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# ADAPTATION AND GOVERNANCE

SEPTEMBER 2014

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**ARCC**



African and Latin American  
Resilience to Climate Change Project

This report was prepared by Johan Schaar of the World Resources Institute through a subcontract to Tetra Tech ARD, and by Patricia Caffrey of Tetra Tech ARD.

Cover Photo: Focus group discussion in Uganda, 2012.

This publication was produced for the United States Agency for International Development by Tetra Tech ARD, through a Task Order under the Prosperity, Livelihoods, and Conserving Ecosystems (PLACE) Indefinite Quantity Contract Core Task Order (USAID Contract No. AID-EPP-I-00-06-00008, Order Number AID-OAA-TO-11-00064).

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# ADAPTATION AND GOVERNANCE

AFRICAN AND LATIN AMERICAN RESILIENCE TO CLIMATE CHANGE (ARCC)

SEPTEMBER 2014

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# ACRONYMS AND ABBREVIATIONS

DCLG	Department for Communities and Local Government
IDS	International Development Systems
IIED	International Institute for Environment and Development
IUCN	International Union for Conservation of Nature
NAC	National Adaptive Capacity
NAPA	National Adaptation Program of Action
PFM	Public Finance Management
RRI	Rights and Resources Initiative
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
UNFCCC	United Nations Framework Convention Framework for Climate Change
UNISDR	United Nations International Strategy for Disaster Reduction
WANI	Water and Nature Initiative
WRI	World Resources Institute

# I.0 INTRODUCTION

Atmospheric greenhouse gas levels continue to rise. Just as inaction on emissions reduction will take us into an increasingly dangerous future, business as usual will not be enough to address the consequences of a warming climate. This paper examines the extraordinary challenges that those making decisions on adaptation to climate change in developing countries face, as well as how power needs to be shared and used in this new context. It aims to show that the way institutions are designed, governed, and linked will have profound implications for our ability to manage what lies ahead. It is not meant to be prescriptive, but rather to create awareness of the determinants of societies' capacity to adapt, which are often absent from the discourse on climate change.

## 2.0 WHAT IS GOVERNANCE?

### 2.1 GOVERNANCE IS ABOUT MAKING DECISIONS

Governance revolves around structures and processes for sharing and using the power that shapes decisions. This dynamic is not limited to decisions within government institutions; it also reflects interaction with the private sector and informal organizations. Understood in this broad sense, governance includes the domains of operations and management, fiscal policy, planning, budgeting, rule of law, regulation, discursive debate, negotiation, mediation, conflict resolution, elections, civic engagement, and other formal and informal decision-making processes (Lebel et al., 2006; Independent Evaluation Group–World Bank, 2007).

Ensuring that the act of governing provides a shared decision-making environment — and that it leads to decisions that actually enable development — has become an objective of development assistance. It has emerged as its own discipline, with specialists, assessment frameworks, and aid practices. Governance has become a normative objective in itself, expressed as *good governance*. Good governance is often characterized as being participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive, and following the rule of law (United Nations Economic and Social Commission for Asia and the Pacific [UNESCAP], 2009)<sup>1</sup>. In 2013, the U.S. Agency for International Development (USAID), recognizing that poverty is driven by poor governance, weak institutions and inequity, released their “Strategy on Democracy, Human Rights and Governance (DRG)” (USAID, 2013), which highlights strong democratic institutions, respect for human rights, and accountable governance as being essential to the success of their development programs (Box 1).

While the exact relationship between the functioning of governance and measurable change in people’s lives may not be immediately obvious, practitioners and academics realize that many determinants of households’ ability to cope with stress, seize opportunities, and invest in their future are intimately linked to governance outcomes. This paper builds on an analysis of how a changing climate may fundamentally alter the situation of the decision maker (a diverse group of people and institutions – landowners; female or male heads of households; local, regional, and national

#### BOX 1. USAID’S DRG STRATEGIC FRAMEWORK: PARTICIPATION, INCLUSION, AND ACCOUNTABILITY

1. Promote participatory, representative, inclusive political processes and government institutions.
2. Foster greater accountability of institutions and leaders to citizens and to the law.
3. Protect and promote universally recognized human rights.
4. Improve development outcomes through the integration of DRG principles and practices across USAID’s development portfolio.

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<sup>1</sup> “Good governance has 8 major characteristics. It is participatory, consensus oriented, accountable, transparent, responsive, effective and efficient, equitable and inclusive and follows the rule of law. It assures that corruption is minimized, the views of minorities are taken into account and that the voices of the most vulnerable in society are heard in decision-making. It is also responsive to the present and future needs of society.” (UNESCAP, 2009)

government institutions; civic organizations; and businesses). It presents relevant experiences and identifies some principles to guide those who are tasked to support a country, its institutions, and its people in managing the effects of a changing climate on society. The paper therefore makes a distinction between *adaptation decision makers* and *development practitioners*. Adaptation decision makers are people — in government, civil society, or the private sector in developing countries — whose decisions will affect society at an aggregated or household level, or the physical and natural environment. Development practitioners are those in international and national development agencies; their mission is to design projects or programs and to provide technical support to developing countries as well as to the adaptation decision makers.

## 2.2 CONSIDERATIONS FOR ADAPTATION DECISION-MAKING

The impacts of climate change are gradually emerging in the daily lives of billions of people. Familiar environments are changing, as alterations in seasonal patterns of rainfall and temperature translate into an increasingly variable — and thereby less predictable — climate. In some regions, there are clear and consistent trends in the form of drier or wetter weather, and fewer very cool and more frequent very warm days and nights. For most developing countries, however, climate change information services are under-developed and do not yet provide reliable projections, neither about future weather nor about the broader systems impacts. Against this backdrop and our analysis of the context in which decisions about adaptation actions need to be made, specific challenges emerge (Box 2). These challenges may not be unique if examined one by one; however, taken together, they present an extraordinary situation with which decision makers must contend. (These features are extensively analyzed in the World Resources Report, 2010-2011 [WRI, 2011]). How societies respond largely will be determined by their governance characteristics.

**Uncertainty.** The lack of precision regarding the direction, rate, and magnitude of climate change creates a fundamental uncertainty with regard to impacts at national and local scales. We know that extreme weather events are becoming more frequent, but we cannot state with any certainty how this trend will play out in a specific rural or urban locality that may experience droughts, floods, or both. Likewise, changes in rainfall and temperature averages and variability over time will produce definite seasonal, decadal, or long-term trends; however, the timing, the extent, and even the direction of these trends are poorly understood. Uncertainty regarding the climate translates into further uncertainty when it comes to effects on physical, biological, and social systems. A change in the productivity of certain crops will affect market prices and value chains, dietary choices, and trade, thus affecting households, markets, and businesses that depend on them. These interactions between systems and scales may materialize in unexpected ways. Decision makers must therefore be prepared for a range of possible futures and try to avoid locking themselves into pathways that turn out to be dead ends if assumptions are wrong.

**Non-linear change.** Climate change is already delivering surprises. Gradual and linear change in biophysical systems may occur long before a threshold is reached; systems may suddenly transition into a new state in which their original characteristics are lost. How long this process takes depends on the system's inherent resilience. Unexpected feedback loops such as those causing Arctic ice to melt much faster than originally predicted are leading to fundamental changes in the distribution and composition of

### BOX 2. SEVEN CHALLENGES FOR ADAPTATION DECISIONS

- Uncertainty
- Incomplete information
- Non-linear change
- Now and for the future
- Local and global
- Multiple sectors
- Monitoring and learning for step-by-step action

species as well as in their ecosystems. Having gone through a transformation into a less productive state, the emergent altered systems with new characteristics may be unable to sustain the historical livelihoods and economic practices of those zones.

Development practitioners tend to work toward gradual and incremental change. Extreme events, whether in biophysical systems or as market upheaval, are perceived as anomalies that are dealt with through extraordinary measures. There are usually strict institutional boundaries between bodies that deal with the linear and the sudden and unexpected – for example, between bodies for disaster management and response and ministries of planning, or between humanitarian and development departments in donor agencies. If non-linear change becomes the norm, anomalies and surprises must be prepared for and embraced in order “not to clarify, map and plan for every single surprise, but to train to be surprised” (Lagadec, 2008).

**Now and for the future.** We are starting to experience and adapt to climate change impacts. We cannot know at what level greenhouse gas emissions and temperatures will stabilize. Some impacts can be anticipated through an extrapolation of current early trends, while others can only be imagined. But change will happen over a long period of time, and the ultimate success of measures taken cannot be predicted. However, we cannot leave action and preparedness until it is too late – nor can we ignore present urgent needs and events that may or may not be directly related to climate change but have a strong impact on vulnerable people and systems. Adaptation actors must contend with the challenge of dealing with the present while having the long-term result of their actions in mind. There must be a link between decisions taken today and the availability of relevant options for tomorrow.

Hallegatte et al. (2012) present examples of such *robust decision making* in the context of the Niger Basin Investment Program and the flood management program in Ho Chi Minh City. In both of these cases, the uncertainty around changing rainfall regimes and sea-level rise require that plans are flexible and allow for new decisions based on new information.

**Incomplete information.** The adaptation decision maker consequently has to accept that information on which to base sound decisions is limited, or even does not exist, because it is in such a form and degree of detail that it is of limited relevance for the context in question. To illustrate, there are climate models that cannot be scaled down, or decisions that carry implications for phenomena that have not yet occurred and must be anticipated. This challenge will require special decision support tools, such as simulations and scenario building, as well as the use of proxy information (i.e., information on parameters that have an understood and predictable relationship to the information needed for decision making). These decisions must be made in such a way that options and alternatives are still open when more complete information can be accessed. Adaptation decisions need to allow many gradual and incremental steps based on what is known, rather than a few big steps that cannot be retraced. They must also traverse institutional levels — local, regional, and national — generating and communicating information that improves adaptive capacity of the farmer as well as the national institutions that support agriculture.

**Local and global – interconnected systems.** Climate change uniquely links the global and the local. Changes in the chemical composition and reflective properties of the atmosphere around the globe produce local effects. These manifestations depend on the characteristics of the natural and physical environment typical to a specific location. Likewise, decision makers’ normative, political, and institutional contexts are determinants for specific impacts, adaptation decisions, and outcomes in response to globally induced changes. Decisions that are made in international institutions such as the United Nations Framework Convention Framework for Climate Change (UNFCCC) and multilateral development banks will influence what financial and other resources may become available to countries at national and sub-national levels.

Local communities are also linked to global systems through markets, trade, and migration, in instances in which national governments set policies that may create enabling or constraining conditions for response at the local level. For example, changes in global food prices that may be directly or indirectly related to climate change — such as harvest failure caused by drought or changes in the use of land from food to biofuel — will immediately affect the price of food at local markets unless governments introduce price stabilization measures. No community is isolated from global events, and all communities must seek means of influence beyond their immediate context. Adaptation requires both individual decisions *and* collective action.

**Multiple sectors.** The values, institutional bias, and interests of the adaptation decision maker will determine how a problem and its solutions are perceived. For the agriculturalist, solutions are found in farming; the hydrologist finds them in flows and streams. But climate change impacts do not respect sector boundaries. Changes in agro-ecosystems, hydrology, human health, and countries' terms of trade will reverberate across sectors. Productivity loss translates into households' purchasing power. The most vulnerable victims of droughts and floods need safety nets and targeted social protection. Impacts must be addressed through a wide lens that registers what happens throughout society. Society must be able to sustain impacts through preparedness and responses in which the ways and means of an array of possible measures are combined. Examples include a new generation of social protection programs such as the Productive Safety Net Program in Ethiopia, which provides continuous support in cash or in kind to the most vulnerable households. Some of this support comes in the form of payment for work that builds environmental or social assets and can be scaled up in times of threatening harvest shortfalls (Berhane et al., 2011).

**Monitoring and learning.** Societies that depend on increasingly unstable systems for which there is no end state in sight face a fundamental challenge. Using experience and indigenous knowledge in dealing with these changes is important; however, this approach is not enough if there is no experience of what now lies ahead. Acting on incomplete information in an incremental way — starting with the present and seeking future outcomes — requires close observation and monitoring of change when and where it occurs. But registering change is not sufficient; systems need to be set up for learning so that new knowledge is internalized and used for adaptation to new circumstances. Outcomes and results of adaptation and investments should be scrutinized, and the various signs of change should be continuously monitored.

## 2.3 IMPLICATIONS FOR THE DEVELOPMENT PRACTITIONER

There are three important implications to consider for the development practitioner in an external or domestic agency who is tasked to support the decision maker (Box 3).

First, for an adaptation intervention to be effective the practitioner must be familiar with the prevailing governance structures, identify decision makers, and seek to understand their challenges — whether they are landowners, female or male heads of households, a local government, a business enterprise, or all of the above. It can rightfully be argued that this familiarity should be a requirement for any development intervention. But special difficulties must be recognized in dealing with problems tied to such uncertainty as adapting to partly unknown phenomena. Making decisions that address climate change effectively will be largely determined by who is represented in governance structures, their ability to understand the implications of climate change, and how their decisions are made. Having this

### BOX 3. ADAPTATION DECISIONS: QUESTIONS FOR THE DEVELOPMENT PRACTITIONER

1. What is the relevant governance structure in the project's environment, and who makes decisions?
2. Does the project's design match the adaptation problem?
3. Is the project set up for learning and change?

information, however, is not enough. There must also be a readiness to execute decisions; without true ownership, little will have been gained unless those affected see it in their best interest to make decisions and assume responsibility for the fate of the adaptation intervention beyond its funding cycle. The power dynamics of decision-making must also be taken into consideration. Decision-makers in positions of power do not necessarily make decisions in the best interest of those most affected by climate change – the most vulnerable.

In practice, this implication means that project sites should be selected where there is likely strong political buy-in including from citizens who the project targets, particularly if the ambition is to develop adaptation interventions that may be perceived as novel in their cross-sector approach and long timelines. If such interventions reflect new national adaptation policies and strategies based on multi-stakeholder involvement at all levels, there is a greater likelihood of central political support that results in improved resiliency of the most vulnerable. Political economy analysis will help clarify whether there is an enabling environment.

Second, the challenges that the adaptation decision maker faces are not very different for the development practitioner who has to design a project or program with an adaptation focus, or prepare a development program to be executed in an environment that is likely to be subjected to climate change impacts. If the preparatory phase of the project or program has a narrow perspective that approaches the problem from a purely sectoral angle, or if either has a limited time frame in mind, then both may quickly become irrelevant given the special challenges described here. Immediate and longer-term implications must be simultaneously considered in program and project design. Moreover, the development practitioner is also part of a governance structure and makes decisions with potentially far-reaching implications both for the communities affected by the intervention and for his or her own agency. The development community will be similarly enabled or constrained by how it manages to look across sectors, take a simultaneously immediate *and* long-term perspective, and recognize the boundaries of the information that underpin decisions.

Third, the practitioner needs to ask: Is the project set up in a learning mode, ready to absorb and act on new and perhaps unexpected information about needs and change caused by the project? Is it designed to register global or regional events and local adaptive practices that will directly affect resources and markets in the local project area? How can such changes be accommodated? What systems are in place to monitor changes in the livelihood conditions and environment of those for whom the project is intended?

In other words, the development practitioner and developing country decision-makers face similar predicaments. They are both part of a governance context and must both deal with a uniquely challenging operational environment. Often, the development practitioner has better access to relevant climate change information, expertise, and resources than the local decision-makers do. The next section will present factors that must be considered to enable positive outcomes in spite of these challenges.

# 3.0 GOVERNANCE FOR ADAPTATION

The extraordinary nature of climate change is due to its complexity and how it links ecosystems and social systems in unpredicted ways. Climate change is occasionally referred to as a 'wicked' problem, i.e., a problem that is ill defined or formulated, and for which there is little consensus about its nature (FitzGibbon and Mensah, 2012). It is associated with strong moral and professional issues and disagreements, technical and social dimensions, and complex linkages to other problems. For decision-makers and development practitioners, it is not obvious when it is time to pursue a different track, and problems may not have a final resolution. Climate change is thus best tackled in inter-disciplinary ways, approached through different knowledge systems and with participatory practices that enable learning.

To approach a problem as complex as climate change adaptation through a governance lens requires a review of traditional perspectives of good governance. Certain elements will remain relevant, and even become more important, but new elements may also be needed. The most important challenges to be accommodated are the long-term nature of climate change, which has no known end point, and the absence of definite answers to basic questions requiring governance systems that are agile and responsive to a variety of situations and needs. Ideally, good governance is informed by iterative action and experience that enables individual and institutional learning and adaptation.

There are available resources that are based on recent learning on the design and implementation of approaches that may be more suitable for addressing circumstances that climate change adaptation practitioners face. Research titled, “Mediating Forest Transitions: ‘Grand Design’ or ‘Muddling Through’” advocates for an adaptive approach that deals with a continuously unfolding set of challenges and opportunities as well as changing societal needs (Sayer, Bull, and Elliott, 2008). Another useful and relevant approach is that of institutional *bricolage*, meaning that existing ideas and experiences are combined or recombined in new, creative, and transformative ways (Sehring, 2009). The different ways these complex perspectives can be operationalized and integrated into adaptation strategies and programs are offered through the choice of a developmental evaluation approach (Quinn Patton, 2011), in which close feedback from program outcomes and interaction between program managers and evaluators form part of the program design. ClimateXChange, Scotland’s Centre of Expertise on Climate Change, has developed and applied a Flexible Adaptation Pathways approach<sup>2</sup> to address climate change in London and New York City. Additional characteristics of these approaches appear in Box 5 on the following page.

**BOX 4. PRINCIPLES OF GOOD GOVERNANCE**

- Transparency
- Legitimacy and inclusion
- Accountability
- Equity
- Efficiency and effectiveness

<sup>2</sup> To learn more about this approach, please visit: [http://www.climateexchange.org.uk/files/9713/7365/7868/Flexible\\_adaptation\\_pathways.pdf](http://www.climateexchange.org.uk/files/9713/7365/7868/Flexible_adaptation_pathways.pdf)

## BOX 5. ADAPTIVE APPROACHES

“Grand Design” or “Muddling Through”:

- Engage for the long term, on-the-ground
- Adapt constantly to changing challenges, opportunities, and societal needs
- Build human capacity and institutions, including capacity to engage with the process of change
- Broaden and diversify the range of conservation options

Institutional Bricolage:

- Embark on a long-term and comprehensive approach
- Sequence reforms logically and deliberately
- Foster participation among stakeholders
- Renounce rigid adherence to blueprint models

Flexible Adaptation Pathways:

- Recognize and address the long-term and uncertain nature of climate change
- Use a risk-based decision framework based on levels of risk
- Identify when critical thresholds are likely to be reached
- Identify alternative adaptation pathways should thresholds be reached
- Utilize pathways consisting of robust adaptation actions
- Incorporate low- and no-regrets actions while research is conducted to enable the establishment of informed, flexible pathways for the longer-term

Studies on the management of resilience in socio-ecological systems — in which people and the environment dynamically interact — identify governance categories that are useful also for the purpose of climate change adaptation (e.g., in Lebel et al., 2006; Moser, 2009). They include: 1) participation and deliberation; 2) accountability; and 3) effective institutions. The development community also recognizes a set of good governance principles that include transparency, legitimacy, inclusion, and equity (Box 4<sup>3</sup>), because many developing countries suffer from administrative corruption, lack of government credibility, and inequitable access to rights and services. The next section will examine the adaptation relevance of these governance categories and good governance principles, as well as their implications for development practice.

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<sup>3</sup> This list of principles builds on various resources, including Benjamin and Fulton, 2011; the USAID Democracy, Human Rights and Governance website (<http://www.usaid.gov/what-we-do/democracy-human-rights-and-governance>); the United Nations Water Governance website (<http://www.watergovernance.org/whatiswatergovernance>); and the Institute on Governance website (<http://iog.ca/>).

### 3.1 PARTICIPATION AND DELIBERATION

Stakeholder participation is generally accepted as a basic principle for successful planning of development interventions and investments. Participation can be rights-based while also having an effectiveness dimension (Henninger et al., 2002). Citizens' rights to be informed and to engage actively on matters that have direct bearing on their interests and well-being are expressed in the legislation of many countries and also, to some extent, in international law.

#### **BOX 6. WHY PARTICIPATORY, REPRESENTATIVE, AND INCLUSIVE GOVERNANCE?**

“Political marginalization is often compounded by social and economic marginalization, leading to poverty, limited economic opportunities, low levels of education and limited access to health and other services. These groups often suffer from discrimination in the application of policies and laws, and in the allocation of public goods and services. Their interests are only weakly represented by elected officials and representative institutions.

This cycle of marginalization impedes broad-based development and perpetuates poverty. Entrenched power dynamics create barriers to inclusion and create the conditions that both trap vast numbers of households in extreme poverty and set the stage for potential conflicts.”

(USAID Strategy on Democracy, Human Rights and Governance, 2013)

Stakeholder participation in a development context seeks to ensure that all relevant knowledge is mobilized and that those who ultimately are the agents of their own development have a sense of — or actually exercise — ownership of plans, allocation of resources, and decisions made. Effective stakeholder participation is also necessary for participatory, representative, and inclusive governance (Box 6; USAID, 2013). Inclusive development is particularly important in the context of climate change when citizens with limited access to assets and rights do not have sufficient resources or decision-making authority to withstand and recover from climate shocks. Practice from decades of rural development planning and implementation has produced methods and modalities for organizing participation where the identification of power relationships is essential (Cornwall, 2008).

As communities, governments, and the private sector are faced with the problem of climate

change impacts, there are even stronger reasons to make sure that those who are affected by it participate in the search for actions and in decisions on investments that build their adaptive capacity. The extraordinary nature of climate change impacts and the absence of blueprint solutions require that problem solving optimize conditions to apply multiple perspectives and experiences. Deliberative space with broad participation will also allow actors to identify difficult trade-offs that adaptation options generate as well as ways of dealing with them.

Societies are complex and diverse, and some societal groups — women, youth, and ethnic and religious minorities — are often marginalized. These groups are hindered frequently by more dominant decision-making forces and are kept from expressing their voice and asserting their rights. It is critical that development practitioners incorporate strategies that ensure that these groups are empowered to not only influence decision-making but act to address climate change. Strategies to empower these groups include strengthening civic groups (formal and informal) to be advocates, developing leadership, acknowledging the essential role they play in developing their own resilience and adaptive capacity, and enabling their access to relevant information and resources to act.

Since climate change impacts are long term, going well beyond the normal three- to four-year political cycles, it is important to engage actors that are used to considering long time frames. This case may not

apply to the general public, but civil society organizations as well as some in the business sector and certain private investors may be more accustomed to these scales. The collective memory of communities and how they traditionally have dealt with extraordinary stress and shocks — knowledge that often rests with community elders — is also valuable when considering future adaptation options. Seeking such broad participation enables decision makers to draw up long-term scenarios and consider the consequences of possible decisions. There are societies, however, in which the political culture is extreme in terms of frequent and disruptive change, and in which elected officials are not effective and often do not serve their full term. In such instances, a stable bureaucracy with a robust institutional memory may help provide the needed long-term perspectives, particularly if those perspectives are reinforced by strong partnerships with civil society groups (formal and informal) and business representatives at multiple levels. Box 7 describes an example of such a partnership.

There is a need to continuously monitor the effects of adaptation decisions in order to gradually adjust policies and plans based on new information. Establishing venues to invite participation with continuity of participants and consultation, based on a range of experiences and expertise, can open the process of evaluation and revision of decisions and thus create ownership when adjustments are made. Considering that governance is exercised not only by government bodies but also by the private sector and informal organizations, the existence of opportunities to share relevant knowledge as well as to define possible solutions collectively will enable the actors, including the most vulnerable, to make informed decisions about their own adaptive actions based on different perspectives and knowledge systems. Such an approach will allow them to adjust to change and seize new opportunities that may arise, leading to adaptive capacity building. This shift will ultimately promote the diversity necessary for effective adaptive action.

### 3.2 ACCOUNTABILITY

While participation may help increase the quality of adaptation decision making, it is not a substitute for political representation, nor does it relieve elected and public officials of their responsibilities toward citizens. One should also be aware that if civil society and private sector actors are favored, there is a risk that the legitimate roles of local representative government institutions will be undermined.

Holding public officials responsible for policies and plans as well as the allocation and use of financial resources cannot be accomplished through consultation and deliberation, even though a culture of participation will foster accountability. When they share information and explain their actions or inactions, open deliberation with authorities builds confidence and trust. Ultimately, however, accountability requires mechanisms for articulating and registering grievances as well as sanctioning poor performance. From an aid perspective, public finance management (PFM) approaches should be emphasized along with ways to strengthen local and national authorities' capacity to allocate, disburse,

#### **BOX 7. GOVERNMENT SUPPORTING LOCAL KNOWLEDGE AND ACTION**

Taking advantage of newly decentralized local governance and finance mechanisms in Isiolo, Kenya, the International Institute for Environment and Development (IIED) assisted five rural wards that are predominantly pastoral in land use to bring together stakeholders — male and female — in shared resilience assessments and learning dialogues that enabled analysis of resilience needs through resource mapping. They used traditional and formal knowledge to articulate challenges and consensus on affordable climate change adaptation solutions. Projects developed in different wards include strategically placed boreholes; rehabilitation of water pans, farm canals, wells, and veterinary facilities; and capacity-building of Rangeland Users Associations and customary institutions charged with natural resources management and other livestock disease interventions. These activities were presented in the county government plan and were funded by the Climate Action Fund (CAF).

and report on the use of financial resources. This recommendation especially applies to climate finance from international sources that may be off-budget and not channeled through regular country systems.

Local authorities often exercise accountability upward to central authorities but fail to practice accountability toward local citizens, including in terms of natural resource management, which will be a fundamental part of adaptation strategies. Lack of local authority accountability to local citizens is particularly visible where the tenure of communities to land and forests is not secure and where there is external demand for control over natural resources. Such insecurity is often a barrier to the kinds of long-term investments in ecosystem services that are necessary to ensure food security and other basic livelihood elements (Rights and Resources Initiative, 2012). Therefore, it is difficult to separate accountability mechanisms from the legal regimes that authorities are supposed to uphold. Citizens from marginalized groups have even less access to land and resources; since they also have limited access to relevant information and public resources, they have a distinct disadvantage that makes them particularly vulnerable to climate change. The interests of more influential players often supersede the interests of these groups. Authorities and climate change adaptation development practitioners must be aware of the circumstances of these groups.

A range of mechanisms contribute to accountability (Ribot, 2004), including transparency, independent monitoring, and the existence of polycentric institutions – the opposite of monolithic centers of power. Other essential elements of accountability include access to legal recourse, budget control, and free media to allow public debate. Several successful approaches implemented by the public sector and independent think-tank nongovernmental organizations have improved government capacity to be more effective and transparent as well as to help citizens to be better informed and hold their governments accountable. The Treasury Department for the Republic of South Africa publishes online, detailed, up-to-date national- and provincial-level budget information with a manual published in five languages to help citizens interpret the information. Grupo Faro, a civil society think tank in Ecuador, publishes printed and online detailed analyses of government and private sector information, monitoring and reporting on performance according to budget allocations and use, natural resource use, environmental compliance, and so on.

Even if all necessary conditions for accountability are present, the uncertainty that decision makers face in climate change provides them with a unique challenge. The risk that adaptation decisions will turn out to be counterproductive or lead to unintended consequences cannot be discounted. For government decision makers to take such risks openly requires a very special relationship between them and citizens. The degree of *trust* that people have in their government as well as the ability of citizens to voice concerns freely, act to assert their rights, and expect government to act in the best interest of communities with no other motives will be important for the willingness of authorities to take risks and for the willingness of citizens to hold them accountable. A culture of open discourse between multiple stakeholders and learning will help equip society for the inevitability of change and the necessary iterative process, in which a step ahead may need to be reversed in order to follow a different direction. Thus, the adaptive capacity of a society is intimately linked to its core values, cohesiveness, and integrity. Additionally, where trust and social capital are weak, a society is at a fundamental disadvantage in coping with the stresses of climate change.

### **3.3 EFFECTIVE INSTITUTIONS**

It is often argued that an issue such as climate change, which manifests across scales and systems, must be matched by institutions that are just as multilayered, polycentric, and non-hierarchical (Lebel et al., 2006). It is not simply a question of promoting decentralized systems, even though local institutions would be expected to respond better to the circumstances and needs of local communities and to manage ecosystem services effectively to benefit those in need of the service. Decentralization is part of many good governance programs in developing countries but has gained a questionable reputation – not

because the assumptions behind it are incorrect, but because decentralization is rarely fully implemented (Ribot, 2004). The central government rarely yields real power over decisions and control of resources. When it does, it often relies on central bureaucratic administrative tendencies to retain control at the regional and local levels through rigid guidelines. In most countries, essential services such as health, education, and natural resource management are still funded and supervised at the central or regional levels, which hampers the ability of local service providers to respond to the needs and circumstances of local citizens. In developing countries, there are few examples in which local government and informal organizations have been able to demonstrate their potential for effective management and delivery of social and natural resource services through real decentralization and empowerment.

Nevertheless, adaptation to climate change provides a strong rationale for recognizing institutions that are effectively decentralized to respond to the needs and circumstances of local users and that match the scales and dimensions of systems that are essential to mitigate impacts and provide adaptive capacity. Such institutions may include arrangements for the management of watersheds or landscapes that have social, cultural, and ecosystem characteristics. They are formal institutions with jurisdictions that have been adjusted to follow landscape and watershed boundaries, as well as informal institutions that manage issues such as agriculture-pastoral interaction, conflict resolution, or traditional social safety nets.

That is also why trans-boundary institutional arrangements dealing with shared resources (watersheds, rivers, and coastal marine areas) also should be reviewed for effectiveness in dealing with climate change impacts – even though watersheds are usually multi-national, which makes their institutional nature especially complex. From a development perspective, it is challenging to identify institutions with an ecosystem or watershed logic or that make decisions based on strictly administrative boundaries, particularly in countries where colonial powers once drew borders with little consideration for ethnic, cultural, or landscape features. That is why traditional institutions with strong local legitimacy are so important. It is also why new efforts to use landscape boundaries as planning entities — such as the International Union for Conservation of Nature (IUCN) Livelihoods and Landscape Strategy that operates in seven Asian countries (IUCN, 2010) — should be closely followed.

### 3.4 ASSESSMENT OF NATIONAL ADAPTIVE CAPACITY

The new challenges that institutions face in managing adaptation require a review of the functions the institutions perform, bearing in mind that new circumstances may be highly disruptive. Through a process of extensive consultation, the World Resources Institute (WRI) has developed a framework for defining these functions, called the National Adaptive Capacity (NAC) Framework (Dixit et al., 2012). The NAC can be used for mapping and for diagnostic purposes. A set of national, regional, or local institutions are analyzed for their adaptive functionality. The NAC Framework may also be used as a tool to design or reorganize institutions and to establish institutional linkages for the explicit purpose of improving institutional capacity to address climate change adaptation. Although government institutions have been the focus of practical application of the NAC so far, the presented functions are relevant also for nongovernmental and informal institutions acting in an adaptation context. The functions include *assessment, prioritization, coordination, information, and climate risk management*, which are briefly presented below.

**Assessment** is the process of examining available information to guide climate change adaptation decision making. As discussed above, adaptation is likely to require iterative assessments over time, including assessments of a country's, and its citizens', vulnerability, climate change impacts, adaptation practices, and the climate sensitivity of development activities, whether in agriculture, forestry, water management, or in enhancing the resilience of ecosystem services or livelihoods. Making assessments in this way requires institutional leads and linkages so that many perspectives contribute to a holistic picture that will change over time. Even if a one-off assessment is insufficient to achieve this goal, a shared assessment experience may still contribute to a shared understanding of the problem and thus

help build institutional partnerships and linkages that will turn out to be invaluable for coordinated adaptation action over time.

**Prioritization** means assigning special importance to particular issues, areas, sectors, or populations. For adaptation, prioritization at the national level should take into account where climate impacts will be most severe and who among the country's population is the most vulnerable. Effective prioritization will engage a wide range of stakeholders, will be made transparent to the public, and will enable review and adjustment of priorities as circumstances change. Countries can have different approaches for setting priorities and may incorporate a wide range of values and concerns in this prioritization process. Priorities may include areas such as food security, social protection, health, disaster management, infrastructure, research and knowledge management, low-carbon development, and institutional capacity building (Government of the People's Republic of Bangladesh, 2009). Identifying adaptation options and testing them against different development goals across sectors as well as applying participatory stakeholder multi-criteria analysis may help in selecting options that should have priority since they are likely to deliver benefits from several perspectives. Practical methods for this approach have been developed, including so-called Multi-Criteria Analysis (Department for Communities and Local Government, 2009), in which a range of adaptation options are tested against different policy objectives. Several developing countries have used this approach as part of their adaptation planning (e.g., Federal Democratic Republic of Ethiopia, 2007).

**Coordination.** Adaptation requires action by different actors at multiple levels, both within and outside government. Coordination of their activities helps avoid duplication or gaps and can create economies of scale in responding to challenges. Coordination may pose a great challenge for governments that are structured according to sector logic, and when administrative boundaries prevent landscape or watershed approaches that would be more conducive to safeguarding and enhancing productive natural resources and ecosystem services.

Coordination may begin as a process of establishing relationships, sharing information, and raising awareness and then may move toward the management of joint decision-making and action. It may be occur horizontally (e.g., among ministries); vertically (e.g., among national, global, and sub-national actors); or among stakeholders (e.g., between government and business). Climate change impacts are felt and responded to locally; therefore, local government and informal organizations play an important role in defining solutions and implementing adaptation actions. A functional interface between local and central institutions and planning processes will become a critical link in making implementation work. Successful coordination requires that actors have a shared understanding of the issue to be addressed and of their own role and contribution, particularly when coordination is complex and cuts across sectors. Assessment exercises will be helpful in building such common understanding.

Asymmetry and imbalances in power and influence between different stakeholders are challenges in achieving effective coordination and should not be underestimated. Still, where a shared analysis of problems leads to identification of shared interests, progress is possible. As an example, the Water and Nature Initiative (WANI) of IUCN reported significant achievements from river basins in several developing countries where stakeholder platforms were built and governance reforms were initiated to allow more effective management of shared water resources (Smith and Cartin, 2011).

**Information** management consists of collecting, analyzing, and disseminating information in support of adaptive activities. Relevant information will vary across sectors, countries, and climate change impacts but, at a minimum, typically covers climate variables, the status of natural and human systems, and existing coping strategies and adaptation actions. Providing or accessing existing information for conducting vulnerability assessments is critical for most adaptation activities. Good information management will ensure that it is useful and accessible to stakeholders. It may also involve general awareness-raising or building the capacity of stakeholders to use information for adaptation (Dinshaw et

al., 2012). In some instances, it has been important to establish *boundary organizations* that will access, process, and present critical climate and other data in such a way that information effectively serves the special adaptation needs of individual communities. A boundary organization must be able to cross interdisciplinary and sector borders, for example, by managing both agricultural extension services and disseminating relevant weather and climate data. Often, boundary organizations play the role of *knowledge broker*.

### 3.5 IMPLICATIONS FOR DEVELOPMENT PRACTITIONERS

This section presents some facets of governance that will be significant for decisions about adaptation – particularly the need for public dialogue and participation, accountability, and effective institutions that can perform a set of specific functions. The development practitioner can draw guidance from this section, as there are obvious practical implications. These facets mostly represent good practice in development management but have particular significance in a climate change context (Box 8).

#### **BOX 8. GOVERNANCE FOR ADAPTATION: IMPLICATIONS FOR THE DEVELOPMENT PRACTITIONER**

1. Seek institutional diversity – multilayered and polycentric, formal and informal
2. Seek out stakeholder engagement
3. Seek decisions and resources close to project action
4. Support local authorities to integrate projects in regular plans and budgets for ownership and accountability
5. Use shared learning to build bridges between institutions

First, this section emphasizes governance as being not only a government affair but rather as a structure and process in which government, civil society, informal institutions, and the private sector interact in decision making. This emphasis means that the practitioner must be ready to engage with a diversity of institutions. The special character of the problem at hand also requires a multilayered and polycentric institutional outlook, because the problem's features will vary depending on perspectives unique to different levels and localities. All features must be captured to identify the best possible options for action. Therefore, an adaptation intervention needs to take special measures to ensure interaction with governance structures. One challenge is to engage with local and informal institutions that may have more legitimacy than formal institutions in mediating resources and information and may be in a position to address more effectively climate change impacts that are felt locally. A review of the institutional interactions that took place in the design of National Adaptation Programs of Action (NAPAs) showed that local and informal institutions were often ignored, which meant that relevant problem analysis for project

design was lacking, and local ownership was limited (Agarwal, 2010). Engaging with, supporting, and building the capacity of local and informal institutions to understand and address climate change should be considered fundamental in designing and implementing effective adaptation interventions.

Second, the emphasis on stakeholder engagement to ensure multiple perspectives, experiences, and knowledge in informing and learning from adaptation interventions has obvious practical implications. Broad-based civic engagement that is inclusive of all social groups — particularly the marginalized and most vulnerable — is important not only for the continuous and iterative adjustment of the project or program itself, but also for enabling stakeholders to improve their resilience and develop their adaptive capacity in a sustainable way. Those most affected by climate change will have a stake in these efforts, which is an essential step for the longevity and sustainability of efforts initiated with external resources that will ultimately come to an end. Therefore, meaningful stakeholder engagement should be integral to adaptation initiatives.

Third, the level at which decisions on the allocation of resources are made has implications for program design. Although attempts at decentralization of resource access and control continue to be fraught with challenges, decentralization is still a viable adaptation strategy. Adaptation interventions address a fluid reality. Decisions must be made where the problem is felt and best understood, which in most cases is locally. However, development practitioners often rely upon information generated at other levels, without the input or awareness of local stakeholders. For best effect, an adaptation project should be designed in collaboration with local decision makers and based on locally relevant and accessible information. Good project design often hinges on the co-creation of new knowledge through participatory processes that synthesize broad “top-down” scientific information and highly contextual local knowledge.

Fourth, development practice needs to ensure that institutions from which accountability is expected are actually supported in their role. Adaptation programs that focus mainly on civil society organizations or the private sector may undermine government institutions and their ability to do what is expected of them. Additionally, programs designed by government officials and development practitioners that do not effectively address the needs and circumstances of citizens most affected by climate change will be met with limited success. Adaptation interventions must avoid favoring the relatively better off or most powerful actors — often the least vulnerable — over the most vulnerable, which can undermine the development of a broad and inclusive governance context. Accountability and ownership are promoted when government institutions at the national, regional, and local levels are encouraged to integrate adaptation programs into their normal planning and budgeting procedures, combined with planning processes that are participatory, open, and transparent to all sectors of society.

The novelty of climate action sometimes leads to high-profile and stand-alone projects that are managed outside of existing implementation structures. Discrete projects are certainly justified to try new techniques and approaches. Experience has shown that well-resourced activities implemented through independent bodies tend to drain existing institutions and systems of staff and funds. The development practitioner needs to plan adaptation activities in such a way that they can be integrated into regular systems and procedures once the pilot phase has proved that a project can be scaled up.

Fifth and finally, addressing governance issues may appear to be abstract and complex in relation to more tangible adaptation actions. However, experience in dealing with other complex socio-ecological problems shows that disregard for the governance dimension will occur at an intervention’s peril. The use of specific diagnostic tools such as the NAC framework opens concrete options for the development practitioner. Analysis and diagnosis as an inclusive process may lead to very concrete opportunities for organizational redesign, including redefining mandates and new inter-organizational links. The shared learning process of assessing vulnerability with many actors involved will help overcome sector and disciplinary barriers, and joint analysis of institutional functions may create a similar result. In turn, this result can be used to develop programs for individual and institutional capacity building as part of the climate change adaptation strategy.

## 4.0 CONCLUDING COMMENTS

This paper explores the demands on decision makers and development practitioners as they are tasked to manage and adapt to the uncertain but increasingly concrete manifestations of a changing climate. It is clear that they face new and extraordinary challenges, and good governance practices will be fundamental to overcoming these challenges. Societies that accept the inevitability of deep change and embrace learning — where social capital and partnership between citizens and their government lead to collaborative learning and dialogue that results in effective climate change responsive planning and action — are better equipped to deal with the increasing strain of climate change as compared to societies where these assets are few or missing. Access to information and open debate, participation, effective representation, and mechanisms for accountability make a difference as societies struggle to deal with climate change impacts.

An inevitable realization from this conclusion is that if these ideal conditions do not exist, people and institutions will have great difficulties designing and implementing effective adaptation strategies. Where governance is weak, where trust is limited between government and citizens, and where institutions fail to bridge social and ethnic boundaries, there is special concern from an adaptation perspective as well as from the perspective of the populations' fundamental needs and rights. Therefore, adaptation cannot be separated from the discourse that deals with basic human rights and security as well as the management of strife and conflict. Climate change decision makers and practitioners are particularly challenged in the context of fragile states and societies.

As mentioned in the introduction, this paper is not meant to be prescriptive. What has been presented is a discussion of governance issues and related considerations as well as possible approaches for decision makers and development practitioners working to address climate change. As the two sections on implications for the development practitioner show, a number of concrete measures will help create an enabling adaptation environment if they are part of climate change adaptation program design. There are instances when people exposed to extreme adversity have demonstrated unexpected resilience, which has allowed them to temporarily manage difficulties even when the quality of governance has not been in their favor. To sustain and enhance that resilience, however, individuals will need external support. Resilience-building requires governance to be an integral and prominent part of adaptation action.

## 5.0 SOURCES

- Agarwal, A. (2010). The Role of Local Institutions in Adaptation to Climate Change. In Mearns, R. and Norton, A. (eds.). *Social Dimensions of Climate Change. Equity and Vulnerability in a Warming World*. Washington, D.C.: World Bank.
- Berhane, G., Hoddinott, J., Kumar, N., and Taffesse, A. S. (2011). The Impact of Ethiopia's Productive Safety Nets and Household Asset Building Programme: 2006-2010. IFPRI.
- Booth, D. (2011). Working with the Grain. The Africa Power and Politics Programme. *IDS Bulletin*, 42(2).
- Committee on Food Security. (2011). Land tenure and international investments in agriculture. A report by the High-Level Panel of Experts on Food Security and Nutrition. *HLPE Report 2*. Rome.
- Cornwall, A. (2008). Unpacking 'Participation': models, meanings and practices. *Community Development Journal*, 43(3), 269-283.
- Cotula, L., Vermeulen, S., Leonard, R., and Keeley, J. (2009). Land grab or development opportunity? Agricultural investment and international land deals in Africa. IIED. London: UK.
- Dinshaw, A., Dixit, A., and McGray, H. (2012). Information for Climate Change Adaptation: Lessons and Needs in South Asia. World Resources Institute.
- Department for Communities and Local Government. (2009). Multi-Criteria Analysis: A Manual. UK. Retrieved from: [http://eprints.lse.ac.uk/12761/1/Multi-criteria\\_Analysis.pdf](http://eprints.lse.ac.uk/12761/1/Multi-criteria_Analysis.pdf).
- Dixit, A., McGray, H., Gonzales, J., and Desmond, M. (2012). Ready or Not: Assessing Institutional Aspects of National Capacity for Climate Change Adaptation. World Resources Institute.
- Federal Democratic Republic of Ethiopia. (2007). Climate Change National Adaptation Programme of Action of Ethiopia. Retrieved from: <http://unfccc.int/resource/docs/napa/eth01.pdf>.
- FitzGibbon, J., and Mensah, K. O. (2012). Climate Change as a Wicked Problem: An Evaluation of the Institutional Context for Rural Water Management in Ghana. *SAGE Open*, 1-14.
- Fulton, S., and Justice Antonio Herman Benjamin (Brazil). *Foundations of Sustainability*, presented at the Ninth International Conference on Environmental Compliance and Enforcement, 2011, British Columbia, Canada.
- Government of the People's Republic of Bangladesh. (2009). Bangladesh Climate Change Strategy and Action Plan 2009. Ministry of Environment and Forests, Dhaka, Bangladesh. Retrieved from: [http://www.moef.gov.bd/climate\\_change\\_strategy2009.pdf](http://www.moef.gov.bd/climate_change_strategy2009.pdf).
- Hallegatte, S., Shah, A., Lempert, R., Brown, C., and Gill, S. (2012). Investment Decision Making Under Deep Uncertainty. Application to Climate Change. *Policy Research Working Paper 6193*. Washington, D.C.: World Bank.
- Henninger, N., Petkova, E., Maurer, C., Irwin, F., Coyle, J., and Hoff, G. (2002). Closing the Gap: Information, participation, and justice in decision making for the environment. World Resources Institute.

- Independent Evaluation Group–World Bank. (2007). Sourcebook for Evaluating Global and Regional Partnership Programs: Indicative Principles and Standards.
- IUCN. (2010). Better forests, better lives. *The Livelihoods and Landscape Strategy in Asia*.
- Kolko, J. (2012). Wicked Problems. Problems Worth Solving. Austin Center for Design (AC4D).
- Lagadec, P. (2008). A New Cosmology of Risks and Crises – Time for a Radical Shift in Paradigm and Practice. Departement D’Economie, Ecole Polytechnique: Paris.
- Lancaster, C. (2007). Foreign Aid. Diplomacy, Development, Domestic Politics. University of Chicago Press.
- Lebel, L., Anderies, J. M., Campbell, B., Folke, C., Hatfield-Dodds, S., Hughes, T.P., and Wilson, J. (2006). Governance and the Capacity to Manage Resilience in Regional Social-Ecological Systems. *Ecology and Society*, 11(1),19.
- Moser, S. C. (2009). Whether our levers are long enough and the fulcrum strong. Exploring the soft underbelly of adaptation decisions and actions. In Adger, N., Lorenzoni, I., and O’Brien, K. *Adapting to Climate Change. Thresholds, Values, Governance*. Cambridge University Press.
- Quinn Patton, M. (2010). Developmental Evaluation. Applying Complexity Concepts to Enhance Innovation and Use. Guilford Press: New York City.
- Ribot, J. (2004). Waiting for Democracy. The Politics of Choice in Natural Resource Decentralization. World Resources Institute.
- Rights and Resources Initiative. (2012). What Rights? A Comparative Analysis of Developing Countries’ National Legislation on Community and Indigenous Peoples’ Forest Tenure Rights. Washington, D.C.
- Sayer, J., Bull, G., and Elliott, C. (2008). Mediating Forest Transitions: ‘Grand Design’ or ‘Muddling Through’. *Conservation and Society* 6(4), 320-327.
- Sehring, J. (2009). Path Dependencies and Institutional Bricolage in Post-Soviet Water Governance. *Water Alternatives* 01.
- Smith, M., and Cartin, M. (2011). Water Vision to Action: Catalysing Change through the IUCN Water and Nature Initiative. IUCN: Gland, Switzerland.
- United Nations Economic and Social Commission for Asia and the Pacific. (2009). What is Good Governance. DOI: <http://www.unescap.org/pdd/prs/ProjectActivities/Ongoing/gg/governance.asp>.
- United Nations International Strategy for Disaster Reduction. (2011). Global Assessment Report on Disaster Risk Reduction 2011. Revealing Risk, Redefining Development. Retrieved from: <http://www.unisdr.org/we/inform/gar>.
- United States Agency for International Development. (2013). USAID Strategy on Democracy, Human Rights and Governance. USAID. Retrieved from: [http://www.usaid.gov/sites/default/files/documents/1866/USAID%20DRG\\_%20final%20final%206-24%203%20\(1\).pdf](http://www.usaid.gov/sites/default/files/documents/1866/USAID%20DRG_%20final%20final%206-24%203%20(1).pdf).
- World Resources Institute, in collaboration with the United Nations Development Programme, United Nations Environment Programme, and the World Bank. (2011). *World Resources 2010-2011: Decision Making in a Changing Climate – Adaptation Challenges and Choices*. WRI: Washington, D.C.

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