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Ready or Not: Assessing National Institutional Capacity for Climate Change Adaptation

Lessons for Planners from the Pilot Applications of the National Adaptive Capacity Framework

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This working paper introduces the National Adaptive Capacity (NAC) framework, a tool to assist governments in bringing institutional capacity development into their adaptation planning processes. The NAC framework enables its users to systematically assess institutional strengths and weaknesses that may help or hinder adaptation. National adaptation plans may then be better designed to make best use of strengths or remedy weaknesses. This working paper describes three pilot assessments conducted using the NAC framework in Bolivia, Ireland, and Nepal.

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SUMMARY

- Effective institutions are at the heart of our ability to respond to growing climate risks. Governments and other institutions at the national level can play a critical role in increasing society's capacity to adjust and readjust (i.e., "adaptive capacity") as conditions shift and as new climate change knowledge emerges.
- As national policymakers, United Nations Framework Convention on Climate Change (UNFCCC) negotiators, international funders, and others develop methods and guidelines for adaptation planning, it is critical that they include a focus on building institutional capacity to adapt to climate change impacts.
- The NAC framework provides a practical approach for understanding the institutional aspects of adaptive capacity. NAC assessments support planning through the development of indicators and targets for tracking national adaptation progress and the identification of capacity gaps that can be filled through investment and action.
- The NAC framework assesses national institutions' abilities to perform *assessment*, *prioritization*, *coordination*, *information management*, and *climate risk management* for adaptation at a particular period in time. This assessment can help planners, funders, and other decision makers identify key activities to track over time, as well as critical players to engage.
- The pilot applications of the framework in Bolivia, Ireland, and Nepal suggest that the NAC framework applies across a range of countries and that it can be tailored to specific country contexts. The pilots used the NAC framework in the following ways:
    - **As a tool for developing indicators for monitoring and baseline setting**. The NAC assessment in Bolivia resulted in the development of specific indicators and metrics for adaptation policy.

  - **As a tool to catalyze action and fill key capacity gaps**. The Irish NAC assessment identified gaps in capacity to build the evidence base for justifying new investments. It also inspired the commission of a national vulnerability assessment.
  - **As a tool to gather and synthesize resources**. The NAC framework can provide a practical organizing frame for sorting a diverse and often scattered body of adaptation-relevant information and resources. This proved particularly useful in Nepal and Bolivia.
- The country teams that applied the NAC framework in Bolivia, Ireland, and Nepal used distinctly different approaches to completing the assessment and also formatted their evaluation findings differently. This indicates that the NAC framework can be tailored for use in a variety of different planning or evaluation processes.

SECTION I: INTRODUCTION

Human settlements in Bolivia are increasingly affected by the impacts of climate change. The two major cities: La Paz-El Alto in the west and Santa Cruz in the east, with different geographies and economic bases will face climate change in very different ways. La Paz-El Alto, located in the Bolivian Altiplano, will have to contend with increased glacier withdrawal, water supply shortages, heavy rains, and increased risk of landslides as the climate changes. Santa Cruz in the eastern plains will face increasing flooding risk and outbreaks of diseases like Dengue.

According to Bolivia's new Autonomic Law, municipal and provincial bodies, including La Paz-El Alto and Santa Cruz, must create local plans detailing their rules and regulations for managing resources. These plans must be specific to each city and could be a means to incorporate their climate change vulnerabilities and needs in local decision-making processes. One plan might involve decreasing disease risks for the city of Santa Cruz due to rising temperatures, while the other might emphasize improvements in water and land management practices in response to glacier withdrawal and changing precipitation patterns in La Paz-El Alto.

Despite the new law, cities like La Paz-El Alto and Santa Cruz have limited resources and experience in resource management planning; and climate change complicates resource management. Adaptation requires understanding risks and balancing tradeoffs, and often cities and other localities do not know where to start.

Ideally, La Paz-El Alto and Santa Cruz will get help to adapt from their national government. That help might include vulnerability or impacts *assessment* findings; tools for *prioritizing* adaptation options; guidance from the finance, transportation, and housing ministries (ideally in a *coordinated* manner); and a range of environmental and socioeconomic *information* with which to design effective municipal actions.

From this perspective, Bolivia's national government has several essential roles to play in helping its municipalities adapt. For example, the national government can create rules and regulations that mandate or create incentives for communities, municipal bodies, or businesses to undertake adaptation actions. The government can also provide much-needed resources and leadership to help communities adapt. At the same time, inappropriate national policy and institutional arrangements can create several barriers to adaptation or worse, even lead to maladaptation.[1] Especially as a growing amount of international finance for adaptation flows to developing countries through their national institutions, adaptive capacity at the national level will increasingly affect whether and how communities are able to adapt.

Are Bolivia's national institutions up to the challenge?

In 2010, Nur University in Bolivia conducted an NAC assessment to answer this question. Using a new framework to review institutional capacity, the NAC assessment pinpointed specific areas of focus for the government, including building the capacity to use and interpret climate information, developing appropriate means to improve coordination of adaptation activities, and developing a system to prioritize adaptation interventions and readjust them over time. Today, several initiatives in Bolivia are working on improving the capacity of national institutions to help deliver adaptation to cities like La Paz and Santa Cruz.

Elsewhere around the world, other national governments have also begun planning for adaptation to respond to the effects of climate change. For least developed countries (LDC), this planning began in 2001 with the project-oriented National Adaptation Programs of Action (NAPAs) under the UNFCCC (UNFCCC, 2011). More recently, countries have begun to develop long- and medium-term national adaptation strategies, such as those in Bangladesh (Government of the People's

[1] The IPCC (2007b) defines maladaptation as "any changes in natural or human systems that inadvertently increase vulnerability to climate stimuli; an adaptation that does not succeed in reducing vulnerability but increases it instead." For example, a new irrigation canal built to increase agricultural productivity, but without taking climate risks into account, may provide short-term benefits but could cause major perverse outcomes if the water availability in the region begins to change because of changes in the climate.

Republic of Bangladesh, 2009) and the Philippines (Office of the President of the Philippines, 2010). Such strategies typically identify broad national adaptation priorities like protecting coastal areas or managing water resources. Their role is largely to lay a foundation for more detailed policies and programs to come later.

Institutions are at the heart of our ability to respond to growing climate stresses and risks (Magnan, 2010; Adger et al., 2007; Agrawal and Perrin, 2008). For the purposes of this paper, we consider institutions to be the formal entities designed to perform a set of functions related to decision making and implementation. They can be classified according to their status or function (e.g., private, public, nongovernmental, bilateral, multilateral, humanitarian, financial, etc.). In a changing climate, the process of institutional change represents an important aspect of building adaptive capacity, which is the ability of a national government and other bodies and individuals to design and implement effective adaptation strategies or to react to negative climatic stresses (Brooks and Adger, 2004). Among climate change adaptation practitioners, a growing emphasis on adaptive capacity reflects the recognition that adaptation will be an iterative process as the climate changes over the long term. The capacity to adjust and readjust as conditions shift and as new global and local climate change knowledge emerges possibly may be more important than any one effort to address a particular climate risk.

But across the globe, particularly in LDCs, existing national government institutions may require significant strengthening and restructuring if they are to address adequately the unique challenges and uncertainties associated with climate change and the relatively long time frames by which climate change impacts will be manifested (WRI et al., 2011). For example, one of several ways in which climate-related challenges may require governments to adjust institutions significantly is the need to create better systems for meeting the needs of the most vulnerable people. In many places, the most vulnerable people tend to be the poor or marginalized who have few resources with which to adapt to climate variability and current socioeconomic conditions and little say in public decision-making processes that affect how climate change will affect them. A critical part of helping such individuals adapt is finding ways to address the underlying factors that make some people vastly more vulnerable to climate change than others (Schneider et al., 2007).

Despite the important role that institutions have to play in adaptation, there are currently no practical approaches for understanding the institutional aspects of adaptive capacity at the national level. Much work on adaptive capacity has focused on how a strong asset base—such as economic wealth, social capital, or high levels of human development—can provide a foundation for responding to emerging climate challenges (Kelly and Adger, 2000; Turner et al., 2003). Common indicators of adaptive capacity at the national level include gross national product per capita, the percentage of population with access to clean drinking water and sanitation, or literacy rates (Brooks and Adger 2004; Moss et al., 2002). Agrawal and Perrin (2008) have focused on institutions, alongside other assets, as important elements of adaptive capacity at the local level. However, the role of national institutions in adaptive capacity has been explored only in general. As a result, national adaptation planning efforts may easily leave out steps that would strengthen institutions.

Our Objective

The aim of this paper is to provide a practical framework, the National Adaptive Capacity (NAC) framework, for understanding institutional aspects of adaptive capacity at the national level. This framework is designed to be used to conduct assessments of adaptive capacity, which can support the following objectives:

- the development of indicators and targets for tracking national adaptation progress and
- the identification of capacity gaps that can be filled through investment and action

As such, the NAC framework is intended primarily to support national adaptation planning. It also may assist global funding agencies, civil society organizations, and researchers in making investment decisions or tracking the results of capacity-building initiatives for climate change. This paper introduces the NAC framework and its pilot applications as follows:

- The NAC framework identifies a set of important functions, detailed in **Section II**, that relevant institutions will need to perform for successful adaptation to climate change at the national level.
- **Section III** presents the major results from the three pilots of the NAC framework in Bolivia, Ireland, and Nepal.
- **Section IV** presents the lessons learned from the piloting of this framework.
- Finally **Section V** provides conclusions and recommendations to support effective development of institutional capacity in national adaptation planning.

SECTION II: THE NATIONAL ADAPTIVE CAPACITY FRAMEWORK

Toward the end of 2008, the World Resources Institute (WRI) launched a project to explore the institutional aspects of adaptive capacity with an emphasis on national-level government. An important milestone was a four-day workshop at the Rockefeller

Foundation's Bellagio Conference Center, which produced "The Bellagio Framework" (WRI, 2009a), a typology of institutional functions that underpin successful adaptation at the national level. Through a consultation process that engaged more than 60 global adaptation experts and practitioners, "The Bellagio Framework" became the National Adaptive Capacity framework (WRI, 2009b).[2] The pilot draft of the function questions for the NAC framework, together with other materials (for example, the NAC Answer Worksheet and Context Worksheet), can be found at http://www.wri.org/project/vulnerability-and-adaptation/nac-framework.

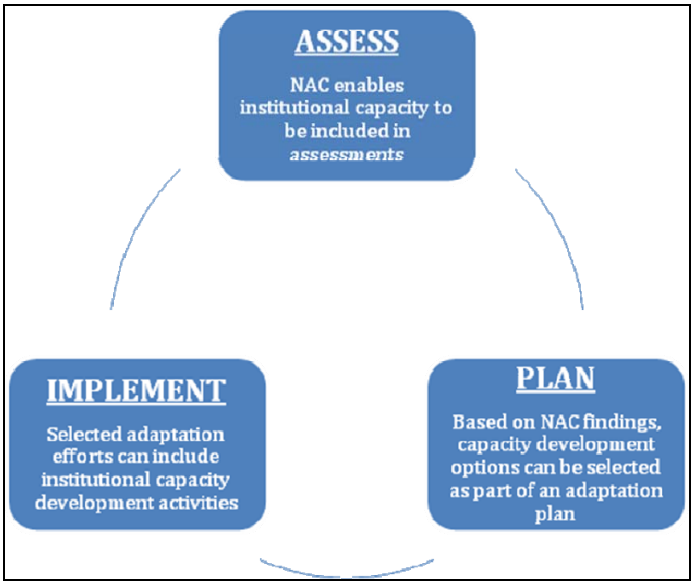
The NAC framework provides a straightforward way to assess how well national institutions are performing a core set of critical functions that underpin adaptation. Table 1 introduces these functions and provides an example of each.

For each category listed in Table 1, the NAC framework provides a number of detailed questions that can assess institutional capacity for adaptation at the national level. Data used in answering the capacity questions are recorded in the NAC Answer Worksheet. The Answer Worksheet asks users to make color-coded (red, yellow, and green) assessments of each question. For each question asked, green means complete or near-complete fulfillment of an NAC function, yellow means partial fulfillment, and red means inadequate fulfillment. Users are asked to document carefully evidence for making such assessments, identify the institutions responsible for fulfilling them, and provide a narrative about institutional strengths and weakness. They are also asked to identify key indicators to track progress over time for each function. In addition, the NAC Context Worksheet helps users to gather an overview of the political and policy making context in the country before diving into the detailed assessment.

The users of the framework must make evaluations of gaps and strengths in capacity. For this reason, the NAC framework assessment is largely driven by the skills, knowledge, and values that its users bring to the assessment process, and will therefore benefit from a multistakeholder approach. The framework itself provides limited benchmarks of quality for each function, because good practice in adaptation is still emerging and may vary significantly depending upon the country context. Instead, the NAC focuses on identifying functions that are critical for adaptation and guides users through a set of questions that help them explore whether a function is fulfilled in the country, which institutions fulfill it, and how well it is fulfilled. Users must decide, based on their own expertise, whether and how to score how well a function is being fulfilled using the "traffic light" color scheme.

The result of an NAC assessment is a single snapshot of national institutional capacity for climate change adaptation during the time of the assessment. Periodic NAC assessments, however, could allow for tracking changes in capacity over time. In this way, the NAC framework can play a role in both the planning and monitoring phases of an adaptation cycle. Figure 1 illustrates how the NAC framework can contribute to the phases of an iterative planning cycle.

Figure 1 | **NAC Framework Contribution to Phases of an Adaptation Planning Cycle**



As an input to a planning process, the NAC framework has the added benefit of being relevant across countries (see Box 1). Different countries' institutions and governments may well perform the NAC assessment functions in very different ways, but they will all need to perform them one way or another. This makes the NAC framework potentially relevant to planning processes or guidelines that may be developed under the UNFCCC or other multinational fora.

[2] The Bellagio Framework and the list of participants from the Bellagio workshop can be found here: http://pdf.wri.org/working_papers/bellagio_framework_for_adaptation.pdf. A longer list of contributors to the NAC framework, including those involved in consultation workshops held in Bangkok and Washington, D.C., is listed here: http://pdf.wri.org/nac_list_of_contributors_010410.pdf.

Table 1 | **Institutional Functions for Adaptation**

Assessment	Assessment is the process of examining available information to guide decision making. Adaptation is likely to require iterative assessments over time, including assessments of a country's vulnerability, climate change impacts, adaptation practices, and the climate sensitivity of development activities.
	Example: In India, a regional vulnerability assessment of the northeast of the country was conducted to inform investment in adaptation under the Indo-German Northeast Climate Change Adaptation Program.[3] It assessed projected climate change, poverty metrics, and ecosystem health, among other vulnerability factors, and enabled comparison of vulnerability among different districts.
Prioritization	Prioritization means assigning special importance to particular issues, areas, sectors, or populations. For adaptation, prioritization at the national level usually takes 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.
	Example: In Bangladesh's 2008 national climate change strategy, six "pillars" were identified as national priorities: 1. food security, social protection, and health 2. comprehensive disaster management 3. infrastructure 4. research/knowledge management 5. mitigation and low-carbon development 6.capacity building/institutional strengthening.
Coordination	Adaptation requires action by disparate actors at multiple levels, both within and outside of government. Coordination of their activities helps avoid duplication or gaps, and can create economies of scale in responding to challenges. Coordination may begin as a process of establishing relationships, sharing information, and raising awareness but may move toward the management of joint decision making and action. It may be horizontal (e.g., among ministries), vertical (e.g., among national, global, and subnational actors), or among stakeholders (e.g., between government and business).
	Example: In Nepal, the Ministry of Environment has taken the lead in coordinating all climate change-related activities. The National Adaptation Program of Action (NAPA) was created with the help of six thematic working groups that each coordinated a particular issue area, with representatives from several ministries in each group. Building on this NAPA process, the government has recently established the Multi-Stakeholder Climate Change Initiatives Coordination Committee (MCCICC), under the Secretary of the Ministry of Environment. The committee aims to foster a unified and coordinated climate change response in Nepal.
Information Management	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. Providing or accessing existing information for conducting vulnerability assessments is critical for most adaptation activities. Good information management will ensure that information is useful and accessible to stakeholders. It may also involve general awareness-raising or building the capacity of stakeholders to use information for adaptation.
	Example: In the United Kingdom, a quasi-governmental organization known as the United Kingdom Climate Impacts Program (UKCIP) published climate change scenarios and associated adaptation decision tools on behalf of the government. These scenarios were widely used to research the possible impacts of climate change. Since October 2011, the Environment Agency has taken over the management of UKCIP.
Climate Risk Management	Climate change will have an impact on different development priorities in different ways. Addressing climate risks requires— • a process of identifying the specific risks to a given priority • evaluating the full range of options for addressing the risks • selecting and implementing risk reduction measures

[3] The program is financed by the German government through KfW Entwicklungsbank and implemented by the Indian Ministry of Development for the Northeast Region.

	Countries typically treat risk management on a sector-by-sector or issue-specific basis. For example, some countries may decide to look at how climate risks can be managed in the agriculture and water sectors. Another country may look at the management of climate risks in its tourism and coastal areas.
	Example: In Vietnam, sea level rise in the Mekong River delta has put significant amounts of agricultural land at risk, threatening the livelihoods of farmers. The government has initiated large-scale restoration and rehabilitation of mangroves as well as the construction of dikes to prevent saline water from inundating agricultural lands. (WRI, 2011).

Box 1 | **Applying the NAC Framework in Different Countries**

The NAC Framework takes a flexible approach to several dimensions of adaptive capacity development:

Sequence: The adaptation planning and implementation contexts in each country can be very different (WRI et al., 2011). Most of the LDCs already have NAPAs; others are working on comprehensive national adaptation strategies. The NAC framework recognizes that different countries are at different stages of their adaptation planning processes. It provides a means of aggregating various activities, plans, and visions for adaptation within a country to feed into an adaptation specific or an integrated planning process.

Institutional choice: The NAC framework recognizes that each country will craft a unique process for adaptation planning and implementation to suit its needs and circumstances. Some countries will choose to integrate climate risks into existing national plans and policies. Still others will call for important planning to be done at state, provincial, or district levels, rather than producing a national plan.

Starting point: By systematically documenting existing policies and plans, the NAC framework provides a basis for developing new adaptation policies that complement, build on or reform existing policies. Some countries will start adapting based on a national, top-down political mandate; others will begin from the bottom up, based on a diversity of local projects. In some places, particular sectors or regions will move forward more rapidly than others, depending upon their needs and strengths. The NAC framework recognizes that any of these starting points can provide a good basis on which to build an effective approach to adaptation that will lead to increased well-being. The framework also helps identify potential synergies and tradeoffs with other existing activities and policies.

Impacts and sectors: Because the NAC framework looks at capacities of institutions relevant to a broad range of adaptation activities, it is potentially relevant to various climate change impacts and the many sectors that may be influenced by them. The framework can be used to assess the capacities of institutions to respond to extreme weather disasters or their capacity to respond to increased disease incidences due to warmer temperatures, among other climate impacts. The climate risk management function of the NAC framework gives users the ability to tailor the framework to different sectoral or thematic processes.

The NAC framework's focus on institutional functions contrasts somewhat with other frameworks for thinking about adaptive capacity, which have tended to focus mostly on assets, rather than institutional functions, as indicators of adaptive capacity. For example, measures of wealth, social capital, and information availability are commonly used to understand adaptive capacity (DFID, 1999, 2000, 2001). Assets-based indicators help answer the question, "What resources do I have that can help me adapt?" The NAC framework's functions-based approach, on the other hand, asks, "What am I able to do that can help me adapt?" These two approaches to understanding adaptive capacity can and should complement each other.

The following sections provide more details about findings from NAC framework assessments undertaken in 2010 in three pilot countries: Ireland, Bolivia, and Nepal.[4]

SECTION III: RESULTS FROM NAC FRAMEWORK PILOT ASSESSMENTS

The NAC framework assessment teams in each country undertook distinct processes, summarized in Table 2.

In Bolivia, Nur University researchers led an NAC framework assessment that included a diverse set of stakeholders, with consultation taking place in stages throughout the assessment process. The assessment team actively worked with existing country platforms for discussion and decision making, such as the preparatory meetings of the Cochabamba People's Conference on Climate Change, the UN Working Group on Humanitarian Organizations, the National Climate Change Program, and the Donor Coordination Working Group for Climate Change. Among the three pilots conducted, the Nur University team most thoroughly embraced the idea of using the NAC framework to generate measurable indicators and quantitative metrics. This culminated in a multistakeholder meeting, hosted by the UN Development Programme (UNDP) with participation of representatives from the Ministry of

[4] WRI selected the pilot countries primarily based upon availability of funding and interest of research partners. Large countries were avoided and PPCR countries prioritized. The Irish Environmental Protection Agency initiated and funded the Irish assessment independently of WRI's research, but volunteered to share findings and serve as a pilot.

Table 2 | **NAC Framework Pilot Assessment Processes**

	Bolivia	Ireland	Nepal
Assessment Time	6 months	6 months	10 days
Responsible Institutions	Nur University, La Paz	Irish Environment Protection Agency (EPA) and University College Cork (UCC)	Institute for Social and Environmental Transitions–Nepal, World Resources Institute, International Institute for Environment and Development
Methods	literature and documentation search interviews with key national stakeholders, including government officials, donors, NGOs, and academics	literature and documentation search in-person and telephone interviews with government departments and agencies, academics/ researchers, and NGOs	literature and documentation search
Workshops	three workshops: February 2010 initial inception workshop; April 2010; July 2010	three workshops: April 2010 for academics and researchers; May 2010 for members of the national research impacts and adaptation steering group; August 2010 for NGOs	one workshop in March 2010 to review findings with NGOs and government officials
Priority Areas Assessed	a) food sovereignty, food security, agriculture, and rural issues b) risk management in human settlements	a) planning b) water c) critical infrastructure	a) water and energy b) agriculture c) forests and biodiversity d) public health e) urban settlements f) disaster risk reduction
Major Outputs	a) recommendations for adaptation policy development b) set of indicators, metrics, and targets for tracking development of capacity over time	a) recommendations for adaptation policy development b) detailed identification of entry points for integrating climate change risks into existing sectoral plans and policies	a) a description of strengths and gaps for each function category of the NAC framework

Environment, the Ministry of Foreign Affairs, and other experts in climate change and risk reduction that identified a set of indicators and targets that could guide adaptation policy (see Tables 3 and 4).

The NAC framework assessment in Ireland, conducted by the Irish Environmental Protection Agency (EPA) and the University College of Cork, had the most formal linkage to the national policy-making process among the three NAC framework pilot assessments. Here, the assessment was conducted in response to a mandate from the European Union to its member states to launch national adaptation planning processes. Consultation during early phases focused on engaging technical expertise from the academic sphere. Broader public discourse is planned for the future, once the formal report is ready for review.

The Irish assessment team indicated that participants in the initial review workshops considered whether to dispense with the color-coded rating system called for in the NAC answer sheet, as well as the question of whether performance of a function was "adequate." In the end, they included both of these rating systems in their assessments, although they recognized that many of the ratings were subjective and depended on "who was in the room." However, they also noted that having to select a rating prompted a deeper, more detailed conversation about the status of key capacities and their importance.

The Nepal NAC framework assessment was much more rapid and shorter than the previous two pilot assessments. A team of researchers from WRI, the Institute for Social and Environmental Transitions-Nepal, and the International Institute for Environment and Development conducted the assessment in 10 days with limited stakeholder engagement in the form of a workshop at which initial findings were reviewed.

The Nepali assessment team, in contrast to the Irish and Bolivian teams, chose not to use the color-coded rating system or the adequacy characterization in filling out the NAC framework. They emphasized, instead, the narrative description of strengths and weaknesses and provided a final evaluation that summarized the major strengths and weaknesses in lieu of a color rating. They saw this approach as less political, more informative, and more positive. Given their short time frame, and limited stakeholder engagement, the Nepali team feared that assigning color scores to the functions or calling performance "inadequate or adequate" could lead

audiences to mistrust the assessment and feel unmotivated to take action.

All three countries have emerging climate change policies, and their respective national governments are actively working on adaptation. Both Nepal and Bolivia are developing, landlocked, mountainous countries and face a similar set of climate change stresses (World Bank, 2009; NCVST, 2009). Despite these similarities, the NAC framework pilots showed that the institutional landscape for adaptation in the two countries was very different. Although particular conclusions from one place seem unlikely to apply easily to the other, more general lessons from the NAC application are presented in the sections that follow. The application of the assessment in Ireland, meanwhile, suggests that the function-based assessment of institutional capacity at the national level also has utility in a developed country with significantly more capacity.

The following subsection summarizes assessment findings according to the function categories of the NAC framework. Annex 1 provides an update of the adaptation planning process to date in Bolivia, Ireland, and Nepal. Annex 2 provides more detailed results from each of the three country assessments.

NAC Assessment Function

Adaptation will require iterative assessment of vulnerability and risk over time, including assessments of climate change impacts, existing coping and adaptation practices, and the climate sensitivity of development activities. Assessment of vulnerability and risk is often the first step in identifying activities and options that help a country adapt to future challenges. Several assessments already existed or were ongoing in the pilot countries of Bolivia, Ireland, and Nepal; and the NAC assessment teams found that these provided a basis to begin work in adaptation. However the NAC framework pilots revealed that important information and knowledge was often lacking, indicating a need for additional assessment processes.

In all three countries, assessment processes lacked geographic and sectoral comprehensiveness. Nepal and Bolivia had a number of community-based and other small-scale vulnerability assessments, but these did not themselves provide a national picture of vulnerability. During the time of the NAC assessment in Nepal, the Ministry of Environment was thinking of undertaking a national climate vulnerability assessment as a first step in identifying appropriate adaptation actions under the NAPA planning process. Several working groups led by the Ministry of Environment conducted detailed local studies throughout Nepal to first identify current household coping strategies and then tried to identify future vulnerabilities to climate change. Meanwhile, local and community-based adaptation projects in Bolivia had helped build an initial understanding in both the government and civil society of local communities' climate change vulnerabilities. The National Climate Change Program (PNCC) of the government, together with the UNDP, are working to draw these findings together into a national vulnerability assessment.

One of the benefits of the NAC framework assessment in Nepal and Bolivia was the creation of a body of adaptation-relevant evidence. Information repositories for climate change adaptation did not yet exist in these two countries, so the information available was very fragmented. The NAC assessment helps users collect and synthesize relevant climate change information in one place, drawing information across institutional boundaries. The review workshop for the NAC framework results in Nepal revealed, for example, that because of interagency disputes over control of funds and projects, rainfall and temperature data from a large number of existing weather stations going back at least a dozen years were not being entered in the central data repository run by the Department of Hydrology and Meteorology. As a result, historical analyses and climate projections for the country have not yet included this data set.

Similarly, in Ireland, a State of Knowledge report had summarized existing and expected climate change impacts in Ireland (Desmond et. al., 2009).[5] This report and the NAC assessment revealed scattered studies and assessments and concluded that a lack of studies and information was not fundamentally a barrier to adaptation action. However, these studies did not add up to a national climate change vulnerability assessment that could inform comprehensive adaptation policy development. This NAC finding was cited by the Ireland Environmental Protection Agency in recommending that the Ministry of Environment support such a national vulnerability assessment. It was commissioned in late 2010 and is now being undertaken by the National University of Maynooth (see Box 2).

Ireland has the capacity to generate complex adaptation studies and assessments. The NAC assessment team, however, identified the need for regular climate risk assessments of existing sectoral policies, plans, programs, and projects. They identified several existing policy tools in the country that could be used toward this purpose, such as environmental impact assessments, strategic environmental assessments, appropriate assessments, and regulatory impact assessments.

In both countries, as in Nepal, information exists that provides an adequate basis for some type of action either at the

[5] This work was based on work carried out by Met Éireann/University College Dublin (McGrath and Lynch, 2008), the National University of Ireland Maynooth (Sweeney et al., 2002; McElwain and Sweeney, 2007), and material from the Fourth Assessment Report of the IPCC (IPCC, 2007a).

Box 2 | National Vulnerability Assessment in Ireland

The impacts of climate change will be felt differently by different groups of people. Developing countries are especially at risk, with their poor and marginalized groups, like women and children, for example, on the front lines of climate change impacts (UNDP, 2007; WRI et al., 2011).
Vulnerability assessments sit at the heart of efforts to prioritize and execute investments in adaptation in ways that address different groups' different experiences of climate change. They can help guide policy makers to target and implement effective adaptation initiatives by identifying—

- the places, particular groups of people, and sectors where those impacts are likely to cause the greatest harm, and
- the nonclimatic factors that help make climate change harmful (such as environmental degradation, lack of mobility, and weak social safety nets).

However, vulnerability assessments are not just for developing countries. Ireland is currently undertaking a national-level assessment of current and future vulnerability to climate change. Ireland's Environmental Protection Agency's (EPA) Climate Change Research Program (CCRP) is coordinating the study, which is being undertaken by researchers at the National University of Ireland Maynooth. The impacts and adaptation steering group of the CCRP first identified the need for a national vulnerability assessment. The NAC assessment provided the evidence base and allowed the EPA to present a convincing case for the study.

This national vulnerability assessment aims to provide a broad picture of climate change vulnerability and identify the people, places, and economic activities most vulnerable to climate change in relation to likely impacts, sensitivity, and adaptive capacity. The study will build on the national State of Knowledge Report (Desmond, et al., 2009) to identify an initial list of critical sources of vulnerabilities for adaptation to address.

Anticipating a reporting requirement to the European Union on impacts and adaptation, the EPA also wanted to undertake a vulnerability assessment that was methodologically comparable to vulnerability assessments in other European countries. The assessment has the following objectives:

- to understand the current and future vulnerabilities to climate change of natural systems, economic and social groups, and major infrastructure; and
- to help prioritize key topics for future further analysis based on this initial study.

This assessment will be used to further inform the development of national policy on adaptation. It will also assist in sectoral and local-level decision making. More specifically, as follow up to this study, the EPA expects detailed climate risk assessments in the priority issues identified through the vulnerability assessment. In preparation for such detailed risk assessment and costing of adaptation options, the CCRP is developing appropriate methodologies.

community, or sector level. This information represents an important strength on which to build. However, coverage of existing assessments is somewhat *ad hoc* and incomplete from the perspective of developing national policy and strong enabling environments. Building more comprehensive, long-term assessment capacity will require the roles and responsibilities of specific agencies and other stakeholders to be clearly spelled out in national legislation. In Ireland, the national legislation currently under development is likely to spell out these roles and responsibilities.

NAC Prioritization Function

Prioritization means assigning special importance to particular issues, areas, sectors, or populations. Prioritization processes are highly political and vary across countries, incorporating a wide range of values and concerns depending upon political processes and power arrangements. At the same time, prioritization typically draws, to one degree or another, on an evidence base. For adaptation, prioritization at the national level should, at a minimum, take into account where climate impacts will likely be most severe and who among the country's population is most vulnerable. As such, prioritization links directly to a country's capacity for adaptation-related assessment (above). In addition, effective prioritization processes will engage a wide range of stakeholders, be made transparent to the public, and enable review and adjustment of priorities as circumstances change.

The NAC framework assessments revealed that, although prioritization of activities for adaptation had started to occur, they were in their infancy in all three countries. The National Mechanism on Adaptation (MNACC) was the principal prioritization instrument for the Government of Bolivia, and it aimed to integrate climate change risks into different sectors. While the NAC team found that the MNACC was transparent, with participation from a wide cross section of Bolivian society, the team also found that the MNACC lacked several important things: a strong mandate, an effective monitoring and evaluation framework, and the ability to channel and allocate public funds. Key ministries like the Ministry of Economy and Public Finance and the Ministry of Planning were only marginally represented in the MNACC, making it weak for the implementation of adaptation activities.

In Ireland, national priorities for adaptation had yet to be identified at the time of the NAC assessment. The ongoing national vulnerability assessment was expected to help create broad national priorities for action on adaptation when completed. The NAC framework assessment revealed the lack of a review system for adjusting priorities over time and recommended that such a system be put in place. The assessment team also believed that this was a key element of a prioritization process and should be supported in upcoming climate legislation. Ultimately, the NAC assessment revealed that these national priorities for responding to climate risks

had to be integrated into sectoral priorities identified by regional and local bodies.

A key lesson learned from the NAC framework assessment in Nepal was the diversity of prioritization processes that may affect climate change adaptation. Although the NAC framework assessment can most easily be used to assess strategy-level government prioritization processes, many in-country actors thought of prioritization as a budgetary allocation process with the Ministry of Finance or as a project selection process under the NAPAs. International funding processes, such as the World Bank-administered Pilot Program on Climate Resilience (PPCR), contributed to this diversity of prioritization efforts. During the time of the NAC assessment, the Government of Nepal was in the process of prioritizing urgent and immediate projects for the NAPA funded by the LDC Fund.[6] The government initially wanted the PPCR to use the same government systems and processes that were being used in the NAPA process. However, the politics surrounding the NAPA and the PPCR processes, as well as the resources involved in them, made for different prioritizations needs. Ultimately, the Government of Nepal and its international partners failed to reconcile the prioritization needs of these two separate processes, and they were kept separate.

While the prioritization of adaptation activities had begun in both Bolivia and Nepal in response to specific international mandates or programs (for example the NAPA process in Nepal or the PPCR), the Irish Government was slowly starting to develop its own priorities for action. Vulnerability and risk assessments often form the basis for beginning such prioritization processes for climate change adaptation, but all three countries had not yet used such assessments as an input to prioritization. Importantly, prioritization was limited to broad strategic themes and, the case of the Nepali NAPA, a handful of high-profile projects. None of the three countries had yet developed methods for including climate adaptation considerations in the development of national budgets or in the prioritization of annual activities.

NAC Coordination Function

Adaptation requires action by disparate actors at multiple levels, both within and outside of government. Coordination of their activities helps avoid duplication or gaps in action, and can create economies of scale in responding to challenges. Coordination may be horizontal (e.g., among ministries), vertical (e.g., among national, global, and subnational actors), or among stakeholders (e.g., between government and business). Political dynamics can significantly affect coordination; the NAC therefore calls for countries to locate the adaptation coordination function in a relatively authoritative institution. This assists, in particular, with the convening of disparate actors, which is often an important starting point for coordination.

Horizontal and vertical coordination through the government remains a challenge in all three of the NAC assessment pilot countries. While the MNACC in Bolivia helped enhance horizontal coordination between the Ministry of Environment and other sector ministries, the Vice Minister of Environment was officially reviewing other coordination mechanisms in the Ministry of Finance and Planning with the aim of strengthening them. The NAC framework assessment revealed that there were a number of different institutions created to coordinate activities for climate change in Bolivia. The government created a special platform to engage indigenous peoples' organizations and allied groups. This platform has helped enhance government coordination as well as helped strengthen the country's international negotiations positions. However, the NAC revealed that several coordination tasks are not effectively implemented by the government: A national mechanism does not exist to help the national government coordinate with provincial and municipal bodies, and there is no explicit mandate for the Ministry of Planning to work together with the Ministry of Environment.

The NAC framework assessment in Nepal revealed that, although there were several plans from the government to conduct coordination activities for climate change, the operational aspects of coordination could be substantially improved. The Ministry of Environment was the lead coordinating agency and a Climate Change Department was being established within it. In developing its NAPA, the government also established thematic working groups with representation of staff from relevant ministries that could act as coordinating mechanisms across sectors. The National Planning Commission also had a role in this coordination, and the Ministry of Finance set up a foreign aid coordinating unit. However, the sustainability of these institutions and the institutional roles of the National Planning Commission and the Ministry of Finance (especially the Foreign Aid Coordinating Unit) in climate change adaptation were not made clear.

In Bolivia, the Peoples Conference on Climate Change in Cochabamba in April 2010 increased awareness and provided a very strong impetus for official bodies to coordinate and develop an implementation structure for climate change adaptation. The Ministry of Planning, for example, received the mandate to take the lead in the implementation of the results of the Cochabamba Conference to integrate climate change issues in the new National Planning Instrument. The Vice Minister of Environment was also tasked with the preparation of a high-level council chaired by the president to

[6] The UK Government's Department of International Development (DFID) and the Dutch Government's DANIDA had supplemented funds from the LDCF to turn the NAPA in Nepal into a "NAPA-plus" process that included more activities than the creation of a NAPA document alone.

deal with climate change policy issues. Overall, the NAC framework assessment here revealed that the government was focused on developing strong positions for the UFCCC negotiations. However, there was still a lack of coordination between the process of developing foreign policy positions and the domestic coordination of adaptation activities in the last few years.

In Ireland, the NAC framework assessment found high levels of awareness among actors currently taking the lead on climate change adaptation activities that coordination was critical and that appropriate processes needed to be put in place to enable both horizontal and vertical coordination. The NAC assessment team thought that existing institutional arrangements within the Government of Ireland could provide a good basis on which to establish effective coordination processes.

However, they also identified the need to establish or mandate a national high-level group to coordinate action on climate change adaptation and strengthen institutional capacity by drawing on a pool of relevant expertise. The steering group on impacts and adaptation of the CCRP, for example, already has participation from numerous sectors and could be a means to coordinate a broader climate change adaptation agenda.

NAC Information Management Function

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, local knowledge, and existing coping strategies. Good information management will ensure that information is useful and accessible to stakeholders. It may also involve general awareness-raising or building the capacity of stakeholders to use information for adaptation.

In the three pilot assessments, countries were beginning to pay more attention to the various information needs for climate change adaptation. Adequate information and analysis was available to enable climate change adaptation planning and implementation to begin in earnest in Ireland, for example.

Yet, improvements could still be made to strengthen and build a more sustainable climate observation system and to better communicate data and analysis to the public and decision makers. Stakeholders involved in data collection and analysis supported the provision of open access to environmental and research data, although efforts to make information publicly available had been *ad hoc* and uncoordinated to date. The NAC assessment in Nepal and Bolivia revealed that there were also several efforts under way to improve weather and climate change information availability and access. In Bolivia, a number of national studies analyzed the difficulties of gathering climate data and analyzing it in the country. Both countries suffered from limited capacity to understand and use climate science, though there have been recent attempts to build future climate change scenarios and conduct climate impact analysis.

The NAC assessment found that new types of information and communication technologies were already simplifying data gathering methods as well as making it easier for users to access and analyze relevant information. Internet-based platforms were playing a significant role in making information freely accessible. Bolivia has already put in place a number of different programs for providing information on adaptation, including a public meteorological observation network through the government meteorological office called Servicio Nacional de Meteorologia e Hidrologia and a system to monitor the Millennium Development Goals through the Government of Bolivia's policy analysis unit (Unidad de Análisis de Políticas Sociales y Económicas-UDAPE) and UNDP. UNDP and the Vice Minister of Environment collaborated to create the Bolivian Climate Change Platform (www.cambioclimatico-pnud.org.bo), with participation from a broad section of civil society, academia, and the private sector. This platform aims to increase awareness about climate change and disseminate key climate change information. In Nepal, the government was in the process of establishing a climate change knowledge management platform and an information portal (see Box 3), and various civil society

Box 3 | Climate Change Knowledge Management in Nepal

The Ministry of Environment in Nepal has established the Climate Change Knowledge Management Centre under the Nepal Academy of Science and Technology (NAST) and a Web-based information portal using funds from the NAPA process (www.climatenepal.org.np). This center aims to be a repository of climate change documents and reports pertaining to Nepal and there are plans to create a mobile library to increase awareness about climate change impacts in the country. The center also aims to enhance public access to climate change-related information in order to build capacities and facilitate the interface between scientific research and policymaking.

As part of the NAPA development process, an online information portal was also created to include all information pertaining to climate change in the country in one place. The portal has created profiles of the various country-specific databases and inventories kept by other organizations in one searchable database. The portal also has created an Internet-based catalogue of reports, maps, and publications about climate change and its impacts on Nepal. Currently, the portal is organized around six themes: science, adaptation planning (tools, methodologies, case studies, and best practices), policy and actions, international climate policy, financing, and technology transfer.

organizations and international nonprofit organizations are establishing climate change-related networks and platforms.

Data gathering, along with analysis and dissemination, continues to be a challenge in countries like Nepal. Most weather stations in the country are in areas that are more populated and easily accessible. The density of weather stations in the Himalayas and the higher hills of Nepal, for example, is much lower than in the urban centers like Kathmandu or in the southern plains. Differences in altitude can create dramatic variability in the current climate and thus on have an effect on how climate change impacts will manifest themselves in the region. The capacity to manage and monitor these stations, as well as to ensure the quality of the observed data, is as important as the resources needed to establish new stations. The NAC assessment revealed that a lack of resources and institutional capacity had hindered the systematic analysis, review, and dissemination of climate change-related information and research in Nepal so far. Ensuring data collection standards for manual and remote stations and developing methods to centralize data collection and analysis have been barriers to improving general information management.

The NAC framework assessment in Ireland identified existing capacity in the country to gather and analyze relevant information. The country, however, lacked a lead organization to manage all climate information and strong political commitment to sustain data gathering and monitoring systems. Systems for information analysis were well developed; however, the NAC assessment identified the need for further system development to support a shift from project-based approaches to a more sustainable programmatic approach to information management for adaptation. The Irish NAC assessment team identified a need for a national climate information platform. This could potentially evolve from the CCRP, which was supporting the development of a pilot national information system that could fulfil many of the needed information management functions.

Many country stakeholders in all three countries were already creating demands for climate information and a few projects were providing information at the local level. Ensuring that accurate and authoritative information reaches key stakeholders continues to remain a challenge. The NAC assessment revealed that countries need to pay special attention to the needs of information users at multiple levels, as well as work to increase public awareness of climate change risks, vulnerabilities, and opportunities for reducing them.

NAC Climate Risk Management Function

Although the previously discussed four functions of the NAC framework assess capacities for the country as a whole, the climate risk management function assesses capacities within a specific sector to manage climate risks. Ultimately, climate change risks need to be integrated into sectoral decision-making processes. For example, many countries will need to fund ways to manage climate risks in the agriculture and water sectors, because these are often highly sensitive to climate change. Another country may look at the management of climate risks in its tourism and coastal areas, because these may be very important economically.

In each sector or issue area, addressing climate risks requires—

- establishing a process of identifying the specific risks to a given sector or issue,
- evaluating the full range of options for addressing the risks, and
- selecting and implementing risk reduction measures.

This process of climate risk management needs to draw on national information and assessment processes addressed in the functions discussed earlier but may also require additional

Box 4 | Climate Change Risk Management in Human Settlements in Bolivia

Although Bolivia is currently the least urbanized country in the South American region, it has experienced rapid urbanization. New and rapidly growing settlements are concentrating in areas that may face significant risks associated with climate change in the future, rise in disease vectors, and losses from extreme events (Gonzales and Zalles, 2010a). The NAC assessment team found a general lack of consistent policies and programs to regulate the growth of such settlements and housing in the country.

Several ongoing activities, however, could provide opportunities to integrate climate change risks and adaptation measures to make these areas more resilient to climate change impacts. The Hyogo Framework for Action and its implementation platform in Bolivia,[7] for example, has created a working group on human settlements as a means of further coordinating the disparate work that is ongoing on urban areas, disaster risk reduction, and climate change.

Researchers and practitioners of different Bolivian and international NGOs are also working together to get local and municipal authorities involved in the integration of climate change risks in their daily work. Specific activities that are currently ongoing include training for capacity development in the use and dissemination of methodologies for assessing vulnerability and risk and mainstreaming climate change into planning efforts.

[7] The Hyogo Framework for Action is a 10-year plan adopted by 168 member states of the United Nations to make the world safer from natural disasters. Adopted in 2005, it identifies key priority areas and offers the principles and means for decreasing disaster risks.

sector- or issue -specific research or assessment not captured by those NAC functions. NAC users are asked to select priority sectors or "issue areas" (such as, for example, a vulnerable group like the elderly or fisher-folk) for which to explore the climate risk management function. The users then apply the climate risk management function questions to this specific sector or issue. The NAC framework pilot assessments found that some sectors had begun exploring climate risks and vulnerabilities; however, the identification and the implementation of risk reduction activities had not yet begun in many relevant sectors.

In Bolivia, the NAC assessment of climate risk management focused on human settlements and agriculture, nutrition, and food sovereignty. The assessment found some comprehensive studies that address climate risks in these two areas but only limited actual implementation of activities. The World Bank and World Food Program have conducted assessments of public-service water delivery in urban areas and vulnerability assessments of food systems respectively, applying a climate lens. Although adaptation options were not identified for human settlements, several promising initiatives for integrating climate change risks in municipal and urban areas were ongoing (see Box 4). Options identified for agriculture and food sovereignty included the conservation of genetic resources, improved irrigation, and the use of existing financial mechanisms like the National Agriculture Security Fund (FONASAG in Spanish) for reducing climate risks. The implementation of these options was found to be quite weak and dependent on external project funding.

The climate risk management function in Ireland was assessed for three priority areas of water, planning, and critical infrastructure. Momentum from existing EU directives for integrating climate change risks and also local-level initiatives were helping to move forward the integration of climate risks in sectors for all three areas. In the water sector, there was a readiness to assess climate risks among stakeholders working in water resource management, water supply, water quality, and marine and coastal resource management. Under the Planning and Development Acts 2000–2010, for example, development plans are required to contain objectives for the promotion of sustainable settlement and transportation strategies in urban and rural areas, including measures to reduce greenhouse gas emissions and address climate change adaptation. The NAC assessment concluded that an important next step could include guidance on how to specifically address adaptation within the spatial planning system for regional and local-level plans. Some recent studies provided a good template to integrate climate risks into some sectors, but the NAC framework assessment team thought that the Irish government needed to conduct more studies to fill the remaining knowledge gaps, for example on social and green infrastructure. The actual identification of adaptation options and their implementation has not yet been systematically undertaken by the concerned sectoral agencies.

The NAC assessment in Ireland identified significant scope for developing an effective approach to climate risk management by building on existing legislation, tools, and mechanisms, especially for spatial planning. The assessment team's recommendations took into account risk of delay through overemphasizing the development of new tools and procedures; hence, they believed the focus should be on integrating climate risk assessment using existing statutory tools like environmental impact assessments, for example.

All six of the major priority areas identified under the Nepali NAPA—disaster risk reduction, agriculture, water and energy, health, urban settlements, and forests and biodiversity—were assessed by the Nepali NAC assessment team under the climate risk management function. The team found no national climate risk and vulnerability assessments for these sectors. Smaller and more context-specific assessments of risks and vulnerabilities did exist, but a lot more work needed to be completed on impacts, risks, and vulnerability assessments in all these sectors.

There was rarely any explicit mention of adaptation options for these areas in existing sector documents. In some cases and sectors (like agriculture and disaster risk reduction), policy options have been evaluated more thoroughly than in others using environmental impact assessments and cost-benefit analyses. Because no adaptation options were identified in many of these sectors, the implementation of such adaptation options has not occurred.

Table 3 | **Process-Based Indicators and Metrics for Measuring Improvements in Adaptation Capacity in Bolivia**

NAC Functions	Bolivian Indicators	Proposed Metrics
Assessment	There is a clear mandate to include climate risks in local development and other types of plans.	Availability of methodologies and guidelines to assist local planners
Coordination	An institution has been tasked to coordinate adaptation efforts in the country.	Mandated institution has clear authority and resources for coordinating other actors
Climate Risk Management	A set of economic incentives for risk reduction has been tested and applied by local, regional, and national investments.	Percentage of total funds for provided by the central government to local, regional, and national investment projects for "climate risk mitigation"

(Adapted from Gonzales and Zalles, 2010 b.)

SECTION IV: LESSONS ON UTILITY OF THE NAC FRAMEWORK

The primary purpose of the pilots was to test the utility of the NAC framework for assessing national capacity to perform adaptation and identify changes that would enable the framework to become an improved and useful tool for adaptation planning. The NAC framework and its pilots were intended to help policymakers integrate institutional capacity development into planning for climate change adaptation by developing country-specific institutional indicators for adaptive capacity, helping set a baseline for those indicators, and highlighting institutional capacity gaps for future adaptation action to fill. Pilot findings indicate that the NAC framework can be useful for the following:

Useful for Developing Indicators for Monitoring and Baseline Setting

The Bolivia assessment provides the best example of using the NAC framework to set a baseline for institutional adaptive capacity. Nur University and UNDP convened a workshop of Bolivian stakeholders from government, academia, NGOs, the donor community, and the UN system to review the NAC assessment findings and identify a set of priority indicators to track over time. The group also developed specific metrics with which to measure these indicators for the national level. The indicators were derived from selected NAC framework assessment questions, chosen because of their particular relevance to capacities needed for development of Bolivian adaptation policy (see Table 3). A separate list of targets was also developed for human settlements and food sovereignty, two areas of focus under the climate risk management function in the Bolivian NAC assessment (see Table 4).

The Bolivian team's concrete metrics paint a picture of Bolivia's current institutional capacity for performing key adaptation functions. They provide the basis for broad, strategic recommendations for the development of adaptation policy. The Ireland and Nepal teams did not go as far in developing metrics and indicators to measure progress.

Useful for Catalyzing Action to Fill Capacity Gaps

The Irish use of the NAC framework best illustrates its ability to identify gaps. The Irish team completed a comprehensive assessment and identified capacity gaps and processes to move adaptation planning forward. Stakeholders in the government valued the assessment process for its early identification of these capacity needs and gaps. For example, the NAC assessment identified the lack of a national vulnerability assessment and presented the evidence base for the government to take action and begin one (see Box 2). An assessment of national vulnerability to climate change based on existing analysis was proposed to assess vulnerabilities of sectors, regions, and locations as well as natural and managed systems in the country (Desmond, 2010). The Nepal and Bolivia assessments also identified numerous gaps in the national institutional capacities to perform adaptation. However, their recommendations and next steps focused on broader strategic issues like creating broad institutional arrangements and engaging with the correct set of stakeholders, rather than focusing on filling specific gaps.

Table 4 | **Climate Risk Management Targets and Metrics Proposed for Bolivia**

Climate Risk Management Focal Issues	Proposed Targets	Proposed Metrics
Human Settlements	In 5 years, the country is able to reduce its water vulnerability in human settlements.	The impact of climate change on local water balance = the amount of water available—the minimum amount of water required
Human Settlements	In 5 years, the country is able to reduce the number of people exposed to extreme events.	No. of people affected by weather-related extreme events
Food Sovereignty	In 5 years, the country is able to reduce its food vulnerability.	Nutrition levels of different populations (ages) Main crops yields index Percentage of food produced domestically
Food Sovereignty	In 5 years, the country has increased the coverage and effectiveness of agriculture insurance mechanisms.	Percentage of coverage of production units with enhanced agricultural practices

(Adapted from Gonzales and Zalles, 2010 b.)

Useful for Gathering and Synthesizing Information

Both the Bolivia and Nepal teams observed how helpful the NAC framework assessment was for gathering in one place a wealth of diverse studies and material relevant to adaptation. In many developing countries where several activities are ongoing but rarely documented, the NAC framework provides an organizing frame to systematically collect and store a wide variety of adaptation-related data and studies in one place. Conducted properly, the NAC framework assessment could serve as a foundation for a range of possible future activities. For example, based on the fact that adaptation is such a new field of inquiry and on the misconception that adaptation is

Box 5 | Promoting Civil Society Advocacy for National Adaptation Action through ARIA

Although the NAC framework was designed for use in government-led national planning, it is not owned solely by government stakeholders and can be used in a bottom-up way by civil society. In parallel with the pilots described in this paper, WRI worked with civil society partners from four continents to combine the NAC framework functions set with the advocacy approach developed under the Access Initiative (www.accessinitiative.org). The resulting ARIA toolkit provides detailed research guidelines to assist civil society organizations in building advocacy agendas for changes in governance that would promote effective adaptation. The toolkit guides civil society coalitions through a process of assessing the comprehensiveness of national action; accountability of national institutions; and access to information, public participation, and justice in key adaptation decisions. ARIA has the following objectives:

- **Build Capacity for Civil Society Organizations (CSOs).** ARIA helps CSO advocates for the poor, the environment, and vulnerable communities build their capacity to analyze existing policies around adaptation. Such analysis provides a basis for structuring an advocacy agenda and engaging government officials.
- **Demand government action on adaptation.** Thus far, much of adaptation planning has been top-down, spurred by global processes.
  ARIA aims to promote adaptation planning from the bottom up through civil society organizations that work closely with vulnerable communities.
- **Monitor adaptation policy implementation.** By providing a bottom-up, non-governmental perspective on institutional analysis of country readiness for adaptation, ARIA can help triangulate results from international and governmental analyses of capacity development progress.

The ARIA toolkit has so far been piloted by advocacy coalitions in Bolivia and Ghana (Foti et al., 2008). Efforts to pilot the toolkit by civil society organizations in Ethiopia and Sri Lanka are under way.

only about climate science and climate models, the Nepal team originally assumed that adaptation-related assessments were very limited in the country. The actual NAC assessment, however, revealed that several local-scale climate change vulnerability assessments had already been carried out and that there were efforts under way to conduct more detailed studies. Although this utility of the NAC framework played out in Ireland as well, the NAC assessment there focused more on gap identification than on gathering resources.

The country teams that applied the NAC framework in Bolivia, Ireland, and Nepal used distinctly different approaches to completing the assessment as detailed in Section III. The three pilots also emphasized different evaluative options offered by the NAC framework. Some assessment teams chose to use the NAC as a scorecard, assigning color codes to each function; while others elected to list strengths and weaknesses. The pilots made clear that both the process followed in completing the assessment and the membership of the assessment team play a significant part in ensuring the legitimacy of the assessment findings. A longer and more detailed multistakeholder assessment may be more trusted by stakeholders than a shorter project led by researchers alone. WRI and its partners are also piloting advocacy-oriented applications of the NAC framework, undertaken by national civil society coalitions through a project called ARIA (see Box 5).

Options for Futher Development

The pilot assessments identified the following options for further development of the NAC framework and associated tools and guidance:

Simple vs. Detailed Assessment Guidance

Several reviewers of the NAC framework and its pilots suggested using the framework to develop a simple checklist-style diagnostic of capacity to perform adaptation functions. This checklist approach would require all assessment questions to be framed so that they had clear, categorical answers. The opposite of the checklist approach would be to flesh out the current NAC framework with more detail and guidance. Significantly more guidance could potentially move the NAC framework toward a standardization approach, rather than leaving a high degree of discretion with the user. As applications of the NAC framework increase, WRI will need to respond to the emerging needs for each country and for each set of users, depending on the user needs and context.

Further Development of NAC Subcomponents

Alternatively, the NAC framework could be developed into multiple assessment tools to help in adaptation planning and program development, recognizing that users tend to emphasize different aspects of the framework. For example, WRI could develop separate, specialized tools with separate outputs that could include qualitative narratives about institutional capacities or a more quantitative means of assessing institutional capacity using indicators and metrics derived from the NAC framework.

Menu of Capacity-Development Resources

Sometimes users seek to move rapidly past the diagnostic process of assessing existing capacity and into the process of building new capacity. In the Irish application of the NAC framework, for example, users requested advice on tools and resources for filling known capacity gaps long before a full capacity assessment was completed. A resource guide (perhaps in the form of a wiki or other Web-based medium) that used the NAC framework as an organizing framework for helping users navigate other adaptive capacity-development tools would be one way to meet this demand. Another way could be to develop a series of minimum standards or a good practice guide derived from the NAC framework for the effective delivery of adaptation across national institutions, but tailored slightly for each country.

SECTION IV: CONCLUSIONS AND RECOMMENDATIONS

Adaptation planning should address the capacities of national institutions …

Rigid planning mandates stemming from multilateral environmental treaties are rarely successful in accommodating the institutional diversity and context specificity required for adaptation to succeed (Sharma, 2009). Yet there is a need at the international level, and specifically through the UNFCCC, for national governments to produce plans for adaptation to help resources flow into the country. As national planners, donors, and the international community work to develop shared expectations around adaptation planning, it is critical that they include a focus on building institutional capacity to adapt to climate change impacts. The development of such capacities at the national level is important in the context of initiatives in which the influence of global actors extends down to local communities.

… and the NAC framework offers an analytic approach that can help.

The NAC framework pilots illustrate one way that an "adaptation lens" can be brought to institutional capacity development initiatives. By providing an adaptation-specific typology of institutional functions, the NAC framework offers a way to move general discussions of capacity building toward a more concrete agenda of *specific* capabilities that can support national action on adaptation. The pilot applications of the framework suggest that the NAC functions apply across a diversity of countries and that they can be tailored to specific country contexts. The NAC framework can help national planners develop indicators of adaptive capacity accommodating country- and sector-specific factors that enable tracking and measurement. This provides countries with the flexibility they need for planning processes, monitoring frameworks, and the resulting adaptation actions to be domestically "owned" and effectively implemented.

An institutional capacity assessment can help planners work with sectors and stakeholders ...

Nearly all countries have strengths with which to begin adapting, but these may not be obvious at the start of planning, given the diversity of institutions that may be involved. Institutional functions can provide a practical organizing frame for sorting a diverse and often scattered body of adaptation-relevant information and resources. This was particularly useful in the Bolivia and Nepal pilots because national adaptation activities there were new and just beginning.

… and promote long-term thinking.

A national assessment such as those piloted using the NAC framework can provide a comprehensive snapshot of ongoing adaptation processes and the full set of stakeholders involved in them. As illustrated by the Bolivian case, this snapshot can help planners, funders and other decision-makers identify key activities to track over time, as well as critical players to engage. By focusing on the gradual, iterative process of institutional strengthening, the NAC may also help to move adaptation planning from a project orientation to more programmatic and systems-oriented approaches.

There is a need to explore how national capacities translate to local adaptation …

For researchers and organizations like WRI, there is a need to delve deeper into how an assessment of national-level capacities translates to actual adaptation on the ground. For example, as gaps identified in a national assessment are filled, do community members notice a difference in the resources available to support their adaptation? As adaptation practices evolve and new lessons are learned, further research and application will also refine capacity assessment tools like the NAC framework to ensure that the most relevant capacities are targeted, to tailor them to specific countries, and to communicate the resulting messages to policymakers.

… but at the national level, win-wins are likely!

Responding to climate change can require unique capacities, such as the ability to support adaptation-specific assessment processes and climate-specific information products. However, other key capacities—for cross-sector coordination or for managing basic environmental data—have broad application. In this way, developing adaptation-specific capacities in a country also supports the development of core capacities for better governance more generally.

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ANNEX 1

RECENT UPDATES ON ADAPTATION PLANNING

The results of the NAC framework pilot assessments only provide a snapshot of the national policymaking space during the time of the assessment. A lot of work has occurred since the completion of the NAC assessments in each of these countries, moving adaptation planning in new directions. This section provides an update on progress in adaptation planning since the pilot NAC assessments were completed in the three countries.

Bolivia

Since the completion of the NAC assessment by Nur University in 2010, Bolivia's National Climate Change Program has begun to integrate climate risks in a select number of prioritized sectors through the National Adaptation Mechanism. The VME and UNDP, through the National Climate Change Platform, have contributed to this process by establishing and implementing two inter-institutional forums—one on water and climate change, and a second forum on food security and climate change. These forums are officially sponsored by the Bolivian government, the UN system, and other international cooperation agencies.

The Bolivian government has decided to prioritize the water sector and a watershed approach in its Pilot Program on Climate Resilience (PPCR), which is still under preparation. This process of creating the PPCR has brought the challenges of intersectoral coordination for integrated watershed management to the forefront. Although the PPCR development process recognized that agriculture extension, risk reduction, ecosystem services, and strengthening of local bodies through decentralization required special coordination, it proved difficult to achieve.

Finally, integrating climate change and risk reduction into the working of local bodies has begun within the government and its partners. Bolivia's new Autonomic Law has created a new mandate for municipal and provincial bodies to create local rules and regulations. Such a mandate could provide valuable entry points for climate risk management if appropriate planning tools and relevant information are made available to local governments.

Ireland

The main drivers of policy development in Ireland for climate change adaptation are the international climate change process led by the UNFCCC, a number of relevant directives from the EU, and observable impacts of climate change itself. For example, in the water sector, the EU's flood directive provides a comprehensive mechanism for assessing and monitoring increased risks of flooding caused by climate change and for developing appropriate adaptation measures.
At the national level, the overarching climate change policy document is the National Climate Change Strategy (DEHLG, 2007). Through it, the Irish government has committed to developing a National Adaptation Strategy that will provide a framework for integrating adaptation issues into decision making at both national and local levels. This framework for the National Climate Change Strategy is currently under preparation.

There are also activities occurring in some sectors that will be affected by climate change such as water, biodiversity, and spatial planning. However, action has yet to be taken on a number of opportunities to integrate climate change adaptation more fully into other sectors such as agriculture, coastal protection, and transportation (Desmond and Shine, 2011). At the local level, authorities have started to integrate adaptation into their planning activities. Such work is happening through national development plans and, in some instances, through specific local climate change strategies.

Research in impacts and adaptation is mainly being progressed through the CCRP, and research activities include observations, modeling, impact and vulnerability assessment, risk, and cost benefit assessment of adaptation options. An important element of CCRP is to widely disseminate research findings and analysis with a view to informing adaptation policy.

Nepal

Since the completion of the NAC framework assessment, a number of separate developments have moved the formal adaptation planning process forward in Nepal. The Nepali cabinet approved the country's NAPA, produced through a broad consultative process, in September 2010. A national vulnerability assessment using existing studies and a prioritization process for identifying proposed priority projects were completed under this planning process. The adaptation options identified in the NAPA include both urgent and long-term adaptation strategies in key vulnerable sectors. The total cost to implement these urgent adaptation measures was estimated at US$350 million.

The Government of Nepal also approved a climate change policy in January 2011, recommending the establishment of a climate change center to undertake research, monitor climate change activities, and provide policy support. Other proposals include the establishment of the climate change center, implementation of community-based local adaptation actions, and the development of a reliable forecasting system. The Government of Nepal also formed the Multi-Stakeholder Climate Change Initiatives Coordination Committee (MCCICC) in April 2010 under the chairmanship of the Secretary of the Ministry of Environment. The committee

aims to foster a unified and coordinated climate change response in Nepal. The MCCICC comprises a broad group of stakeholders, and builds on the broad stakeholder approach initiated by the NAPA process. The recently established Climate Change Management Division at the Ministry of Environment serves as the Secretariat of the committee, which meets at least once every quarter.

Finally, the Strategic Program for Climate Resilience under the PPCR was approved in June 2011 for the World Bank's PPCR. A separate national climate risk assessment was carried out for the SPCR, and five major programs were identified to integrate climate risks into the workings of the government and to create transformational changes. The total costs of the five programs in the PPCR were US$110 million with US$50 million as grants and US$60 million as concessionary loans to the country.

ANNEX 2

Table 5 | **Key Strengths and Gaps for Institutional Capacity for Adaptation in Bolivia**

NAC Functions	Strengths	Gaps
Assessment	Assessments at different levels exist and are slowly being consolidated.	No national assessments. Limited treatment of social vulnerabilities, mostly impact-focused. Limited ability to conduct and understand future scenarios.
Prioritization	5 broad priorities have been identified for adaptation within the adaptation planning instrument (MNACC). Local bodies can also define own priorities.	Limited synergies with existing priorities. Limited use of evidence. No review process. Line ministries involved but not finance and planning ministries.
Coordination	Cochabamba Conference 2010 played an important role. Strong coordination for international negotiations and among horizontal agencies.	Limited vertical coordination. Sometimes different agencies working at cross purposes.
Information Management	Climate change data gathering slowly developing. Other economic and social data gathering occurring.	But met. data gathering and analysis is low and irregular. Limited budget and institutional weakness of SENAMHI. Dissemination is weak.
Climate Risk Management (Human Settlements and Food Sovereignty)	Some vulnerability and impact assessments for urban areas and food sovereignty.	Some project-based implementation. Adaptation options that have been identified may need to be reviewed. The involvement of local authorities is currently under review by the Autonomy Law. Food sovereignty agenda is on hold at the national level.

Table 6 | **Key Strengths and Gaps for Institutional Capacity for Adaptation in Ireland**

NAC Functions	Strengths	Gaps
Assessment	Assessments have been ongoing for some time. Sufficient information exists to plan for and implement adaptation.	There is not as yet a full systematic assessment of vulnerability at the national level.
Prioritization	There is awareness of the need to prioritize actions at the national level.	A system needs to be put in place for reviewing and adjusting priorities over time and to clarify responsibilities.
Coordination	Existing structures provide a good basis on which to establish effective coordination process.	A national high-level group to coordinate action on climate change adaptation and strengthen institutional capacity is needed.
Information Management	Well established systems for data gathering and analysis for key areas exist. Their use to support climate change adaptation planning is being advanced. Pilot projects are providing information to local stakeholders.	Need to improve and ensure information systems and to better communicate data and analysis to the public and decision makers. The need for a national climate information platform has been identified.
Climate Risk Management (Water, Planning, and Critical Infrastructure)	Water: EU Directives are drivers for integrating climate change concerns into water resource management. Planning: Existing tools and guidelines related to planning are starting to address climate risk. Critical infrastructure: Assessments have been conducted.	Water: Pilot activities have been conducted, and some adaptation relevant activities have been pursued, but without adaptation as the motivation. Planning: Some assessments and implementation have happened. Critical Infrastructure: Responsibility for assessing and minimizing climate related risks needs to be enhanced

Table 7 | **Key Strengths and Gaps for Institutional Capacity for Adaptation in Nepal**

NAC Functions	Strengths	Gaps
Assessment	Some subnational and local studies exist.	Limited resources and institutional capacities for comprehensive national assessments. More work on methodologies for assessing vulnerability needed. Limited inventories.
Prioritization	Other government programming processes do use occasional prioritization that may include periodic reviews, local needs, and stakeholder participation.	Limited prioritization for CCA. No system exists for reviewing priorities over time. Limited programmatic resources for prioritization.
Coordination	Coordination mechanisms for climate change that exist in the country include NAPA TWGs) NPC, Climate Change Division, Donor Compact, and Prime Minister's Council on Climate Change.	Operational aspects remain weak. No initiative for revisiting coordination needs or for monitoring coordination. Limited clarity on role of existing institutions currently mandated to coordinate.
Information Management	Plans under way to establish knowledge platform. Data collection and analysis exist. Analysis under way through various government and NGO-led studies.	Data collection is weak. Limited weather stations. Lack of resources, capacities, and institutional abilities hinder systematic analysis, review, and easy availability of information. Dissemination efforts have been very weak.
Climate Risk Management (Agriculture, Water, Human Health, Urban, Biodiversity and Forests, Disaster Risk Reduction)	Some predisaster hazard assessments carried out in all sectors. Wide stakeholder consultations in many sectors.	Hard infrastructure options given primacy. Limited climate change risk and vulnerability assessments for sectors.

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