich, U.K.: University of East Anglia, 2006).

10 N. W. Adger and colleagues identify 18 indicators: population with access to sanitation; literacy rate, 15–4 year olds; maternal mortality; literacy rate, over 15 years; calorific intake; voice and accountability; civil liberties; political rights; life expectancy at birth; government effectiveness; literacy ratio (female to male ratio); GDP per capita; Gini coefficient; regulatory quality; rule of law; health expenditure per capita; educational expenditure as a percentage of GDP; and percentage of population employed in agriculture. See N. W. Adger, J. Paavola, and S. Huq, “Toward Justice,” in N. W. Adger et al., eds., *Fairness in Adaptation to Climate Change* (Cambridge, MA: The MIT Press, 2006), pp. 1–20.

11 D. Woodward, “The Impact of Macroeconomics on the Climate Adaptive Capacity of African Countries: A Research Framing study, with Reference to Ghana and Ethiopia,” report to U.K. Department for International Development (DfID) (London: New Economics Foundation, August 2007).

12 S. Alkire, *Concepts and Measures of Agency*, OPHI Working Paper Series No. 9 (Oxford: Oxford Poverty and Human Development Initiative, 2008).

13 J. Dreze and A. K. Sen, *India, Development and Participation*, 2nd ed. (New York: Oxford University Press, 2002).

- ▶ adaptation, which implies *a process of planning leading to a lasting change in the risk environment*, and
- ▶ coping, which is a *“temporary response to a familiar disturbance or transient threat,”*¹⁴ whether economy-wide (e.g., drought or falling output prices) or household-specific (e.g., illness of an income-earner).

Thus a household’s unplanned immediate response to a drought may be considered as coping; but adaptation would be the household’s response to an increase in the overall frequency or severity of droughts. Effective adaptation therefore includes problem perception, planning, preparation, implementation, and reflection on outcomes.

In sub-Saharan Africa, given the combination of a high incidence of poverty and exposure to serious economic and other shocks, coping is the norm. However, most coping strategies available to households – use of savings, borrowing, increasing working time, rural-urban migration, etc. – are either one-off actions or changes of limited duration. Consequently, where households have already had to cope with major shocks, their ability to cope with or adapt to climate-related shocks may be impaired by previous rounds of coping.¹⁵

The high level of uncertainty about the ways climate change is likely to affect particular regions within a particular time frame means that building the climate resilience of individuals and households will often be more important than climate proofing or climate risk management of state investments. In this sense, the distinction between adaptation and coping represents less a dichotomy than two ends of a continuum: a key aspect of climate resilience is setting in place the mechanisms for coping with the future trends and shocks that changes in the risk environment may imply.

People have different abilities to perceive, anticipate, withstand, and recover from climate effects. Planned adaptation by the state and by other agencies should appreciate this. Autonomous adaptation can be enhanced by policy and other programmatic interventions that build up the components or precursors of adaptive capacity – sufficient wealth, health, knowledge, and social organization. Planned adaptation will fail to achieve its objective if it does not succeed in reaching those whose adaptive capacity is weakest. There is little evidence that the concept in economic development of “trickle down” has succeeded in enhancing adaptive capacity. Adaptation by the poorest will require planned adaptation that is effective in overcoming those constraints that

have isolated the poor and marginalized them from the benefits of economic development. Building resilience to climate effects among the poor implies enabling local action by people and doing so in a timely way, as well as developing climate foresight and actions that keep climate events from becoming poverty tipping points.

Businesses

The assets, health, knowledge, and governance components of adaptive capacity are as relevant for businesses as for people. To be able to adapt effectively and efficiently, businesses need sufficient assets and capital to invest in adaptive behavior; they need the organs of the business to be healthy and functioning well – decision-making structures, cash flows, market intelligence, etc. They also need information on how changes in climate and parallel social and ecological changes will affect their market opportunities and risks. Businesses need to be in markets that are governed in ways that allow adaptive behavior to be planned and executed without undue impediment. An example from Bolivia (see Box, p. 16) illustrates how businesses – in this case, small farms – can benefit from a process that allows adaptive responses to an increasing likelihood of extreme weather events.

Businesses must adapt to and try to exert some control over customers, suppliers, lenders, and regulators, as well as to the various climate change effects. They must adapt to and exert some control over markets, while the markets themselves operate within the sphere of higher scales of influences and regulations and depend on these for their adaptive capacity. Events in the last two quarters of 2008 illustrate how market activities unrelated to climate (sub-prime lending and derivatives trading) can drastically affect adaptive capacity and how quantitative changes can accumulate rapidly, leading to thresholds that could easily become tipping points into dramatic qualitative change if governments fail to intervene to alter the direction of change.

14 Tyndall Centre, op. cit. note 9, p. 7.

15 M. Moench and A. Dixit, eds., *Adaptive Capacity and Livelihood Resilience: Adaptive Strategies for Responding to Floods and Droughts in South Asia* (Boulder, CO: The Institute for Social and Environmental Transition, 2004), p. 14.

Fondo de Mitigación del Riesgo Agrícola, Bolivia

Fundación PROFIN has developed an innovative, index-based insurance scheme being piloted in four provinces in Bolivia. It combines incentives for risk reduction and a flexible, people-centered index mechanism. In this scheme, the trigger is based on the production levels of reference farming plots in areas that are geographically similar in terms of temperature, precipitation, humidity, and type of soil.

Farmers identified as good practitioners by their peers farm the reference plots. The scheme is based on the fact that these farmers have established reputations within their communities for their skills and knowledge and that the yields on their plots can serve as reliable indicators of whether production levels have been adversely affected by environmental factors (thus triggering an insurance payout) or by other factors within a farmer's control. This reduces the moral hazard in the scheme, and the reference farmers also serve as technical assistance agents to promote ideas for increasing yields and reducing disaster risks and impacts.

The system encourages other farmers to match the reference farmers in implementing efforts to reduce the effects of drought, excess rains, hailstorms, and frost because those farmers run the risk that otherwise their own plots will be significantly affected while the reference farmers' plots will be less affected.

Source: Fondo de Mitigación del Riesgo Agrícola, at www.fundacion-profin.org/fmra.html.

Markets

The adaptive capacity of markets can be assessed in terms of their asset base; the well-being of their constituent parts; the information and knowledge gained, held, and used; and the way higher-scale agents govern their performance.

To some extent, effective markets rely on the ability of private actors to compete in terms of efficiency and productivity. Economic growth relies upon there being opportunities for investors to identify ways of generating revenue and profits from enterprises. The ability of businesses to survive and thrive stems from their capacity to withstand changing market conditions. Climate change will affect markets and will require businesses to adapt. The increased demand for goods and services required for adaptation and for mitigation of carbon emissions represents an opportunity for those businesses that have the capacity to take advantage of these

new opportunities. However, climate change will also affect productivity – particularly in those sectors most dependent upon natural resources and affected by extreme weather conditions and sea level rise – and markets will be squeezed on both demand and supply sides.

State policy and planning strategies often focus on creating an enabling environment for markets to function more efficiently. Companies are accustomed to lobbying for and receiving subsidies and incentives and to benefiting from favorable trading relations. Hence, the concept of planned adaptation being used to help businesses and markets adapt is well established. Climate foresight within planned adaptation for businesses and markets is as important as it is for individuals and households. The more aware and affluent private sector actors will invest in developing the climate foresight relevant to their sectors. Other private sector actors may have to rely more on state provision of regulatory support and financial incentives.

Ecosystems

Ecological systems do not respond to change in a smooth fashion. Tipping points occur when the cumulative effects of both slow and fast environmental changes and disturbances reach thresholds that result in dramatic and often rapid negative changes in ecological systems. Small events such as droughts, floods, or pest outbreaks might trigger ecological changes that are difficult or even impossible to reverse. This phenomenon has been observed in ecosystems such as coral reefs, freshwater resources, coastal seas, forest systems, and savannah and grasslands. Accumulated stresses may lead to catastrophic shifts, such as loss of coral reefs and their ecosystem services. Fast-onset surprises, such as invasive species and emerging infectious diseases, could become more common.

Climate change is likely to change an ecosystem and its services because the ecosystem has co-evolved with the previous climate. If these changes imply rapid losses of ecosystem services, the impacts narrow human adaptation options.

2.2 Interfaces among the capacities of people, businesses, and ecosystems

To what extent are the adaptive capacities of people, businesses, and ecosystems interconnected? Businesses contribute to the wealth, health, and knowledge components

of people's adaptive capacity. Ecosystem services strongly determine the adaptive capacity of people. This section contains some examples of how institutions, private and public, mediate these interfaces.

Markets for adaptation goods and services

A significant proportion of adaptation takes place in what is termed the private sector – choices, investments, and actions are taken by individuals, households, and businesses. To the extent that businesses trade relevant goods and services to individuals and households, there is a market in adaptation. Access to this market is determined largely by price mechanisms, but state interventions can help break down problems of market segmentation and inaccessibility for the poor. The following box illustrates some important issues related to market segmentation and accessibility to low-carbon energy technology.

Perhaps the most obvious adaptation-relevant commodity that is traded is information about climate variability and change. People and businesses will invest in getting information to help reduce the unpredictability associated with climate events and trends. Governments can and do provide such information. Similarly, expertise on adaptation options and resources can be marketed to improve the way people adapt. Hard technology represents another category of adaptation goods that will find a market when people perceive adaptation as a necessary or advantageous avenue. Services such as insurance are already part of the adaptation marketplace.

Geoghegan, Ayers, and Anderson reviewed private sector channels for delivering adaptation, including banking services tailored to the needs of the poor (micro-credit and savings), agricultural risk insurance, and drip irrigation.¹⁶ They concluded that a range of goods and services produced and supplied by the private sector can facilitate adaptation to climate change. However, the most useful products are often not provided in forms they can afford or get access to. This differential access to insurance, credit, and technologies accentuates the “adaptation gap” between the poor and the better off. Some products are already widely available but need to be tailored to the needs and limited means of the poor. This can mean a major redesign of the products and their markets. In other cases, new products to support adaptation by the poorest may need to be developed. Both approaches require considerable investment in research and

Market segmentation and accessibility to low-carbon energy technology

A review of over 50 low-carbon energy access (LCEA) initiatives from South Asia and Africa noted two main findings.

First, low-carbon small and medium-size enterprises (SMEs) involved in energy technology face trade-offs in delivering direct and wider benefits. Decisions that SMEs make regarding the technologies they promote and the business models they use influence the mix of benefits they are able to deliver. Policies, market signals, and finance instruments used by the SMEs can further influence these decisions. The greatest benefits for the poor come from the technologies that are specifically designed for use by poor households without access to comparable alternatives. Achieving a desired balance of benefits requires understanding and taking account of these influences.

Second, affordability and the opportunity cost of using low-carbon energy technologies are key determinants in reaching the poor, as are technology design and use, affordability, and delivery models. Access to end user credit, at affordable rates and terms, is essential for bringing LCEA technologies to the poor. Micro-finance institutions backed by soft loans and government subsidies are common mechanisms for making LCEA technologies affordable; even with these, however, the opportunity cost of technologies that do not offer income-generating opportunities is very high for poorer households.

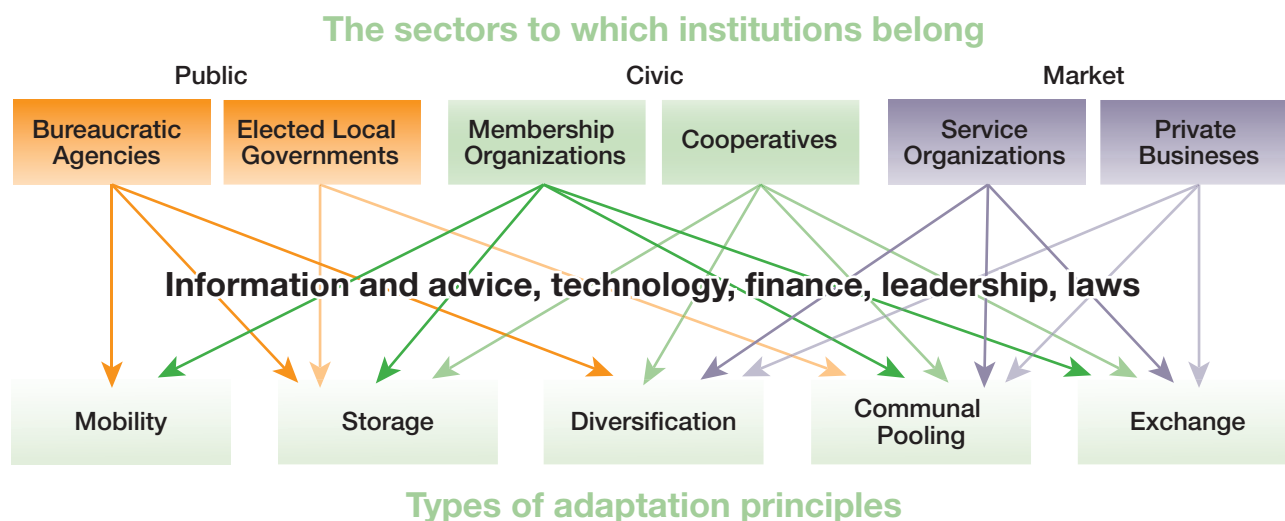
Source: T. Geoghegan, B. Dixon, and S. Anderson, “Opportunities to Achieve Poverty Reduction and Climate Change Benefits through Low Carbon Energy Access Programmes: A Review of the Portfolio of the Ashden Awards for Sustainable Energy,” prepared for U.K. Department for International Development, April 2008.

development, and such investment is unlikely to come from the private sector alone, given the inevitable small profit margins and high transaction costs involved in products marketed for very poor consumers.

Where the private sector is now providing goods and services that can support adaptation by the poor, businesses are likely to have a strong social mission and even be structured and operate in a hybrid for-profit/non-profit way; be

¹⁶ T. Geoghegan, J. Ayers, and S. Anderson, *An Assessment of Channels to Support Climate Adaptation by the Poorest* (London: International Institute for Environment and Development, forthcoming).

Institutional mediation of external interventions to facilitate adaptation



Source: adapted from Agrawal, McSweeney, and Perrin, 2008.

receiving financial and other incentives from governments, donors, or NGOs to provide or expand services to poor customers; or be providing bulk goods or services to intermediaries that absorb the transaction costs involved in retailing them to the poor. This is the case with some insurance companies and re-insurers.

Any adaptation initiatives aimed at the poor that promote technologies and services for adaptation will need to give attention to market development. In doing so, they should take account of the evidence that markets for the poor are likely to depend on the participation of socially motivated entrepreneurs, considerable market research, NGO and donor assistance and investment for start-up, and financial and policy incentives to serve the poorest.

Having looked at the interactions between people and businesses in markets for adaptation goods and services, we now look at how the public or state sector provides a further set of interfaces. Agrawal, McSweeney, and Perrin identified four main external interventions – information provision, technology supply, finance, and leadership – to reinforce adaptation practices.¹⁷ The authors characterize adaptation strategies as being related to mobility, storage, diversification, common pooling, and exchange.

Such interventions can be fostered by organizations based in different institutions located in different sectors:

private, civil society, and public. The effectiveness of these institutional and interventionist routes to increase adaptive capacity is determined by factors related to their relevance to and accessibility by those who need to adapt and “the institutional means of their provision.”¹⁸ The above Figure illustrates the interfaces between sectors (private, civil society, and public) and the different ways that adaptation of different categories can result from these interfaces.

Partnerships of varying potential to facilitate adaptation can be formed at the interfaces between the three sectors of institutions and embedded formal and informal organizations for adaptation. Often, formal local institutions and organizations interact in informal ways, and these interactions can be critical to adaptation.¹⁹

Adaptation through social protection

States are charged with facilitating the development of the national economy and thus improving the well-being of

17 A. Agrawal, C. McSweeney, and N. Perrin, “Local Institutions and Climate Change Adaptation,” Social Development Notes No. 113 (Washington, DC: World Bank, 2008).

18 Ibid., p. 27.

19 Ibid.

their citizens. However, in the least developed countries the poor and socially excluded rarely benefit from conventional approaches to development through economic growth. For these groups, incomes are not rising adequately. Food, water, and energy security are not improving. Health and education levels – particularly of girls and women – continue to be unacceptably low. This is acute in many sub-Saharan African countries, but similar patterns can be seen in other areas where chronic and acute poverty persist. Significant increases in investments in food, water, and energy security are necessary, plus the provision and the improved quality of key services.

Hence, policies to boost demand for and to expand equitable access to quality services are also required. Different development agencies and some developing-country governments now see social transfers – regular and predictable grants to poor households – as a way to achieve universal access to services and address the underlying causes of inequalities in well-being. The prospect of increased and more predictable aid flows provides a window of opportunity to support low-income countries to invest in social transfers to bring development benefits to those who have lacked them.

Yet do social transfers offer a way to enhance climate adaptive capacity? One problem with social transfers and social protection in general is that these policies have not paid enough attention to the long-term risks associated with climate change. Another is that too much of the current social protection agenda is designed and financed by external actors – bilateral and multilateral donors, international NGOs, academics, and consultants – and not enough by domestic constituencies, national governments, local civil society, and citizens.²⁰

However, a review of impact evidence of social transfer schemes in Mexico, Brazil, and Ethiopia found that state-managed social transfer programs, compared with other adaptation delivery channels, have significant potential to help improve the adaptive capacity of the poor in terms of the scale of impact and comparative advantage, impact on adaptive capacity, and the facilitation of adaptation by the poorest.²¹

Social transfers have been shown to be workable and cost-effective in different developing countries. They have been used to scale up access to and demand for equitable health and education services. Climate change challenges the well-being of the poor and increases the need for service

provision. Social transfers represent a targeted means of addressing these challenges. Aid flows for poverty reduction and financing for climate adaptation are both likely to rise significantly in the next decade. Climate-induced poverty could be addressed also through this channel for supporting the climate adaptive capacity of the poor. However, social transfers for supporting climate adaptive capacity require significant amounts of additional revenue.

Using the analytical framework developed by Chapman in her background paper on social transfers,²² Geoghegan, Ayers, and Anderson concluded that:

- ▶ The use of social transfers to support the adaptive capacity of the poor will require long-term and predictable financing. Developing-country governments are right to use donor resources cautiously for social transfers until concrete assurances are made on the level and duration of support. Awareness of climate adaptation entitlements increases the political imperative for sustainable public sector initiatives.
- ▶ Measured and incremental approaches to introducing and then scaling up social transfer programs have proved the most pragmatic. There is time to explore social transfers as a means of supporting adaptation where climate change will cause significant impacts only in the future.
- ▶ Policy coherence between social transfer programs, wider service sector initiatives, and climate adaptation plans is important and requires coordination by government and donors within and among sectors (health, education, social welfare, agriculture).
- ▶ Climate adaptation planning represents a major new policy area for governments and donors. However, least developed countries are carrying out National Adaptation Programs of Action (NAPAs), and slowly some donors are realizing the value and importance of these country-led initiatives. Developing-country governments are also realizing the strategic importance of social trans-

20 S. Devereux and R. Sabates-Wheeler, “Editorial Introduction: Debating Social Protection,” *IDS Bulletin*, vol. 38, no 3 (May 2007).

21 Geoghegan, Ayers, and Anderson, op. cit. note 16.

22 K. Chapman, *Using Social Transfers to Scale Up Equitable Access to Education and Health Services*, Background Paper (London: Policy Division, DfID, 2006).

fers for improving the poor's well-being and access to key services. The potential synergistic relation of these two positive factors needs to be explored.

- ▶ Sectoral or general budget support in many cases is a more effective means of supporting social transfers than project financing. Large multi-sectoral conditional cash transfer programs have been co-financed by governments and donors as stand-alone programs, parallel to sector reform and investment efforts. Dedicated funds are required for social transfers aimed at improving climate adaptive capacity within budgetary support packages agreed by countries and donors.
- ▶ In cases where poverty-reducing budget support is not an option, social transfers for climate adaptive capacity could be funded as separate programs outside national budgets through UN agencies, humanitarian coordination bodies, or NGOs.
- ▶ Managing social transfers to improve climate adaptive capacity requires institutional strengthening that may need a parallel technical assistance program.²³

Adaptation through ecosystem protection

A complex set of relationships exists among climate change adaptation, the livelihoods and well-being of the poor, and the resilience of ecosystems and their associated services. Improved foresight on climate impacts and adaptation strategies is required so that abrupt, climate-induced shifts in ecological systems and the socioeconomic repercussions of these shifts can be anticipated, planned for, and perhaps even avoided.

Some NGOs and governments have been exploring approaches that help people protect and improve their local ecosystems in ways that also improve their own livelihoods and adaptive capacities. Such efforts can stop the qualitative shifts mentioned earlier and – if they involve, for example, growing and protecting forests – can help mitigate climate change.

Highlighting the role of ecosystems in adaptation suggests a number of possible win-win options. These are related to the possibilities of increasing the flow of ecosystems services and building stronger local participation and adaptive capacity at the same time as disadvantaged groups are helped to deal with future impacts of climate change. These strategies can lead to risk reduction and can also con-

tribute to a transition to sustainable poverty alleviation in rural communities. In Tigray province in northern Ethiopia, collaboration between local farmers and experts on a farming-with-nature project – using compost to increase yields, selecting a diversity of wild plant species to decrease the need for fertilizers, making trench bunds to hold water and reduce soil erosion – led to innovative uses of farming systems and also resulted in higher yields, higher groundwater levels, increased household income, and stronger livelihood opportunities for women.²⁴

The “win-win” relationship between investments in ecosystem services and improved livelihoods of the poor should, however, not be assumed to be cheap, quick, easy, or (most of all) inevitable. Elite capture of the benefits of these efforts is possible, and in some cases the outcomes have not lived up to expectations.²⁵

Coping strategies can also create downward spirals, or “lose-lose” situations. Those vulnerable to climate change, perhaps unable to grow their traditional crops, may be forced to overharvest ecosystems for food, fiber, and fuelwood, accelerating ecosystem degradation and the sort of qualitative ecosystem change that will leave them worse off. In addition, external non-local changes or maladaptations driven by indirect impacts of climate change can also rapidly undermine the resource base of local communities. Examples include investments in extraction of nonrenewable fossil groundwater, rapid land use change as a result of investments in biofuels, or increased fishing pressure as a response to changing market prices.

Efforts to conserve ecosystems and to adapt to climate change often involve trade-offs, as described by Heather McGray and her colleagues at the World Resources Insti-

23 Geoghegan, Ayers, and Anderson, op. cit. note 16.

24 J. Lundberg and F. Moberg, *Ecological in Ethiopia – Farming with Nature Increases Profitability and Reduces Vulnerability* (Stockholm: Swedish Society for Nature Conservation, 2008).

25 P. Frühlings and H. Warfvinge, *For Reasons of Climate: Reflections on New Swedish International Forestry Undertakings* (Stockholm: ORGUT Consulting AB, 2008).

tute.²⁶ Managing those trade-offs and effectively using adaptation strategies to realize both livelihood and ecosystem objectives remain difficult challenges, requiring an understanding not only of the ecological factors that undermine resilience – such as biodiversity loss and habitat fragmentation – but also of a range of management and governance issues. Social sources of resilience – such as diversity in institutions and knowledge, learning from disturbance and change, social capital, ecological knowledge, and adaptive multilevel governance structures – are all important aspects in dealing with the complex dynamics of ecosystems and economic and technical changes.

2.3 Interfaces among local, national, and international scales

The Intergovernmental Panel on Climate Change has distinguished four scales of adaptive capacity: mega (global – e.g., international agreements), macro (national), meso (at the community or population-group level), and micro (at the level of the household or small company).²⁷ The mega, macro, and meso scales relate to planned adaptation, while some meso and most micro scale adaptation fit the autonomous category. Adaptive capacity, and hence adaptation, at the local scale depends critically on the capacity for planned adaptation at wider scales. Successful, appropriate, and effective adaptation therefore requires adequate and coherent adaptive capacity at all these scales.

An examination of interfaces draws attention to the relationship between adaptive capacity at the macro scale and at the meso and micro scales.²⁸ The state plays a key role not only through its direct role in collective adaptation but also in the environment and incentives its policies create for individual and voluntary collective adaptation. Governance issues, both in government and in other collective forums, are therefore critical. Indeed, without effective, accountable, and equitable decision-making processes, “many collective adaptation decisions made at local levels end up protecting vested interests and the interests of the less vulnerable.”²⁹

The extent to which climate change increases existing stress and the way people respond to its impacts are determined largely by people’s adaptive capacity, which must be understood before effective adaptive measures can be taken. That capacity is mediated through local perception, interpretation, and meaning of formal and informal institutions.

The scope of their adaptive capacity depends largely on the political context, the extent to which their rights are respected, and the cultural setting. Social, economic, political, and cultural marginalization can limit adaptive capacity. At the same time, it is through these social, economic, political, and cultural institutions and organizations that external support must be channeled. Addressing the human dimensions of climate change means recognizing the nature of prevailing marginalization while working with the structures upon which vulnerable people depend.

The table on page 22 summarizes the main interfaces between local governance and the wider context in which they operate.

Collaboration among stakeholders at different levels of societal organization is often facilitated by “bridging organizations” – organizations that link other organizations and individuals. These bridging organizations are helpful in dealing with both slow and rapid changes. In the case of slower changes, they can transfer information about scientific advances, pending policy changes, funding, and innovative approaches that reduce vulnerability. At best, they can help local actors deal with a range of discordances between governance modes as governing bodies deal with social, economical, and ecological change. Examples come from situations where governance jurisdictions do not match ecosystem boundaries or where different governance organizations try to manage the same natural resource for different purposes but with no coordination among purposes.

For rapid changes – such as forest fires, plant disease, and invasive alien species – bridging organizations can prove crucial in bringing together information and actors to secure prompt responses. The droughts and fires in the Amazonia in 2005 offer an example. The speed and magnitude of

26 H. McGray, A. Hammill, and R. Bradley, *Weathering the Storm: Options for Framing Adaptation and Development* (Washington, DC: World Resources Institute, 2007).

27 Intergovernmental Panel on Climate Change (IPCC), *Climate Change 2001: Synthesis Report* (Cambridge, UK: Cambridge University Press, 2001)

28 See, for instance, Woodward, op. cit. note 11.

29 Adger, Paavola, and Huq, op. cit. note 10.

Local institutions and organizations are key...

Local public, private, and civil society organizations are the main actors directly influencing the vulnerability of households and localities.

Norms, rules, and customs, particularly those relating to natural resource management, create an institutional environment that frames households' responses to climate change and governs the actions of public and private actors.

Local organizations work within these institutional norms to control, coordinate, and sometimes deliver external resources to facilitate adaptation.

But they operate within wider structures

Many of the priorities and attitudes of these organizations toward addressing risk and chronic poverty are formed through their interfaces with line ministries, international market actors, and social movements.

Local interpretations of institutional norms define the relationships between local people and the authorities and businesses with which they interact, but the starting point for the process of negotiating the meaning of these institutions is in formal policies, norms, and structures determined at national and global scales.

Their management of these resources reflects the prevailing incentives for listening to the poor and/or responding to vested political, donor, and commercial interests, and such organizational incentives are largely determined within more macro dimensions.

events caught many local communities and government organizations by surprise. However, fairly rapid response was achieved by the successful coordination of networks of state and non-state actors – ranging from local governments and national ministries to scientists at the U.S. National Aeronautics and Space Administration.

This paper does not advocate off-loading increasing responsibilities onto local actors. Its aim is to encourage understanding of the realities of who does what in climate change adaptation as a point of departure for determining priorities, modalities, and targeting strategies that increase capacities at local, national, regional, and international scales.

3. Toward Capacity Development

Possibilities for autonomous adaptation are closely related to governance issues. Countries, provinces, districts, and municipalities facing the most serious adaptation challenges are often localities with meager capacity and poor governance. Governance-adaptation connections remain poorly conceptualized in academic and development circles. This section looks at these links through the lens of capacity development. The nature of adaptive capacity is considered in terms of which capacities need to be strengthened and what works or does not in terms of the development of capacities for both governance and autonomous adaptation.

3.1 Rethinking how capacity development underpins human development efforts

The international development community has considerable experience in capacity development. What can be learned from this experience to strengthen climate adaptive capacity?

The definition of capacity development proposed by the development community tallies well with the approach to adaptive capacity presented in the previous sections of this paper. Developing capacity comes down to enabling people and organizations to define and achieve their objectives, while remaining cognizant of the challenges they face. Capacity development is thus considered at three different scales: individual, organizational, and the enabling environment. (See Box.)

The main lesson of efforts to promote capacity development is that it is neither fast nor easy. Attempted quick fixes (e.g., those often suggested for dealing with the food crisis and other emergencies that are caused in part by climate change) have not worked. Efforts to create institutions that can achieve the goals of pro-poor natural resource management have more often than not yielded miserable results.³⁰ Similarly there has been little progress in achieving the capacity-related aspects of the Millennium Development Goals.

Evidence consistently shows that public, private, and civil society organizations will never become sustainable

What is capacity development?

The Development Assistance Committee of the Organisation for Economic Co-operation and Development (OECD/DAC) has summarized the consensus about capacity development as follows:

Capacity – understood in terms of the ability of people and organizations to define and achieve their objectives – involves three levels: individual, organizational, and the enabling environment.

Capacity development goes well beyond the technical co-operation and training approaches that have been associated with “capacity building” in the past. The stock of human capital and the supply of general and technical skills are important. However, a country’s ability to use skilled personnel to good effect depends on the incentives generated by organizations and the overall environment.

Capacity development is necessarily an endogenous process of change. Because it involves much more than awareness of technical subjects and general organizational principles, it cannot be imported. Donor organizations with a mandate for supporting capacity development should be at the forefront of the movement emphasizing country ownership of change initiatives.

Appreciating the interactions between three levels of the capacity development process – enabling environment, organizational and individual – means recognizing the important role of systemic factors in enabling or blocking change. However, the constraints arising in the enabling environment are not equally binding in all cases, and it is possible to identify factors at the organizational level that make success more likely. Focusing capacity development on particular organizations may also make good sense in generally unpromising governance situations.

Source: OECD/DAC, *The Challenge of Capacity Development: Working Towards Good Practice*, DAC Guidelines and Reference Series (Paris: 2006).

³⁰ See, for example, J. Sayer, G. Bull, and C. Elliott, “Mediating Forest Transitions: ‘Grand Design’ or ‘Muddling Through?’” *Conservation and Society*, vol. 6, no. 4 (2008), pp. 320–27; J. Barnett, “The Effect of Aid on Capacity to Adapt to Climate Change: Insights from Niue,” *Political Science*, vol. 60, no. 1 (2008), pp. 31–47; Frühling and Warfvinge, op. cit. note 25.

or responsive to their members, staff, or clients if they are created solely to implement a project. Stand-alone training projects and indeed projects in general have had little discernable or sustainable impact on capacity development. Thousands of abandoned government and NGO training centers across the developing world bear witness to the need to plan and resource capacity development programs for the long term. Disaster management in particular has been locked into short-term projects, not least due to the boom-bust cycles that are inherent in the humanitarian funding approaches upon which they rely.

The Paris Declaration on Aid Effectiveness was in part a response to top-down “capacity building” efforts of the past, with the declaration being an attempt to move away from simply transferring the “right answers” to instead stressing that a nationally and locally owned capacity development process must be at the core of any sustainable change effort. This lesson has not been reflected in most recommendations for climate change adaptation.

A realistic but proactive human development agenda is needed that recognizes that poverty is not just about lack of income; it is about individuals and households being powerless to act and influence their futures. The three aspects of capacity development described earlier relate to overcoming this powerlessness, but the most obvious place to start is with the capacities of individuals. When the topics of climate change adaptation and DRR are raised with most civil servants, members of grassroots organizations, entrepreneurs, and households, the responses are uncertain. Many have never heard of the issues. Others have learned certain catch phrases but have yet to consider more profoundly what this means for them. The gap between expectations regarding what needs to be done and the so-called absorptive capacity of these individuals is vast. This is partly due to the novelty of the jargon surrounding climate change. Also, it is easy to become bewildered when simultaneously dealing with new opportunities as aid response is scaled up at the same time that projected hazards are perceived to be overwhelming.

Human resource development tends to be associated with training. While there is certainly a need for widespread training to raise awareness and instill basic skills related to new forms of adaptation and DRR, this is far from enough. Development of individual capacities involves managing human resources so that people are motivated to apply their skills

effectively. Many government organizations are unable to provide space for their staff to respond to the uncertainties and surprises of climate change and disasters. Much can be learned from organizational reforms in other sectors.

The uncertainties that accompany climate change mean that ongoing access to information is paramount. Democracy relies on people having the information they need to make their own informed decisions. Climate change adaptation is not about telling people what to do. It is about helping them to adapt their local knowledge and wisdom to changing and uncertain circumstances. (See Box, p. 25.)

3.2 Promoting inclusive governance, locally and nationally

The main way that inclusive governance helps reduce vulnerability is through efforts to alleviate poverty. Thus the main entry point for building on existing organizational development trajectories is in the links among vulnerability and poverty policies and programming. Vulnerability reduction depends on capacities to provide appropriate leadership, to engage actively as part of civil society, to provide access to services (especially those related to information, technology, and access to capital), and to mobilize a dynamic business environment that creates opportunities to pursue less risk-prone livelihoods.

Governance amid decentralization and subsidiarity

National policies and commitments to reducing vulnerability are central, but they cannot simply be “transferred to” or “implemented” locally. (See top box, p. 26.) Local actors are increasingly willing and able to decide for themselves whether to listen to advice from above, and their decisions are directly related to how they are dealing with a range of tasks.

As a result of decentralization, local government is being overwhelmed by massive responsibilities. The principle of subsidiarity is essential, in that local actors and local governance are the most important basis for action informed by existing conditions. At the same time, factors related to covariate risk have meant that local government (particularly poorer municipalities and districts) have little chance of managing these risks or even of obtaining resources to develop their capacities for the future. Adaptation will not

Rethinking human resource development – the example of agricultural diversification

Development efforts have in the past traditionally used education and agricultural extension as tools to change the attitudes of “risk-averse peasants,” who insisted on using what was seen as the maladaptative practice of diversification. The tendency of poor farmers to produce a variety of crops to spread their risks was perceived as standing in the way of finding escapes from poverty. Specialization was seen as a precondition for commercialization of smallholder agriculture, despite the increased risks that specialization entails.

These trade-offs are now being recalculated. Agro-biodiversity and access to a range of livelihood options are being recognized as a strength. Planting trees in farm fields and using non-timber forest products have provided rural people with improved livelihood security (while at the same time in many cases sequestering carbon). Yet there are few examples of how human resource development efforts are changing to respond to this newfound respect for diversification. Furthermore, response to the food crisis has in many cases emphasized a return to past approaches based on promotion of a limited range of seed varieties in order to increase aggregate national food stocks. The demands of the globalized agro-food industry have included commercial pressures for bulk production of specific crops and varieties. Biofuel investments often entail a return to the promotion of monocultures.

Diversification has perhaps been increasingly acknowledged as a “good thing,” but other pressures mean that an appropriate shift in human resource development priorities has yet to gain ground. This is true for both the trainers and their organizations. Agricultural extension agents are not prepared to provide advice about complexity, and their training institutes (where they still exist) are weak. National policies and leadership from ministries of agriculture and the environment are required for progress in the development that human resource investments are supposed to contribute to.

come about as a result of calls for more investments in effective local government. Efforts to decentralize responsibilities for adaptation need to reflect inevitable human resource gaps, lags in organizational and institutional reform, and unfulfilled promises of financial devolution.

Aid can help overcome some of the obstacles facing local organizations in adaptation and risk reduction. Investments have been effective in producing risk maps, initiating participatory planning, and building basic human resources. The greater (but often hidden) challenge is in ensuring that effective links are created among national climate change efforts and the municipalities, districts, and provinces that are tasked with moving from words to actions.

In many countries there are capacity and communication gaps between those at ministerial levels who hold the financial resources and manage the international networks and the local government actors who often lack the skills, awareness, and time to explore ways to get these resources. One obvious way to overcome this is to engage those ministries and public authorities with a greater local presence in adaptation efforts (e.g., those dealing with water, energy, spatial planning, and agriculture). Ministries of environment have an important role in national coordination, advocacy, and policy development, but others will generally have to take the lead in bridging the frontline gaps between policy and practice. Competition over turf and funding, especially between ministries of environment and agriculture, is virtually endemic in many countries, so such sharing of responsibilities will be difficult to achieve.

Understanding the opportunities and constraints facing local governments and their relations with line ministries is key to successful adaptation. The realities of developing decentralized capacities must inform decisions about how to ensure that the range of adaptation initiatives, from watershed management to social protection, are sustainable and reach the most vulnerable sectors of the population. Building trust and capacity within local government requires the sustainable ownership of reformed institutions for local natural resource management and risk reduction.

Changing role of civil society

Civil society organizations are playing a greater role in both advocacy and implementing actions to deal with the consequences of climate change. Civil society is helping set the

Decentralization: part of the problem and part of the solution

The resilience of the rural poor depends on the quality of local governance of natural resources. Decentralization is not a panacea. As demand for natural resources grows, the opportunities for corruption also increase and the quality of governance comes under growing pressure.

The 2008 Asia-Pacific *Human Development Report* highlights the overlapping forms of corruption that affect those relying on the shrinking forests and other common property resources. Land grabs and strong pressures from neighboring countries have transformed thousands of hectares of forest and communally managed land in Laos into rubber production, with a huge loss of biodiversity and few guarantees that local residents will ultimately benefit. The remaining forests are being degraded through illegal cross-border trade.

Loss of access to agricultural land and non-timber forest products, together with population relocation, is causing a breakdown in traditional systems of natural resource management without any consequent strengthening of state structures to fill the breach. The Laos central government is struggling to exert greater authority and leadership while also devolving responsibilities to sub-district levels. It remains to be seen whether more effective structures of decentralization will prove effective in reining in the rush to exploit the forests.

Source: UN Development Programme, *Tackling Corruption, Transforming Lives: Accelerating Human Development in Asia and the Pacific* (New Delhi: Macmillan India, Ltd., 2008).

Whose visions for civil society?

Aid pipeline pressures can result in programming that reflects a donor's vision for civil society rather than local cultural, social, political, and economic realities. In Afghanistan, the search for quick fixes for land use, commercialization, and food security issues has sometimes failed due to misconceptions about what "civil society" means within villages in a highly tradition-bound society experiencing conflict and stress. Plans have been made based on hopes that *shuras*, the local structures in which community elders lead decision making, can be transformed quickly to act as modern commercial cooperatives or egalitarian distribution channels for social protection without attention to what "civil society" means for these civil society actors themselves.

Source: I. Christoplos, *Out of Step? Agricultural Policy and Afghan Livelihoods*, Issues Paper (Kabul: Afghanistan Research and Evaluation Unit, 2004).

rules for climate change adaptation, acting as a watchdog to see that they are enforced, and also mobilizing populations to act accordingly. Some organizations are taking on significant roles in service provision, helping to fill the gaps where local government and business are weak or absent. Local-national-global networks of civil society organizations can help address the gaps between national and local government by creating multistakeholder platforms for debate about how to address climate risk. However, the sum of these different sets of activities does not present a clear picture. The borders of responsibilities and realms for action are shifting, and there is no clear consensus about who should do what.

A core question is whether vulnerable groups are represented in, or at least by, civil society organizations. (See bottom Box.) Claims from these groups have not always been based in real capacities to act and engage with vulnerable communities. There are dangers that the increase in funding that will be made available to civil society organizations for climate change adaptation will reduce their accountability to vulnerable households and communities. Disaster relief tends to reinforce vertical accountability to donors. There is an obvious danger that the desire for quick impacts (and disbursements) in climate change adaptation initiatives will create similar incentives. Safeguards are needed to ensure that this does not happen. New approaches to working with civil society may include, for example, funds managed by grassroots organizations whereby they can contract services that they value from national and international organizations they trust.

The place of business

Public investments in capacity development tend to be focused on the public sector (and sometimes civil society). Yet business is the biggest investor in areas such as technology transfer. Given the large role that business plays in commercial activities related to energy, natural resource management, and many of the sectors affecting climate risk, it is essential to get business, government (national and local), and civil society communicating on adaptation. Business makes many of the most important decisions that affect how risk is managed. Most development flows come from private sources rather than international aid. According to a recent analysis, private sector investments

constitute up to 86% of investment and financial flows and are thus a critical point of leverage for reducing climate and disaster risks.³¹ These investments fund most of the development activity and govern day-to-day decisions that affect risk management outcomes.

Decisions acted upon by businesses frame to some extent the livelihood choices of households. The markets they create, develop, or abandon provide a primary range of incentives and constraints for choosing different courses of action. The power that businesses exert within public/private partnerships can determine who benefits and who does not, and whose adaptation to climate change is given priority. The tax revenues they generate can be important for local government capacity, and the financing they contribute to civil society is playing an ever-greater role in capacities to scale up.

Businesses' adaptation efforts have often focused on climate-proofing their factories, stores, and field operations. When a farmer chooses a different seed variety or a shopkeeper installs a stronger roof, these private sector actors are investing in their own risk reduction. Larger companies have been focusing more on adaptation and risk reduction as they realize that they cannot succeed in societies that are failing due to lack of adaptation. Corporate social responsibility is a growing channel for working with local neighborhoods or even entire nations to help manage water resources, mobility, and communications. Now more of this is being done under the umbrella of adaptation to climate change.

For some time in the 1980s and 1990s, the privatization of infrastructure services was a key ideology for many development actors. Mixed results have meant that more attention is being paid to sophisticated public-private solutions. Yet the effects of privatization on risk remain little studied or understood. In industrial countries, it makes sense for the government to retain the risk when privatizing, as they are best able to handle unknown risk through their power of taxation.³² However, the same assumption may not hold true in developing countries, and it may be more efficient to shift the risk to the market as a component of privatization. With increased infrastructure losses expected due to climate change, the efficient assumption of risk will be increasingly important.

For all these reasons, it is critical to engage the private

sector as a stakeholder and key resource in climate change adaptation. (See Box.) The business community must be present in forums for planning and decision making for proactive risk management and climate adaptation. However, the questions must always be asked, "Whose risk are we talking about, and who is benefiting?" For example, a

Tapping the potential of private sector engagement in disaster risk

A 2007 UK Department for International Development report explored the untapped potential of private sector engagement in disaster risk reduction and identified a number of key entry points in the critical areas of financing risk, building resilience, and facilitating recovery:

Risk financing and transfer:

- Catastrophe micro-insurance
- Index-based micro-insurance
- Sovereign risk transfer
- Support risk pooling at regional scales
- Global reinsurance facilities

Building resilience:

- Integrated home improvement programs
- Enhancing early warning systems
- Peer-reviewed building code compliance

Facilitating recovery:

- Financial sector inclusion
- Emergency liquidity facilities
- Post-disaster communication and transportation systems for families
- Cash transfers for post-disaster humanitarian relief
- Corporate social responsibility for relief and reconstruction

Source: J. Linnerooth-Bayer, R. Mechler, A. G. Patt, and E. Clay, "Options for Private Sector Engagement in Disaster Risk Reduction", Scoping study commissioned by Dfid for CHASE-FST Collaboration, February 2007.

31 United Nations Framework Convention on Climate Change, "Fact Sheet: Financing Climate Change Investment and Financial Flows for a Strengthened Response to Climate Change," at unfccc.int/files/press/backgrounders/application/pdf/fact_sheet_financing_climate_change.pdf.

32 P. Freeman, "Natural Hazard Risk and Privatization," in A. Kreimer, M. Arnold, and A. Carlin, eds., *Building Safer Cities: The Future of Disaster Risk* (Washington, DC: World Bank, 2003).

number of proposals have been put forth that incorporate public-private partnerships and the provision of micro-insurance and other forms of risk financing in support of adaptation. These deserve further exploration and discussion in multistakeholder forums. These instruments, if left to purely market forces, can be irrelevant to the needs of the poorest and become inaccessible and unaffordable for them. To contribute to the adaptive strategies of the poor, micro-insurance needs to be flexible, pay quickly to cover losses, and include incentives to secure investments in risk reduction.

Coordinated approaches to engagement with local organizations

Environmental pressures often result in new forms of partnerships and collaboration among local communities, municipalities, civil society organizations, and business. Particularly after a disaster, these actors may come together and overcome past divisions and conflicts. However, sometimes these conflicts intensify, fueled by competition over aid resources. Not enough is known about ways to use adaptation efforts to promote new forms of partnerships and a more democratic society or about how competition over resource flows for adaptation and mitigation may inadvertently augment tensions among the actors who will need to work together to deal with environmental change.

Greater coordination between local organizations is central to more effective use of local capacities. The national and international institutional silos that have prevented ministries from collaborating must not be replicated at the front line. Research findings will reach farmers only if they are linked to extension services or if the details are channeled through information flows within value chains. Researchers will only understand how farmers and businesses are themselves adapting to climate change if they, along with extension agents, listen to and interact with local people, local government, farmers' organizations, and companies. Micro-finance and insurance institutions can reach vulnerable people only if these services are designed with an understanding of how the poor can get access to and use them and an awareness of the practical challenges inherent in sustaining and managing far-flung financial service organizations with staff in isolated, disaster-prone areas.

Such a coordinated approach has spatial implications.

Despite advances in information technology, in most of the world local people still need to sit down together to work out how they intend to deal with risk and climate change. Geography still counts in terms of enabling coordinated approaches. In recent years many aid donors have shifted away from programming approaches that were previously referred to as “integrated rural development programs” or “area development programs” in order to focus more on broad sectoral policy formation. While this shift has been well justified in light of the poor sustainability of many of the past programs and poor local ownership, there are dangers that the international community may have lost the capacity to address the locally defined nature of vulnerability and sustainability. Thus there are reasons to revisit territorial approaches and the ways that the aid community can best support national approaches to bringing local stakeholders together in developing specific geographical areas.

3.3 Facilitating ownership and accountability

Ownership and the Paris Declaration on Aid Effectiveness

Inclusive governance for adaptation is ultimately manifested in the ownership of policy objectives. In recent years the drive for ownership has been promoted through efforts to implement the Paris Declaration on Aid Effectiveness by aligning aid with national strategies and harmonizing donor approaches. These goals reflect the realization that little will happen and nothing will be sustained unless there are capacities to manage adaptation and the ownership to integrate adaptation into ongoing national and local development strategies and processes. This ownership relies on coherence between the formal regulatory frameworks and central investment strategies (and indeed among international and donor agencies) and the plans and processes already under way locally.

As mentioned earlier, the magnitude of the task of bridging the local-national divide must not be underestimated. There are well-justified fears that the emerging climate change adaptation agenda is a top-down effort that will reduce the space available for local actors to determine their own strategies and control their own futures. The struggle to react to climate change as a “crisis” diminishes opportunities for local actors

to take ownership of their own climate change agenda and integrate it into their own development strategies.

Promoting democratic institutions for climate change adaptation requires seeing both the local and the national political arenas as part of the solution and not labeling “politics” as an obstacle to reform. Politicians are regularly held to account for how they deal with risks and disasters. But the accountability of politicians for reducing risk is often distorted by attention to short-term political gains.³³ There is a disconnect between short political cycles and the need for investments toward long-term risk reduction. The search for short-term political gain cannot be overlooked if local politicians and their constituencies are to be mobilized to take seriously the adaptation efforts that are becoming a central aspect of local development efforts. If vulnerable people are going to benefit from investments in climate change, it will be because their political institutions mobilize the will to ensure that they are better protected from risk than they are today. Politics must lead to policies, local and national, that encourage flexible but firm and committed responses to risk.

Ownership is a precondition of long-term sustainability, but it is not a guarantee. Bringing together ownership and sustainability may actually be more complicated than it seems. The design of National Adaptation Programs of Action by least-developed countries illustrates this. NAPAs are nationally owned, but they do not meet the other criteria of the Paris Declaration on Aid Effectiveness related to integration into national planning and budgetary processes. They have not received significant levels of financing because they are seen as exemplifying the kind of “projectization” that the Paris Declaration seeks to eliminate and replace with programmatic approaches.

This leads to a conundrum. The NAPAs and many other small adaptation and DRR initiatives, particularly those promoted by civil society, are a first step toward local learning about how to address climate change. They can create concrete, on-the-ground examples of actions to address what is widely seen as a rather abstract set of hazards. Ultimately, the NAPAs are more about capacity development than about furthering adaptation. Without this first step there will be great difficulties in taking a far larger second step, since the modest levels of ownership that they represent will be extinguished. Solutions to this conundrum must be found in

situating support to initiatives such as the NAPAs within a much more comprehensive dialogue on adaptation. This means that, although these “pilot projects” may not actually be scaled up, they should be used as capacity development exercises and as a platform for establishing a broad dialogue about what climate change adaptation implies in a Paris Declaration perspective.

Finally, it is not just the climate change agenda that must be adjusted to the Paris Declaration. Learning is needed in the other direction as well. The NAPA example illustrates how the Paris Declaration needs to be better aligned with the emerging climate change architecture, most notably the need to respect and promote adaptive capacity through local actors. Harmonization and alignment processes have in many instances disenfranchised the civil society actors who must be part of sustainable development. Poverty Reduction Strategy Papers have not been adapted in a timely manner to surprises and emerging/changing needs.

Accountability and learning

The climate change community has an image problem in development circles. The science of climate change is seen as being too focused on macro-level technical models to relate to on-the-ground realities. Existing work on community adaptation is often perceived as heavy on rhetorical claims but lacking in empirical validation. The credibility and utility of advice on climate change adaptation is not seen to be sufficiently supported with solid and independent assessment of what has worked in the field, what has not worked, and which assumptions have proved valid about the impact of new policies addressing climate change. If the individuals promoting and implementing climate change initiatives are to be held accountable for the quality and effectiveness of their work, and if they are to learn from practical experience, then monitoring

and evaluation must be devised and used on a much larger scale than has been the case thus far, including particular attention to appropriate forms of impact assessment.

Climate change initiatives frequently include mecha-

33 I. Christoplos (Rapporteur), “Changing the Way We Develop: Dealing with Disasters and Climate Change,” Conference report from the Oslo Policy Forum, 27–29 February 2008.

nisms for monitoring whether people are managing the environment in prescribed ways. Adaptation requires more of a learning approach, combined with systems by which affected populations can begin to hold their political leadership (and aid donors) to account for whether vulnerability has been reduced. Three principles should guide monitoring and evaluation of adaptation efforts: impartiality/independence, credibility, and usefulness.³⁴

- ▶ **Impartiality/independence** of monitoring and evaluation efforts is needed to ensure that assessment is seen to be free from vested interests and normative bias. The desire to support urgent and decisive action and to justify increased investments in climate change activities has meant that such independent judgment has at times been lacking in analysis of climate change initiatives.
- ▶ **Credibility** will emerge as a result of increased independence and greater investments in field-level analysis of the results of new investments, approaches, and policy changes. Theories of change are not enough. Credibility is an outcome of providing verifiable and reliable evidence of the results of adaptation efforts.
- ▶ **Usefulness** can only be achieved by focusing on the target group identifying forms of information that are relevant and applicable. The development community that is ultimately involved in adaptation is a multifarious creature, with a range of interests and capacities to understand and respond to the findings of research, monitoring, and evaluation. If a more trusting and constructive dialogue is to emerge between the advocates of climate change adaptation efforts and the development actors who are expected to carry them out, this will require more attention to understanding how decisions are made at different scales and designing monitoring and evaluation instruments that relate to these specific processes.

This paper began by stating that a failure to focus on the local dimensions of adaptation misses the point in terms of whether human vulnerability is being reduced. Only by tracking the process of change in people's lives can researchers understand if efforts at a range of scales to support adaptation really make a difference. Such tracking requires a shift of emphasis from calls for investments to analyses of the results of these investments. More empirically based assessment of who benefits and how are required if confi-

dence in the inclusive nature of the climate change agenda is to be assured. This will mean going beyond monitoring of hazards and investment flows to concentrate more on how new mechanisms are affecting the changing nature of vulnerability and generating measurable outcomes in terms of enhanced capacities of households, businesses, local governments, and ministries to manage risk.

³⁴ See Network on Development Evaluation, *Evaluating Development Cooperation: Summary of Key Norms and Standards* (Paris: Development Assistance Committee, Organisation for Economic Co-operation and Development, 2008).

4. From Here to There: Enabling Local Adaptation

At the conclusion of the UN International Decade for Natural Disaster Reduction in 1999, Allan Lavell questioned whether the international community had gained any clarity after 10 years of focus on the impacts of disasters on development gains. He concluded that “concentration on the question of the impacts of disasters on development basically serves as a distraction from the fundamental question, which is the impact of development on disasters. Only by resolving this latter question will we ever get anywhere in terms of risk and disaster mitigation, and, consequently, in terms of reduced disaster impacts.”³⁵ In a similar fashion, achieving an approach to adaptation that reflects the human dimension of climate change will require a significant departure from the status quo. It will require a far more critical perspective regarding traditional development models, which must be recognized for their contribution to current levels and distributions of poverty and to vulnerability to climate change impacts.

With this in mind, this paper has broken down the human and institutional implications of climate risks, described the essential components of adaptive capacity, and explored the necessary elements, interfaces, and relationships necessary for enhanced climate adaptation through the lens of inclusive governance. In this concluding section, we identify the key principles for enabling local climate adaptation and suggest a few points of departure for agencies to use in setting priorities.

4.1 Principles for ensuring a focus on the human dimensions of climate change

A focus on the human dimensions of climate change will require several changes.

Change in perspectives

- ▶ Approaches to adaptation must be turned upside down to focus on local adaptation strategies as the point of departure for engagement.
- ▶ Approaches to adaptation must learn from past experiences in dealing with risk in development.
- ▶ Approaches to adaptation should move away from the notion of “climate victims” and support the development of capacities for adaptation by the people instead of for the people.
- ▶ Approaches to adaptation should recognize the highly differentiated nature of adaptive capacity across households, ages, geographic locations, gender, and ethnicity and not prescribe “one-size-fits-all” solutions.
- ▶ Efforts must be concentrated on removing barriers and disincentives to autonomous adaptation to promote locally owned capacity development processes.
- ▶ Adaptation by the poorest will require support from public funds – e.g., through cash transfers and other social protection mechanisms – that allow those facing the climate challenge to more effectively demand and get access to adaptive goods and services.
- ▶ Ecosystems and their associated services must be recognized as fundamental for human well-being, which implies that the ecological impacts of adaptation policies must be taken seriously.

35 A. Lavell, *The Impact of Disasters on Development Gains: Clarity or Controversy?* Presented at the IDNDR Programme Forum, Geneva, 5–9 July 1999.

Change at local/national/global interfaces

- ▶ Different capacities are needed at different scales with regard to access to information, promotion of learning within and among a range of organizations, and creating institutions that support democratic and accountable climate governance.
- ▶ The silos that prevent coordination among the local/national/global perspectives and actors in different sectors must be overcome through greater communication, exchange, and dialogue.
- ▶ Civil society and private sector actors should become strategically engaged in plans and processes for adaptation and capacity development.
- ▶ Increased attention to climate change adaptation must be matched by increased investment in monitoring and evaluation of the impacts of new initiatives and by ensuring that lessons are applied.
- ▶ Ownership at national and local levels, based on the mechanisms of the Paris Declaration on Aid Effectiveness and related instruments, must become part of how climate change adaptation is conceptualized and promoted.
- ▶ Trade-offs between different local interests in resource use and resource conservation must be recognized and addressed in a transparent and democratic manner, based on subsidiarity but cognizant of dangers related to corruption and local abuse of power.
- ▶ Trade-offs between local and global goals and interests must be assessed with far greater attention to the human (local) dimensions of the strategies that are chosen.

Change toward a greater recognition of risks

- ▶ The scale of the local environment must encompass a broader perspective on the challenges facing local actors in order to reflect the range of economic, societal, and ecological risks in development.
- ▶ The DRR experience provides a range of lessons—some successes, but also many mistakes—that should inform efforts to address the development risks emerging as a result of climate change.
- ▶ DRR efforts should place additional emphasis on ecological early warnings – for example, rapid loss of ecosystem services such as pollination loss, decreased mitigation of disease, and fish stock declines.

- ▶ The surprises that will occur in terms of disasters and signals about the need to change development trajectories must be reflected in a more coordinated approach to planning for adaptation and DRR.
- ▶ Co-investments in DRR and adaptation should reflect the growing power of local decision makers due to decentralization but also the financial, organizational, and human resource limits they face in shouldering their growing responsibilities.

4.2 Recommendations for Copenhagen and beyond

What is to be done? What priorities should be presented at the Fifteenth Conference of the Parties to the UNFCCC in Copenhagen in December 2009? And how should efforts be targeted to encourage the development community to take up the momentum beyond the UNFCCC process? Two sets of recommendations are presented here. The first is directed at influencing the UNFCCC process; the second is formulated for the broader development community beyond Copenhagen.

Recommendations for Copenhagen

Climate change negotiations are sometimes seen as an opportunity to right an array of development wrongs and to implement policies and measures that have long made sense from a development perspective. Development of adaptive capacity, as outlined in this paper, requires actions that are in some respects similar to mainstream development. By and large, a country that scores high in the Human Development Index scores low in rankings of vulnerability to climate change. Should global climate negotiations therefore focus on poverty reduction and other development strategies?

There is no clear answer. The UNFCCC does recognize that climate change poses risks to people, the environment, and the economy. But its primary focus is on stabilizing greenhouse gas emissions in the atmosphere (i.e., mitigation). Adaptation per se is not a commitment of parties to the UNFCCC; assisting developing-country parties in their adaptation efforts is, however, a commitment for industrial-country parties.

The amount of new and additional funding in the Adaptation Fund is much less than was expected. Therefore,

expectations that the climate change negotiations will significantly contribute to achieving the principles just outlined should be modest. Discussions in Copenhagen could provide a forum for raising attention to these concerns, but raising the commitments and the cash to turn the climate change adaptation agenda upside-down must be a far longer-term endeavor. The following recommendations refer to issues that should be flagged in Copenhagen, but the ways that these issues are raised should reflect the need to use the event as a driver in a process that will require steadfast efforts for years to come.

Doing things that people want

A fundamental aspect of a focus on the human dimension of climate change is to ensure that adaptation efforts reflect what vulnerable people want. The UNFCCC process should reflect the need for broader engagement in the design and implementation of new initiatives.

- ▶ Evidence should be presented of the demands for climate change adaptation measures that are coming from localities facing an array of different risks.
- ▶ The strengths of the NAPA process should be highlighted, and proposals for future steps should engage people affected by climate change and should reflect how vulnerable people themselves intend to manage the risks they face.
- ▶ Increased investment should be mobilized in monitoring and evaluating how the results of climate change adaptation are perceived by vulnerable people, businesses, and local governments and in ensuring that this information is used to inform the design of the new climate change adaptation architecture.

Doing more of the same

Climate change adaptation is not a new agenda. It has long been pursued as a “positive externality” in efforts to achieve the Millennium Development Goals, reduce disaster risks, and alleviate poverty, albeit usually implicitly. There is no need to reinvent the wheel, but we will need a bigger one.

- ▶ Additional attention is needed to harmonizing the emerging architecture of support to climate change adaptation with existing efforts funded by official development assistance to address disaster risk and other risks threatening vulnerable people.

- ▶ Proposals should be put forth to expand ongoing programs to support climate change governance and especially to invest in the capacities of local government for environmental management, land use planning, and integrated water management.
- ▶ The links between the UNFCCC and new initiatives to address the food crisis should be strengthened, with particular attention on how to expand production while supporting long-standing risk reduction strategies used by people in high-risk environments and ensuring that production increases translate into improved household food security among the poor.

Doing things differently, with due caution in pursuing development objectives

The way “development” is done needs to change so that it does a better job recognizing risks and risk management. The UNFCCC offers an opportunity to state some core principles of what should be done differently in the future:

- ▶ DRR can no longer be an obscure technical process; it must be mainstreamed as part of how the international community supports local governance amid the pressures of climate change.
- ▶ Existing calls for “climate proofing” development should be reformulated and go beyond merely assessing the risks that climate change poses for return on investment to also proposing ways to ensure that development efforts “do no harm” with respect to processes of autonomous adaptation.
- ▶ A common vision on adaptation should allow for flexibility and learning so as to reflect how local people, local businesses, and local government are adapting or failing to adapt to climate change.

Beyond Copenhagen

It is the development community rather than the climate change negotiators who will need to lead the process of placing the human dimensions of climate change at the center of the adaptation process. Copenhagen will be important to set the tone and generate engagement in a new development agenda, but the process of turning that commitment into reality will be up to the development community.

Doing things that people want

Development efforts should ensure that adaptation priorities are set by those in need of adaptation and provide room for national and local politicians and communities to develop and coordinate their own agendas accordingly.

- ▶ Priority should be given for investments in facilitating demand from those affected by climate change.
- ▶ The use of scenario planning with local stakeholders should be promoted to build consensus, understanding, and learning about the implications of climate change for development and risk management plans.
- ▶ Existing climate change and risk reduction modalities should be reviewed so as to reconsider centrally planned, science-driven planning and programming processes and to engage elected local and national politicians in discussions of the changing landscape of risk.

Doing more of the same

Adaptation programming should build on what is known about pro-poor development. This will involve applying lessons learned from an array of past development efforts (e.g., in strengthening ownership, human rights, and local democracy) to the challenges of climate governance.

- ▶ Development efforts should support decentralized structures for improved market integration, with greater attention to how markets affect the access and assets that the poor use to manage risk, including land rights, access to basic services, and social protection.
- ▶ Adaptation efforts should be planned to reflect the importance of long-term commitments to developing local human, organizational, and institutional capacities as the basis for more appropriate natural resource management and sustainable livelihoods.
- ▶ Adaptation efforts should reflect the tenets of the Paris Declaration on Aid Effectiveness.

Doing things differently, with due caution in pursuing development objectives

The growing understanding of climate change implies the need for new forms of programming. This should be paired with a higher degree of caution in pursuing some existing development objectives to ensure that there is coherence between climate change adaptation and the wider development agenda.

- ▶ Support to agricultural services must expand, but in different forms than those pursued in the past; this implies developing new risk-aware approaches to extension service provision, ensuring that seed programming reflects the need to preserve and promote agro-biodiversity (especially in the emergency food crisis response), and making certain that market-oriented programming reflects the risks inherent in climate uncertainty and variability.
- ▶ Social protection systems need to be aligned with formal and informal risk transfer mechanisms so as to reflect the changing landscape of multiple covariate and idiosyncratic risks.
- ▶ When considering pro-poor growth strategies, higher degrees of uncertainty and climatic variability must be factored into program design; this is above all important in the promotion of potentially profitable but high-risk crops for smallholders, addressing the trade-offs of food versus cash crops to take into account changing terms of trade and food security risks, and assessing impacts of resettlement efforts where one set of risks may be exchanged for another.
- ▶ Guidelines and methods for monitoring, evaluation, and environmental impact assessment should be revised to include greater attention to analysis of risks and vulnerabilities and acknowledgement of the uncertain outcomes, inevitable surprises, and volatility of future development processes.

Acronyms

DRR	disaster risk reduction
LCEA	low-carbon energy access
NAPA	National Adaptation Program of Action
NGO	nongovernmental organization
SME	small and medium-size enterprise
UNFCCC	UN Framework Convention on Climate Change



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