

United Nations Development Programme



Designing Climate Change Adaptation Initiatives

A UNDP Toolkit for Practitioners



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LIST OF ACRONYMS

AF	Adaptation Fund
APF	Adaptation Policy Framework
ALM	Adaptation Learning Mechanism
CBOs	Community Based Organizations
DAC	Development Assistance Committee
DANIDA	Danish International Development Agency
DRM	Disaster Risk Management
GEF	Global Environment Facility
GTZ	German Technical Cooperation
IPCC	Intergovernmental Panel on Climate Change
IISD	International Institute for Sustainable Development
IUCN	International Union for Conservation of Nature
LDCF	Least Developed Countries Fund
M&E	Monitoring and Evaluation
NAPA	National Adaptation Programme of Action
NC	National Communication
NGO	Non-Governmental Organization
OECD	Organisation for Economic Co-operation and Development
OECD/DAC	Organisation for Economic Co-operation and Development / Development Assistance Committee
PRSP	Poverty Reduction Strategy Papers
RBM	Results Based Management
SEI	Stockholm Environment Institute
SCCF	Special Climate Change Fund
UNDP	United Nations Development Programme
UNDAF	United Nations Development Assistance Framework
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNITAR	United Nations Institute for Training and Research



OVERVIEW

The Fourth Assessment Report of the Intergovernmental Panel on Climate Change (IPCC 2007) states unequivocally that the world is warming. The report provides a comprehensive analysis of how climate change is affecting natural and human systems. There is increasing concern about the likely implications of climate change on poverty, economic growth, ecosystem services, livelihood opportunities, as well as overall human development. The poorest populations in developing countries are expected to bear the brunt of the impacts of climate change, with costs in individual sectors (e.g., water or agriculture) expected to exceed billions of dollars in some countries. In this context, the world's attention is shifting toward adapting to the likelihood of a range of climate change-induced effects on ecosystems and economic development.

With the emerging necessity to adapt to climate change, countries and communities are starting to design and implement adaptation initiatives of various types, scales, and coverage. These initiatives seek to manage anticipated climate change risks at the national, sub-national, local/community levels. Some focus on developing system-wide local capacities aimed at analyzing, planning, and implementing a range of priority actions that strengthen the resilience of key stakeholders and institutions against anticipated climate change risks. Very often, this entails:

- » **Conducting analyses of the likelihood of associated biophysical and socio-economic implications of long-term climate change risks**
- » **Preparing development strategies and plans to include consideration of climate change risks and opportunities**
- » **Reviewing/revising/designing national and sub-national policies (including accompanying legislative adjustments) to take into account climate change risks and opportunities**
- » **Developing partnerships, tools, and practices to incorporate climate resilience into investment decision-making processes**
- » **Testing and demonstrating discrete interventions to manage climate risks**

In this context, an emerging challenge is to design initiatives that explicitly address a climate change-driven problem. Questions arise on how to differentiate between a climate change adaptation initiative and a traditional development initiative. What are key elements that must be considered when developing and designing an adaptation initiative? Operational guidance on these questions is still very nascent.

Scope of the Toolkit

This Toolkit aspires to support all those involved in the design of measurable, verifiable, and reportable adaptation initiatives. It provides step-by-step guidance. As such, it seeks to answer the following question: What are the basic steps in planning and designing an adaptation initiative?

Linkages to Other Ongoing Sustainable Development Initiatives

Although adapting to climate change represents a new challenge, linkages exist between business-as-usual development strategies and adaptation. Development oriented results will generate benefits for managing climate change risks. Poverty reduction, improved nutrition, enhanced education, expanded infrastructure, and improved health will reduce vulnerability to climate change. At the same time, much of the adaptation financing that is currently available – Special Climate Change Fund (SCCF), Least Developed Country Fund (LDCF), The Adaptation Fund (AF), etc. – stipulates distinguishing between baseline development needs and the value added contribution – additionality – of the proposed results in the context of the climate change problem. This Toolkit provides guidance on developing adaptation initiatives that are distinct to baseline development.

Audience

The Toolkit is aimed at a wide audience of practitioners who are called on to support the formulation of adaptation initiatives.

- » Professionals at the national and sub-national levels such as central, regional, and local government staff
- » Community-based organizations and local communities (i.e., direct local beneficiaries) who seek to develop proposals for community-based adaptation initiatives
- » Non-governmental organizations (NGOs), and national and local associations
- » Development agency staff supporting stakeholders in developing countries and/or other parties interested in the formulation and implementation of adaptation initiatives

Organization of the Toolkit

This Toolkit is organized into four main sections, each reflecting a vital component in the process of formulating and articulating an adaptation initiative.

1. Making the Case
2. Key Steps
3. Building Consensus
4. Tools and Methodologies

Throughout the text, there is advice on key information required, relevant sources, and critical issues to consider, and examples that are relevant to designing a climate change adaptation initiative.

Accompanying Materials

This Toolkit forms the basis for an accompanying training package that consists of PowerPoint training materials. The training package can be tailored for a course that follows the four main sections outlined in this Toolkit.

Main Sources of Information for this Toolkit

The material presented draws from UNDP experiences supporting countries at the national, sub-national, and community levels with the design of adaptation initiatives. It also captures key lessons and findings of other organizations on similar issues. Many of the UNDP projects were funded by the Global Environment Facility (GEF) as well as bilateral donors, including the Government of Japan.

Information on adaptation initiatives supported by the following organizations was also considered in the preparation of this Toolkit.

- » The Organisation for Economic Co-operation and Development / Development Assistance Committee (OECD/DAC)
- » United Nations Framework Convention on Climate Change (UNFCCC)
- » Intergovernmental Panel on Climate Change (IPCC)
- » United Nations Environment Programme (UNEP)
- » United Nations Institute for Training and Research (UNITAR)
- » World Bank (WB)
- » Danish International Development Agency (DANIDA)
- » German Technical Cooperation (Deutsche Gesellschaft für Technische Zusammenarbeit – GTZ)
- » International Institute on Sustainable Development (IISD)
- » International Institute for Environment and Development (IIED)
- » Stockholm Environment Institute (SEI)
- » International Union for Conservation of Nature (IUCN)
- » Oxfam International



CHAPTER

*A Toolkit for
Designing Climate
Change Adaptation
Initiatives*

1 Making the Case

Key Principles of Adaptation to Climate Change

Even if the world stopped emitting greenhouse gases today, we would not escape the impending effects of climate change. Significant changes in the typology, frequency, intensity, duration, and distribution of climate-induced hazards can be expected, even under relatively modest scenarios of climate change. The increase in temperature by 2°C is likely to result in the extinction of 15-40% of all species. A 3°C or 4°C increase will result in millions of people being displaced due to flooding, and an increase of 4°C or more is likely to seriously affect global food production (Stern 2006). There is no denying that adaptation to climate change is necessary for survival and should be a priority for all countries.

Managing Climate Change Challenges on Development

Conducting Long-Term Planning Exercises

In addition to affecting the distribution, nature, and severity of climate-related hazards (i.e., damaging physical events) across the globe, climate change may result in the emergence of new types of hazards that were previously absent or rare. There are also likely to be changes in risk factors (i.e., the probability of harmful consequences). Adaptation efforts should be closely linked with strategies for disaster risk management (DRM). DRM strategies, policies, and measures are a good starting place to address new, more intense, and frequent weather-related risks. For example, integrating the findings of climate change risk assessments into planning processes for disaster risk reduction and management, and enhancing existing early warning systems and emergency plans are relevant for both adaptation to climate change, as well as DRM. However, adaptation is not simply about better risk reduction or coping with a stochastic climate. The extent of vulnerability to climate change is a function of changing risks as well as the levels of exposure, sensitivity, and adaptive capacity to new and emerging hazards. Given the fundamental shifts in economies and ecosystem boundaries that will result from climate change, upgrading existing or new DRM measures alone, while necessary, will not be sufficient.

A major challenge confronting decision-makers is how to deal with the inherent levels of uncertainty regarding changing long-term climate conditions and their associated impacts. Making medium to long-term decisions today, under conditions of imperfect information, is one of the greatest challenges. Effective climate change adaptation will require long-term planning approaches at the national, regional, and local levels. Reacting to changes in the short-term or medium-term, without attention to changes that will occur and remain over the long-term, will result in poor investment decisions; the costs of which could exceed the direct local costs of warming.

A major challenge confronting decision-makers is how to deal with the inherent levels of uncertainty regarding changing long-term climate conditions and their associated impacts.

Mainstreaming Adaptation into Policy and Investment Decision Making

Adaptation is cross-cutting in nature and therefore complex. Effective adaptation requires an approach that incorporates both policy and investment issues into the planning and decision-making processes. No one solution will adequately address effective adaptation, including market forces. There are inherent uncertainties in the timing and magnitude of climate change and the linkages between adaptation and development that further complicate the adaptation process. In addition, the costs and benefits of climate change are not necessarily internalized in the decision-making process. Taken together, this may result in sub-optimal decision making unless a holistic approach is adopted upfront. Governments should promote early action. To do so, they will need to:

- » Provide appropriate information on future climate change and the implications on key sectors
- » Set performance standards and establish codes
- » Propose criteria to select priority adaptation policies for implementation; these criteria can include cost-benefit ratio, and robustness and flexibility criteria
- » Incorporate adaptation concerns into national development policies and public investment plans
- » Design and implement long-term policies to protect climate sensitive ecosystem services and public goods (water supply, coastal protection, regional political cooperation, etc)

Climate change is a multi-sectoral issue. Promoting increased resilience to the impacts of climate change is closely intertwined with development choices and actions that cover a variety of sectors, such as energy, agriculture, health, water, and infrastructure. In particular, it is essential to consider both the synergies and trade-offs between adaptation and mitigation activities, including possible negative and positive side effects. Focusing too much on isolated adaptation goals, without considering side effects (e.g., cross-sectoral effects) and linkages with other goals, could lead to missed opportunities. Strong coordinating mechanisms at the national and sub-national levels are therefore required. Such mechanisms are most effective when they are well integrated into the local organisational and administrative culture, and nested in decentralised systems. At these levels, governance and accountability is geared to respond to the adaptation needs of the poorest and most vulnerable.

Experience shows that it is counterproductive to create stand-alone institutions charged with responsibility for climate change risk management. Climate change cannot be the sole responsibility of any single institution or professional practice. Instead, it is important to strengthen existing systems of governance, including those at the regional level that can promote 'bottom-up' effective adaptation. Line ministries responsible for the provision and management of public goods, food production, and water management need to be fully accountable for maximising the efficiency of public goods and services, while minimizing the fiscal burden from climatic losses. In the coming decades, the pervasive nature of climate change requires a behavioral shift, the mainstreaming of adaptation into development, and the incorporation of investment decision-making processes at all levels of society.

The IPCC defines adaptation as "...adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, that moderates harm and exploits beneficial opportunities" and "...a process by which individuals, communities, and countries seek to cope with the consequences of climate change, including variability"

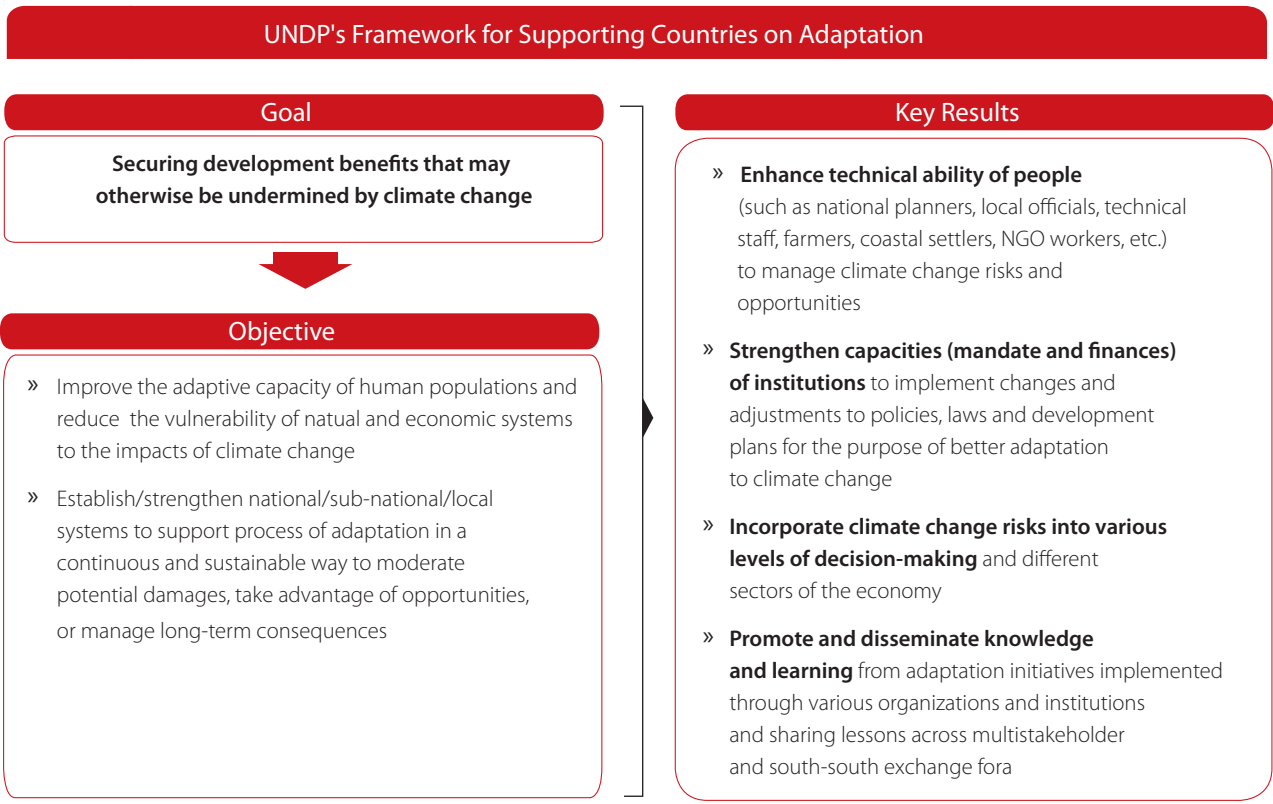
Source: IPCC, 2007

Financing Adaptation Action

There is little doubt that sustainable human development will be more costly under changing climatic conditions. The cost of adaptation will also be high. In fact, estimates suggest that adaptation costs in developing countries will be in the order of tens of billions of dollars. This figure is modest compared to the economic and social costs of not adapting to climate change.

Effective adaptation requires a shift in the way sustainable development is done. Sustainable development and adaptation must be addressed together. This means mainstreaming adaptation into development and taking a holistic approach to project financing and investment. A long-term perspective must be adopted. This change will result in an increase in the net costs of achieving sustainable development. The main reasons include: the measures that must be introduced to manage the additional risks and challenges brought about by climate change; the opportunity costs as scarce resources are redirected or lost; and the costs of managing the uncertainty that is inherent with climate change. The financial needs required to adapt to climate change far exceed what is available through relevant and current funding sources. New and additional resources are imperative to address adaptation needs. Decision-makers will therefore be called upon to:

- » Prioritize adaptation action
- » Reduce the risks of maladaptation
- » Right-size structural risk reduction measures
- » Promote adaptation initiatives
- » Develop new financing mechanisms for meeting the additional costs of adaptation





CHAPTER

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2 Key Steps

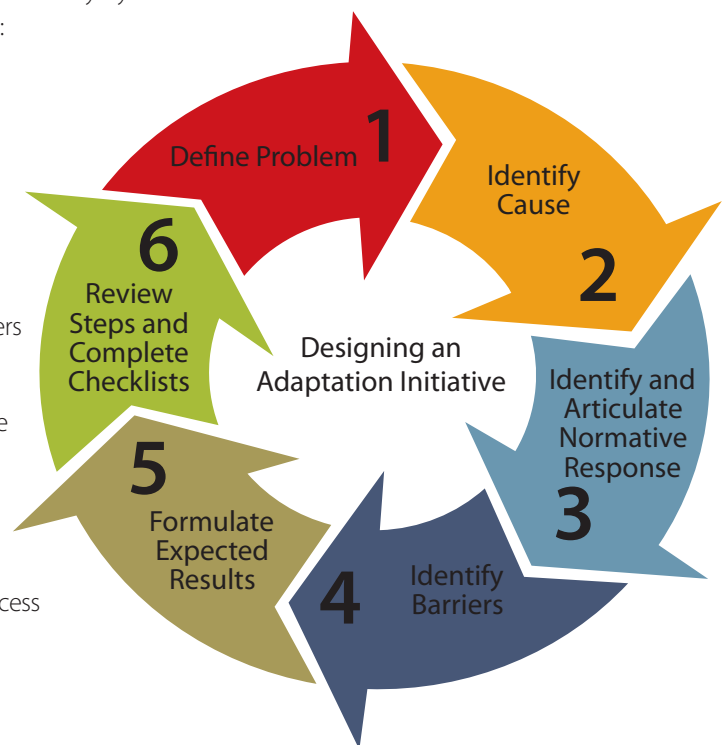
Key Components in Designing an Adaptation Initiative

Six Steps for Designing an Adaptation Initiative

The preparation of an adaptation initiative can be made easy by a series of simple but sequential steps. They include:

1. Defining the problem
2. Identifying the causes of the problem
3. Identifying and articulating the normative response
4. Identifying key barriers
5. Designing project responses to overcome key barriers
6. Reviewing the first five steps and completing checklists to ensure due diligence in meeting source of fund requirements

These steps represent a minimum set of activities for defining a project with a logical structure. Stakeholder consultation is critical for each activity. A non-linear process should ideally be followed when undertaking these core activities.



WHAT IS AN INITIATIVE?

An initiative is a convenient means to assemble a variety of inputs to achieve an outcome (i.e., a changed condition). Initiatives vary in size of budget (\$10,000 - \$100,000,000), scope, institutional development, capacity development, etc.

CHAPTER 2: KEY STEPS

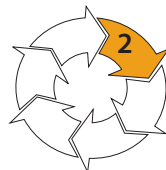
Key Components in Designing an Adaptation Initiative

1. Define the Problem



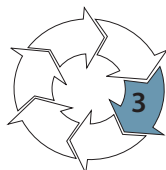
This step involves describing the climate change-induced problem that is of concern.

2. Identify the Causes of the Problem



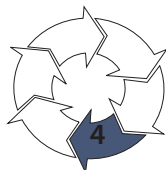
This step involves identifying the reason(s) for the climate change-induced problem. Analysis of the causes will involve examining development stresses upon which the additional climate change stress is superimposed. An examination of why the climate change-induced problem is not currently addressed may be required. There are likely to be a range of non-climate related factors that are also at the heart of the problem. An understanding of the causes of the problem is critical for formulating a targeted adaptation initiative.

3. Identify and Articulate the Normative Response



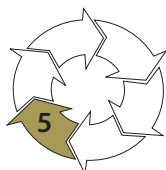
Identify and articulate the normative response. This is the preferred solution or situation to address or manage the identified underlying problem(s). Several inputs, including: a) results of climate change assessments; b) findings from technical assessments, including those from applied research; c) technical expertise (local, sub-national, national, and international (where relevant); and d) political considerations need to be brought to bear to formulate the normative response.

4. Identify Key Barriers



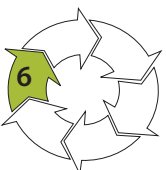
The underlying logic is to identify the reasons why, if a given situation is preferred, it has not already been put into practice or implemented. Once the normative response has been articulated, the next step involves identifying the set of barriers that must be overcome to meet the normative response. That is, a comprehensive mapping is required of all critical barriers that need to be removed to achieve the normative response. This mapping exercise is necessary, among other reasons, to determine the results that are sought and that linkages to other ongoing initiatives are made. This exercise builds upon the identification of the causes behind a given problem. It will enable project developers to determine the most appropriate level of intervention for a given initiative.

5. Design Project Responses to Achieve the Desired Solution



Once steps 1-4 are complete, enough information should be available to design a clear and well articulated adaptation initiative. The design should include: a) expected results; b) tangible products/services that the initiative will deliver; c) activities and inputs that are required to achieve the key results and products/services. At this stage, the project design should also address issues of financing and project monitoring and reporting.

6. Review First Five Steps and Complete Checklists to Ensure Effective Implementation



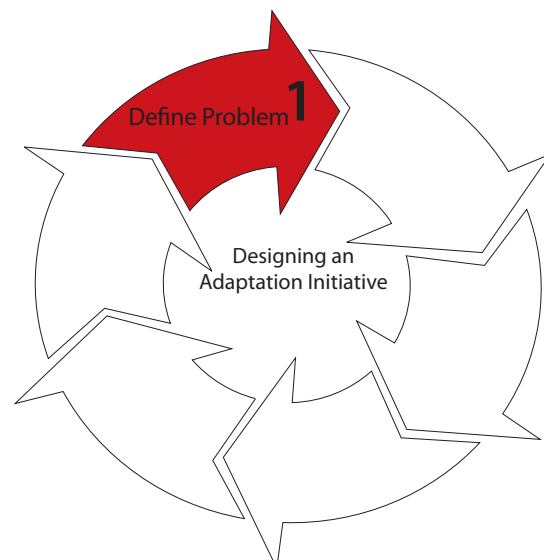
The last step involves the review of the first five steps and the completion of checklists. This will help ensure that all steps are complete and improve the project's chance for effective implementation.

STEP 1 Define the Climate Change Problem

The first step in designing an adaptation initiative is to articulate the climate change-driven problem. In this Toolkit we provide an example that helps illustrate the implementation of the Toolkit's key steps in designing an adaptation initiative. Initiatives are designed to respond to the specific needs of the defined problem. An initiative that targets the national/sub-national level may differ from an initiative with a focus on the local/community level.



Source: CARE, Angie Dazé, 2007



Understanding the Task

Stakeholder consultations and review of existing published and unpublished analytical assessments will be necessary to clearly define the underlying problem. A robust climate risk analysis may need to be undertaken in order to determine the climate change-induced problem(s). In this context, information on the near-and long-term state of climatological and socio-economic factors is critical. This includes a thorough analysis and quantification of the likely implications of anticipated climate change, such as extreme events, on key socio-economic factors of concern. Knowledge of the climate change risk is a crucial first-step in determining whether the perceived problem will occur at the national, sub-national or local level. It is also necessary to identify the range of impacts that are likely to manifest. Together, this information is critical for informing decisions that can minimize anticipated adverse climate change impacts.

Approaching the Task

Pragmatic measures can be taken to understand the problem. Some key measures are outlined below.

- » Review existing literature on climate change impacts on key sectors and regions within the country
- » Identify key findings that can be the starting point for discussions with key stakeholders
- » Organize and conduct a series of stakeholder consultations to articulate and validate the problem
- » Consult with professional experts in your country

The process of identifying the climate change driven problem will entail a series of consultations with key stakeholders.

Initial consultation: Ensure all relevant stakeholders are informed of the context for discussing the problem statement. This could include an opportunity to program resources from a specific donor for adaptation. In such a case, it would be important to establish the expected scope, policy objectives and anticipated budgetary envelope so that discussions could be grounded on what would likely be feasible. This initial consultation provides a good opportunity to brainstorm about the potential climate change related problems, in particular about what is already known or has been identified through various ongoing processes.

Second consultation: Based on research and broad consultations, present a list of climate change induced problem(s) to key stakeholders. A range of problems rather than just one problem is usually identified for action. Use this second consultation as an opportunity to review the list of problems and choose one problem that will be the focus on the adaptation initiative. As part of the process of elimination, a climate risk assessment may be a useful tool to prioritize work. Once there is agreement on the problem and scope of work, additional primary or secondary information may be required and collected.

Third consultation: During this consultation, vet and validate the agreed problem statement. Ensure that the baseline context is accurately defined.

Information and Resources to Undertake the Task

The following is a list of resources that may be useful in defining the problem.

1. National Communications submitted to the UNFCCC.
2. National Adaptation Programme of Action (NAPA).
3. Field notes from visits to sites where there is a manifestation of a particular climate-related problem that one expects to worsen or be indicative of what is likely to be case in the not too distant future.



4. Information on the current institutional, policy and capacity context. This includes information on national/sub-national as well as sectoral policies and strategies, including ongoing and planned initiatives of relevance. This is critical information to establish the baseline for the project.
5. Results from consultations with community level stakeholders on current development and/or climate change-related issues. This is critical information for establishing the project baseline.
6. Minutes/notes from meetings with experts such as economists, agronomists, climatologists, hydrologists, finance experts, planners in central government, sub-national level institutions, academia, private sector and civil society. This information is necessary to fully appreciate the dynamics and complexities of the underlying problem.
7. National and sectoral programmes or strategies (e.g., Poverty Reduction Strategy Papers - <http://www.imf.org/external/NP/prsp/prsp.asp>, National Development Strategy).

Information Sources for Defining a Climate Change Adaptation Problem Statement

There are a number of information sources available for defining a specific problem statement. Search engines on the internet can be used to identify and access documents that may provide relevant information. The following is a list of useful websites to search that include links to additional sources.

- » UNDP's Adaptation Learning Mechanism (www.adaptationlearning.net)
- » UNFCCC (http://unfccc.int/national_reports/items/1408.php)
- » NAPA (http://unfccc.int/cooperation_support/least_developed_countries_portal/items/4751.php)
- » National Communications to the UNFCCC (http://unfccc.int/national_reports/non-annex_i_natcom/items/2716.php)
- » National Capacity Self-Assessment (<http://ncsa.undp.org>)
- » UNDP's Human Development Report (<http://hdr.undp.org/en/>)
- » World Bank Database on Research Findings (<http://econ.worldbank.org>)

Additional Considerations

The following list of best-practices should be helpful in clearly articulating the problem.

1. Define a clear and precise problem statement, preferably without jargon.
2. Clearly define the expected results of the adaptation initiative. Do not state climate change as the problem. The problem statement should be of a much lower-order, typically an issue that is within the ability of one adaptation initiative to tackle. Define the problem in terms of how climate change will impact a key sector at the national, sub-national, or local level.
3. Avoid the temptation to describe the causes of the problem in the problem statement itself. For example: Intensified and frequent coastal flooding due to climate change adversely affects community livelihood opportunities. The reason this distinction is important is because it is highly unlikely that there is only one type of cause for the problem. Causes are discussed under Step 2 of this Toolkit.
4. Use climate data from the IPCC (IPCC-<http://www.ipcc.ch>), regional models, and other readily available sources. In addition, the use of information on the implications of climate change to support the problem statement is helpful. It is not critical to undertake new analyses to determine the climate change related problem. Use a variety of sources to assess the type, number, and complexity of existing problems. The information collected can be 'triangulated' to identify and prioritize the problem(s) that the adaptation initiative is addressing. The articulation of the problem statement entails a detailed analysis of the added contribution that climate change presents for a variety of vulnerabilities.
5. Ensure that baseline conditions vis-à-vis national/sub-national policies and strategies, including ongoing and planned programmes/projects, are defined. This is important both in the context of understanding the problem and identifying what is already in place to address the underlying causes of the problem (see next section). It is also helpful in determining the normative response and the associated barriers that need to be overcome in order to effectively manage the problem and achieve the preferred solution.



IS DETAILED CLIMATE SPECIFIC DATA NECESSARY TO ARTICULATE THE PROBLEM?

The question often arises as to whether detailed climate change data is necessary in order to articulate a climate change problem. This detailed information typically includes time-series meteorological data and includes various interval periods (daily, monthly, seasonal, annual, decadal, etc.). Often, such information is not sufficient. The articulation of a climate change problem requires more than data. The problem analysis is concerned with examining the implications of observed and anticipated long-term trends in climate on a key sector.

Researching both analytical products and detailed climate data provides a more holistic view of the climate change driven problem. Both are necessary to provide the most complete understanding of the problem. Analytical products include: a) peer-reviewed scientific papers; b) reports in grey literature; c) summaries of interviews with stakeholder groups (farmers, government, etc.).



Multiple Approaches for Analyzing the Problem

UNDP's Adaptation Policy Frameworks for Climate Change: Developing Strategies, Policies, and Measures (APF), suggests a variety of approaches to analyze the climate change-related problem in a rigorous manner. The four major types of approaches are:

- 1. Hazards-based approach:** The problem is identified and assessed based on current vulnerability and current risks. Climate change scenarios are then used in conjunction with other information to examine how vulnerability and risks are likely to change over time and space.
- 2. Vulnerability-base:** The problem is identified based on an assessment of how likely it is that the critical thresholds of vulnerability (viewed as a combination of development conditions and sensitivity to climate change) will be exceeded under alternative climate change scenarios.
- 3. Adaptive capacity-based approach:** The problem is assessed by examining the current adaptive capacity of a system and determining weaknesses in the context of emerging risks and opportunities under a range of climate change scenarios.
- 4. Policy-based approach:** The problem is assessed based on whether an existing or new policy is robust under climate change. A number of qualitative and quantitative techniques can be employed to test whether the policy is robust enough when looked at against a range of anticipated climate change risks.



WHAT ARE THE CAUSES OF THE PERCEIVED CLIMATE CHANGE RELATED PROBLEM?

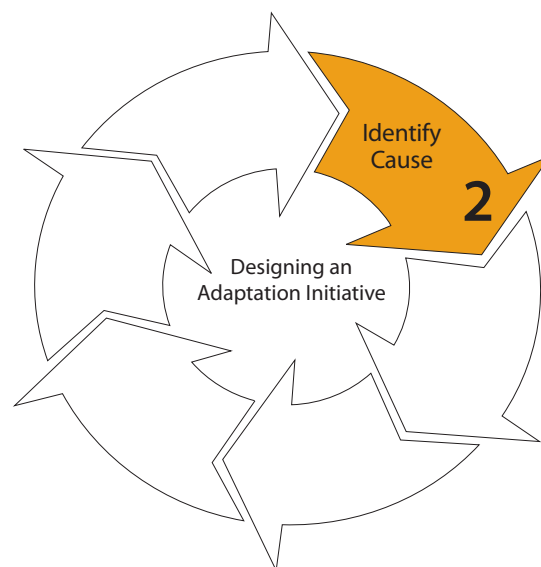
STEP 2 | Identify the Cause

The second step in designing an adaptation initiative is to identify the range of causes for the defined problem(s).

Understanding the Task

Causes in this Toolkit are defined as the drivers of a climate change problem. They include: factors that are context specific and time bound, institutional drivers, and attitudinal and behavioral drivers. Context specific and time bound factors could be the absence of a qualified person(s) or the shortage of specific resources; institutional drivers could be policies, laws, systems, etc.

The success of this step of the process relies heavily on the ability of the project developer to accurately identify and analyze the full range and levels of causes for any given problem. This includes both the climatic and non-climatic drivers. When doing this, the project developer takes into account the immediate, underlying, and root levels of the problem. This process is instrumental to shaping a response that will avoid or reduce the problem. If the most relevant causes are not identified correctly, the design of the adaptation initiative will be misaligned with the problem. If so, the expected outcomes of the project will not be realized and the project could lead to maladapted results that are more disruptive and/or damaging to a country than prior to project implementation.



Approaching the Task

There are a variety of pragmatic ways to identify the cause(s) of a problem. Essentially, there are two questions that must be answered when identifying the cause: 1) What is the cause? and 2) Why is it the cause? Ask these questions in iterative steps until all answers are exhausted. The purpose of these questions is to assist in accurately assessing the linkages between the cause and effect of a given problem. They provide a deeper understanding of the cause of the problem and provide insight on how to best address it.

Level of Causes

There are three levels of causes for each problem as (illustrated on page 19).

Immediate Causes

Immediate causes (sometimes known as primary causes) are usually the direct technical causes of the problem.

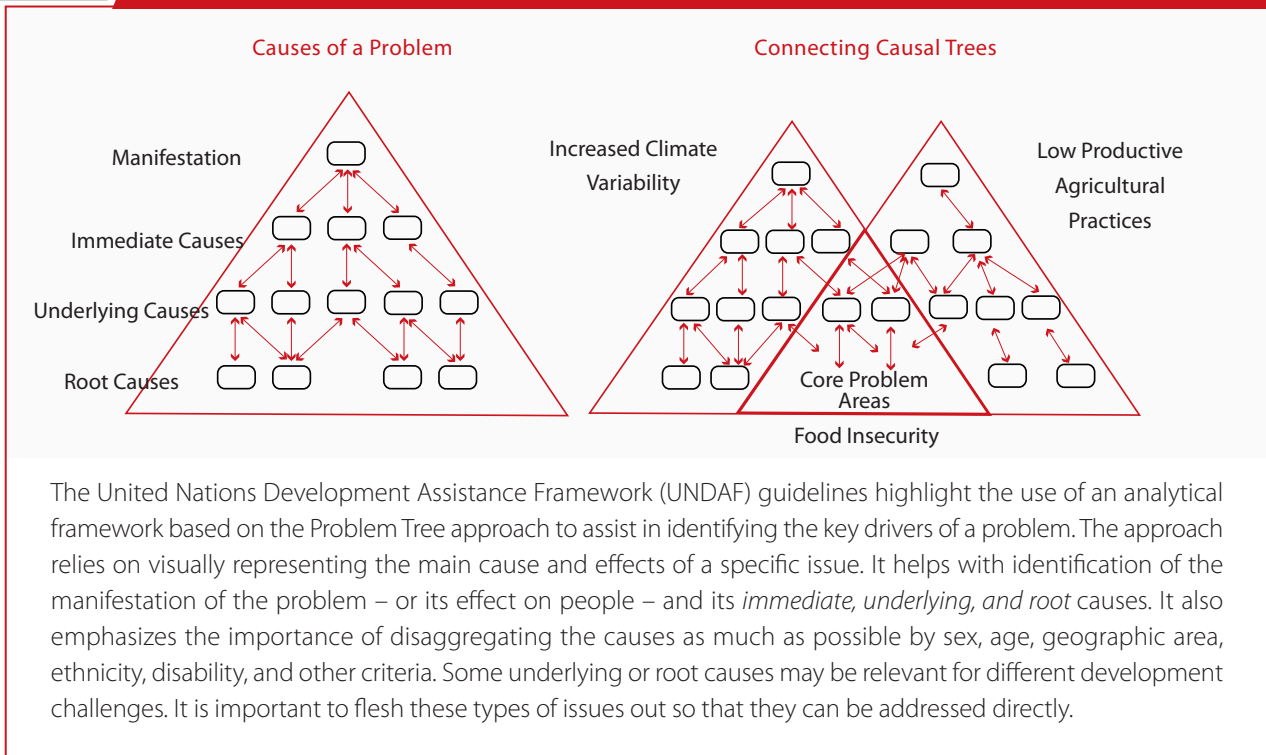
Underlying Causes

Underlying causes contribute to the immediate causes. Usually these causes are the result of resource uses and practices, and related social and economic drivers. Examples include land and water use and damaging or unsustainable practices. Social and economic causes can include increased sectoral development, economic incentives, and land tenure issues. Understanding how these sectors operate is helpful in identifying these underlying causes (e.g., within agriculture or transport), as well as the respective governance framework. Linkages between sectors should be explored because causes and impacts are usually not limited to a single sector.

Root Causes

Beyond the social, economic, and sectoral pressures, are root causes; these correspond to system level issues such as macro-economic policies, demographic trends, consumption patterns, accessible information, and democratic processes. All suggest a scope beyond that of a single project and should be identified in order to understand the context of a given problem.

Typology of Causes



The United Nations Development Assistance Framework (UNDAF) guidelines highlight the use of an analytical framework based on the Problem Tree approach to assist in identifying the key drivers of a problem. The approach relies on visually representing the main cause and effects of a specific issue. It helps with identification of the manifestation of the problem – or its effect on people – and its *immediate, underlying, and root* causes. It also emphasizes the importance of disaggregating the causes as much as possible by sex, age, geographic area, ethnicity, disability, and other criteria. Some underlying or root causes may be relevant for different development challenges. It is important to flesh these types of issues out so that they can be addressed directly.

Source: European Commission, 2004. (http://ec.europa.eu/europeaid/multimedia/publications/index_en.htm)

Note: Modified from UNDAF Guidelines, 2009

Implementing the Key Steps: An Example

The following example illustrates the 'question and answer' process that could be employed when identifying the causes of a problem. For the purposes of this Toolkit, only two causes/responses were given for each cause example. In practice, however, there are usually more. The project developer should carry out the 'question and answer' process until the he/she has exhausted the number of causes for each problem. He/she should also bear in mind that there are inter-linkages between causes that need to be identified and considered.

The Problem Statement

Increasing temperatures and reduced rainfall are adversely affecting agriculture production in country X. The underlying causes of vulnerability are many and may include the lack of necessary technical capacity and physical and financial resources to adapt to and overcome worsening climate change conditions.

Box 1a

What are the Causes for the Absence of Technical Capacities?

Cause 1: Rural school children do not receive the necessary education at the primary, secondary, and tertiary level

- » Transport to schools is often not available *Why is it the Cause?*
 - In part, because transport to schools is often not available due to poor infrastructure *Why?*
- » The standard of teaching in schools and universities is frequently low *Why is it the Cause?*
 - [Fill in the response] *Why?*
- » Political mandates to make the necessary increases to education budgets have not been adopted by relevant ministries *Why is it the Cause?*
 - [Fill in the response] *Why?*

Conclusion 1: The rural population receives a low level of education that result in limited agricultural and management skills among this population

Cause 2: In country X agricultural education does not address the impending impacts of climate change on the agricultural sector

- » Curricula does not address the needs of emerging climate change pressures *Why is it the Cause?*
 - [Fill in the response] *Why?*
- » Teachers with appropriate training are not available *Why is it the Cause?*
 - [Fill in the response] *Why?*
- » [Fill in the response] *Why is it the Cause?*
 - [Fill in the response] *Why?*

Conclusion 2: Educated students are not equipped to implement or develop adaptation solutions

Box 1b

What are the Causes for the Absence of Physical Resources?

Cause 1: Government fertilizer and seed delivery programmes are unreliable

Why is it the Cause?

» Maladaptation of programmes

Why?

- [Fill in the response]

Why is it the Cause?

» Mismanagement of funds

Why?

- [Fill in the response]

Conclusion 1: Farmers lack the seeds and fertilizers necessary at the start of the growing season due to poor delivery reliability

Cause 2: Infrastructure available to rural farmers is not appropriate for impending climate change impacts, such as floods and droughts

Why is it the Cause?

» Long-term climate change risks are not factored into design and maintenance plans

Why?

- [Fill in the response]

Conclusion 2: [Fill in the response]

Box 1c

What are the Causes for the Absence of Financial Resources?

Cause 1: A large portion of the population is employed within the informal sector and consequently do not pay taxes

Why is it the Cause?

» Government budgets are extremely limited relative to developed countries where most of the population is employed in the formal sector

Why?

- [Fill in the response]

Conclusion 1: [Fill in the response]

Cause 2: The government budget allocated to the agricultural sector does not address climate change impacts

Why is it the Cause?

» [Fill in the response]

Why?

- [Fill in the response]

Conclusion 2: Many agricultural investments will not yield large returns due to climate change and represent a poor allocation of resources.



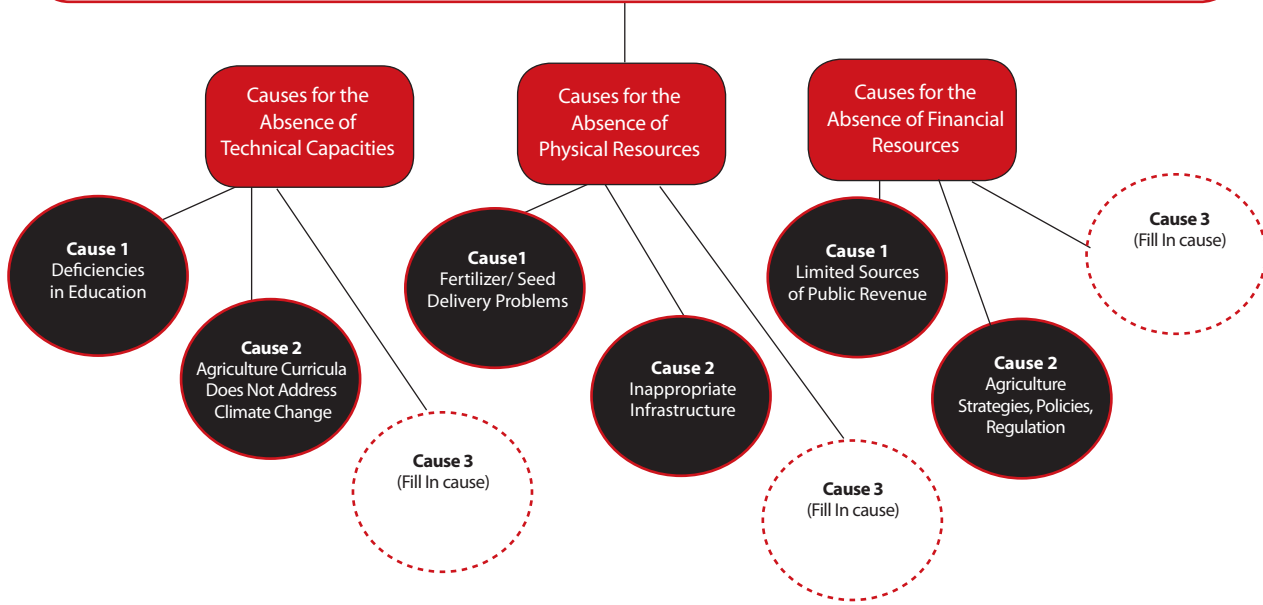
UNDP NEITHER PROMOTES NOR SUPPORTS THE SPECIFIC TYPES OF INTERVENTIONS OUTLINED ABOVE.

CHAPTER 2: KEY STEPS

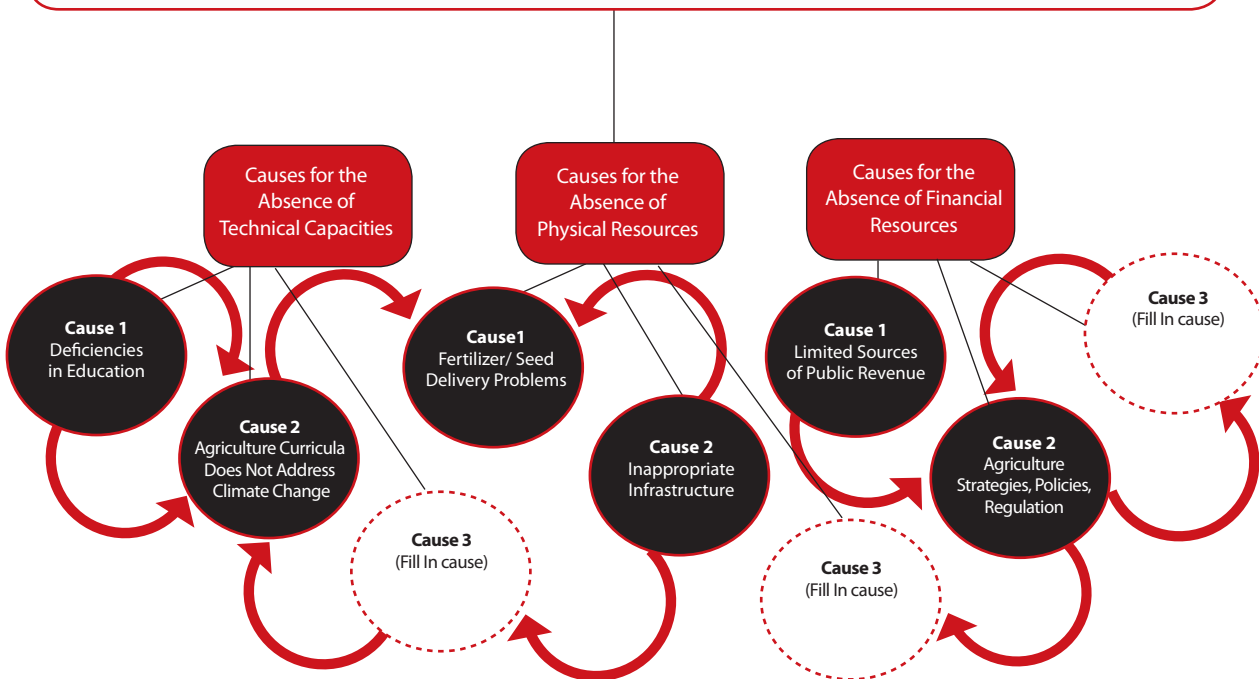
Step 2: Identify the Cause

The Problem Statement

Increasing temperatures and reduced rainfall are adversely affecting agriculture production in country X. The underlying causes of vulnerability are many and may include the lack of necessary technical capacity and physical and financial resources to adapt to and overcome worsening climate change conditions.



Inter-Linkages Between Causes



Note: Modified from UNDAF Guidelines, 2009



KEY ISSUES FOR CONSIDERATION

1. Outline the full range of causes in the context of the problem.
2. Articulate causes in a clear and detailed manner. Causes are likely to be context specific.
3. Identify both non-climate (baseline) and climate change-specific causes. Causes in the context of a climate change-related problem often include both climatic and non-climatic factors.
4. Question the causes: "Is this problem arising because of climate change?" It is useful to engage in brainstorming with colleagues as opposed to relying solely on reading of documents/notes.
5. Recognize cross-cutting and interlinked causes.
6. Use critical analysis in the process of outlining causes. It is a very iterative process and must be stakeholder driven.
7. Do not assume that causes are linear or can be neatly articulated into specific circles.
8. Avoid fictionalization or speculation of the facts by ensuring broad stakeholder consultations. Document relevant findings outlined in reports, peer-reviewed papers and expert judgments for future reference and cross-checking.
9. Avoid dwelling on potential solutions or thinking ahead of what the project should do. A thorough inventory of all relevant core causes is necessary at this stage for formulating an ideal response. Discussion of the future results of the project should take place after the normative response has been formulated (Step 3).

Information and Resources to Undertake the Task

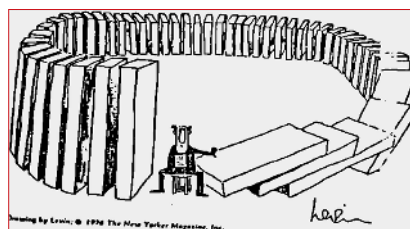
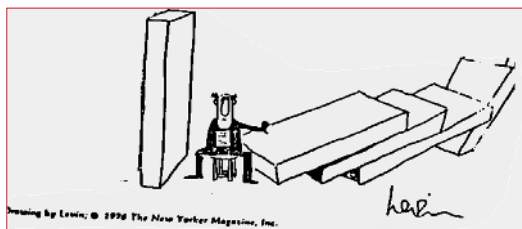
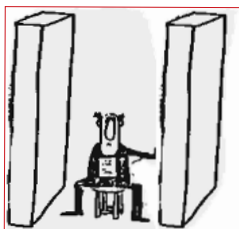
A thorough cause analysis in the context of a climate change adaptation problem should include:

- » Key vulnerabilities related to business-as-usual development under current climate
- » Vulnerabilities that could occur from a range of potential future climate change scenarios (use a variety of resources to assess these vulnerabilities)
- » Information regarding ongoing or existing investments, strategies, programmes or interventions that seek to address existing vulnerabilities

The following sources, highlighted from Step 1, are examples of materials that could be used when preparing for discussions on causal chain analysis. They should provide the necessary background to foster meaningful discussions on this topic.

- » Minutes/notes from meetings with experts such as economists, agronomists, climatologists, hydrologists, finance experts, planners in central government, sub-national level institutions, academia, private sector, and civil society. Refer to Section 3 on Building Consensus;
- » Peer-reviewed, published and non-published articles on biophysical and socio-economic impacts of climate change;
- » Field notes from visits to sites where there is a manifestation of a particular climate-related problem.

Understanding an issue as completely as possible is important because intervening in one point of a system...



Source: From Deenapanray, 2009

Additional Considerations

Guiding Questions for Vulnerability Assessments

There is scientific consensus that climate change is human-induced. It is imperative that we understand the effects climate change will have on our environment and society. This is important to appropriately design and introduce strategies, plans, and measures to reduce adverse impacts. In order to understand vulnerability at national, sub-national or local levels, recognition and understanding of three key components — exposure, sensitivity, and adaptive capacity — is required. The following questions can facilitate that process.

What are the projected hazards and perturbations caused by climate change?

- » What will happen to temperature patterns?
- » What will happen to rainfall events?
- » Are extreme events likely to increase in frequency and/or magnitude?

What specific sensitivities to climate change and its projected hazards and perturbations exist?

- » How will current sectors of society (population, agriculture, water, energy, tourism, fisheries, health, and biodiversity) be affected by these hazards and perturbations?
- » Are there current socio-economic trends that interact with and could amplify these sensitivities?

What is the level of adaptive capacity?

- » How will society cope with and manage these changes? Will it be able to make changes through policies and activities that minimize adverse impacts (or make the most of the opportunities presented)? Or, will the expected changes increase their vulnerability?
- » Can adaptation take place at the sector level, or is there a need for more structural changes within society (e.g., economic diversification)?

For additional details, refer to the UNDP Publication, *Mapping Climate Change Vulnerability and Impact Scenarios: A Guidebook for Sub-National Planners*.

CHAPTER 2: KEY STEPS

Step 2: Identify the Cause

Managing Climate Change Risks and Opportunities: Interrelated Issues



Source: <http://www.diplomacy.edu/climate/>



WHAT SHOULD THE NORMATIVE RESPONSE BE IN THE CONTEXT OF IDENTIFIED CAUSES?

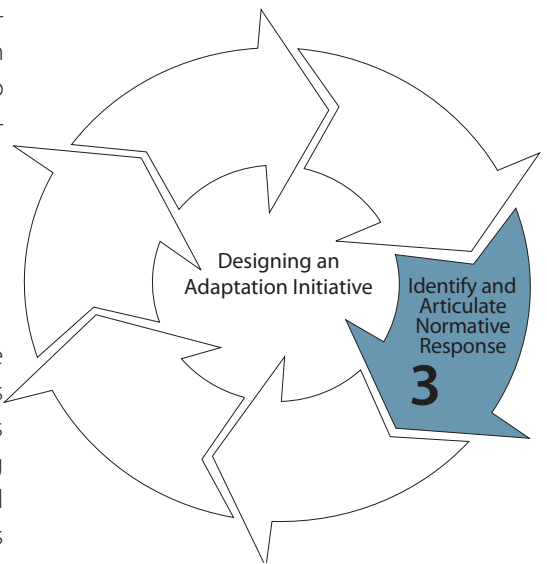


STEP 3 Identify and Articulate the Normative Response

After identifying the cause, the next step in formulating an adaptation initiative is to identify and articulate the desired long-term outcome resulting from the initiative. This is commonly referred to as the normative response. It outlines the preferred solution to address and manage the underlying cause of the problem.

Understanding the Task

Identifying and articulating the normative response is critical. The previous section illustrated that the dissection of a problem involves the identification of a set of causes. In practice, there are difficulties addressing all of these causes in a single initiative, including funding constraints, political considerations, time limits for implementation, and a host of other limiting factors. As such, an essential part of the process of determining priority project level results requires establishing a preferred response to the causes of the underlying problem. It is through this process that key results for a project or series of projects should be determined. A more complete understanding of what needs to be done provides a platform from which to determine what to implement based on agreed criteria for prioritization.



Approaching the Task

Identifying the normative response will most likely entail the following activities.

1. Conduct an initial stakeholder consultation to review the results of the causal chain analysis.
2. Brainstorm with stakeholders to formulate the normative response.
3. Map out the ideal plan of action in the context of the previously identified problem and immediate, underlying, and root causes.
4. Differentiate between responses that are required to manage climate change related issues and responses that would be required as part of business-as-usual development.
5. Recognize that multiple initiatives may be required to address the identified problems. Narrow in on the required responses based on Steps 1 and 2. At this point of the process, it is more important to map out what the required response is, rather than to focus on which response can be more easily implemented through a single initiative.
6. Determine further information necessary to prioritize the identified responses.
7. Plan wider stakeholder participation as part of an iterative dialogue to establish the normative response.

CHAPTER 2: KEY STEPS

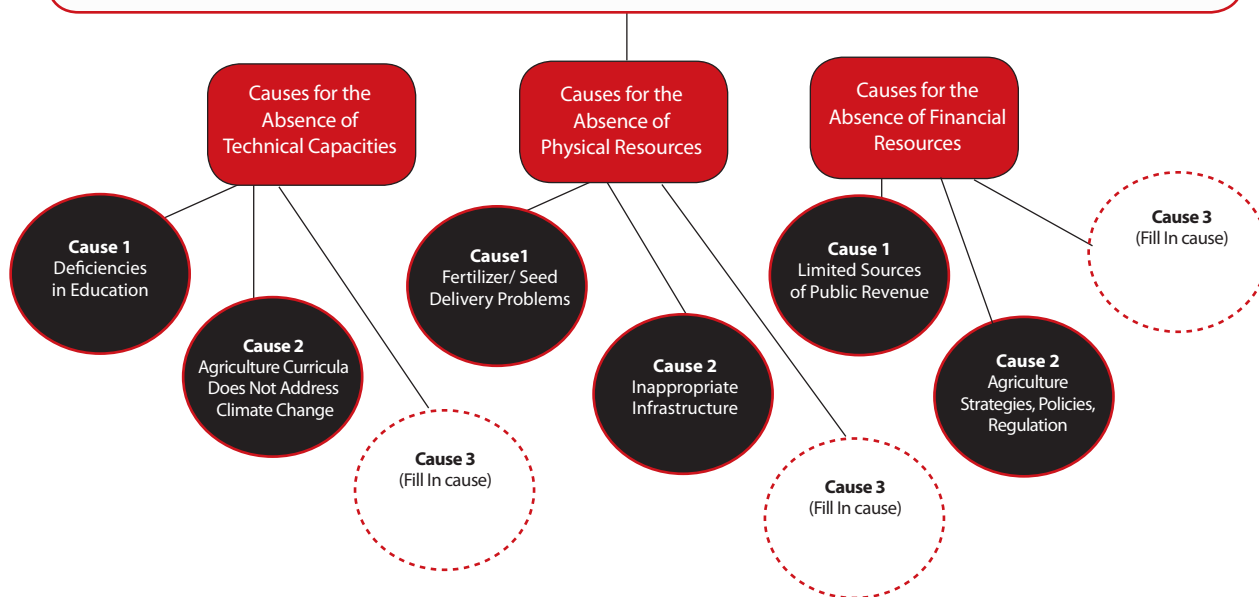
Step 3: Identify and Articulate the Normative Response

Implementing the Key Steps: An Example

The following diagram builds on the example illustrated in Step 2. It identifies and articulates some examples of potential normative responses to the identified problems. The same 'question and answer' process that was used for Step 2 should be employed when identifying the normative response. For the purposes of this Toolkit, only two normative responses were given for each problem. In practice, however, there are usually more. The project developer should carry out the 'question and answer' process until he/she has exhausted the number of normative responses for each problem.

The Problem Statement

Increasing temperatures and reduced rainfall are adversely affecting agriculture production in country X. The underlying causes of vulnerability are many and may include the lack of necessary technical capacity and physical and financial resources to adapt to and overcome worsening climate change conditions.



The Normative Response

Technical Capacity

1. School children and adults receiving a high level of education in agronomy and adaptation to climate change
2. Government investing in and expanding an agricultural extension service highly skilled in implementing adaptation to climate change measures
3. (Fill in normative response)

Physical Resources

1. Investing a considerably larger portion of the annual budget in the agricultural sector than is presently allocated
2. Taking climate change into account when investing in infrastructure for the agricultural sector
3. (Fill in normative response)

Financial Resources

1. Government investing in the agricultural sector
2. Agricultural productivity per unit land area increased across the country
3. (Fill in normative response)

Note: Modified from UNDAF Guidelines, 2009

Sustainable Resource Management: Mongolia



Source: UN Photo/Eskinder Debebe, Tarialan, Mongolia, July 2009

Step 3

Information and Resources to Undertake the Task

Several inputs need to be considered when formulating the normative response:

- » Results of climate change risk assessments
- » Findings from technical assessments including those from applied research
- » Technical expertise – local , sub-national, national and, where relevant, international
- » Political considerations

These resources may be consulted when identifying the normative response. They are similar to those outlined in previous sections. The adaptation chapters of the Vulnerability and Adaptation section of National Communications and NAPAs are an excellent place to start research.

Additional Considerations

It may be useful to consider the following when articulating the normative response.

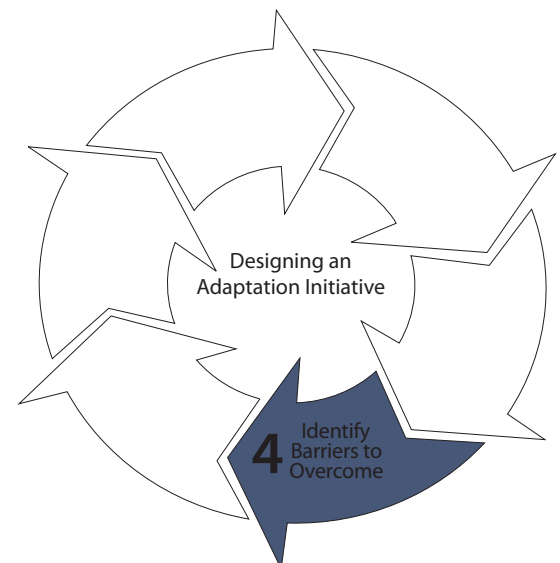
1. It is important to make the distinction between which normative responses are (or should be) achieved irrespective of climate change (i.e., baseline development), and which responses are necessary because of the risks and opportunities associated with climate change. This distinction is important for articulating the value-added contribution of those financial resources that have been made available to support a targeted response to address climate change.
2. How is the normative response embedded in and dependent on existing policies, strategies, and investments? This is important to ensure that the proposed adaptation initiative is anchored within ongoing baseline development efforts. The answer to the above question may have the added value of helping to identify potential co-financing opportunities, including linkages that should be made to ongoing and/or planned programmes and projects.
3. Who/what entity is best placed and has the capacity, either locally or internationally, to support implementation of the identified normative responses?



WHAT IS PREVENTING IMPLEMENTATION OF THE NORMATIVE RESPONSE?

STEP 4 Identify Barriers

Once the normative response is articulated, the next step is to identify the barriers that need to be overcome. A comprehensive mapping of all the critical barriers is required. This helps to determine: a) what the adaptation initiative specifically seeks to achieve; and b) what linkages the initiative has to other ongoing initiatives, strategies, and interventions. It establishes a project baseline from which to build, recognizing that a single initiative will be able to contribute to the resolution of some, but not all, barriers. Resolving macro-level barriers is usually not feasible through any single project.



Understanding the Task

Barriers are usually identified through focus group discussions with relevant stakeholders, and a review of relevant background documentation. During this process, it is critical to hear, understand, and capture different points of view, and draw upon local expertise as much as possible. Views may differ between and among stakeholder groups. For example, when speaking with national government officials regarding local district adaptation measures against sea level rise, they might describe the barrier as the lack of motivation of local officials to implement measures described in new policy reforms. However, when discussing the same issues with local officials, they might describe the barrier as a low level of awareness due to a lack of training of government officials or experts, due in turn to an inadequate budget.

When identifying barriers, it is important to match them to specific adaptation initiatives. This ensures that the barrier can be effectively addressed and overcome. Some barriers may be better or more appropriately addressed through other parallel initiatives. Such parallel initiatives may not be motivated by climate change but are necessary nonetheless. In this context, developing partnerships as well as leveraging and factoring in other initiatives in the design of the adaptation-focused initiative are critical.

Approaching the Task

It is important to triangulate the information on key barriers as they emerge. Particular areas to document and organize are:

- » Stakeholder discussions
- » One-on-one interviews with targeted stakeholders in public/private institutions, academia, NGOs and civil society, as well as technical and non-technical experts
- » Findings from scientific documentation, risk/economic assessments and/or other technical assessments

Implementing the Key Steps: An Example

This diagram illustrates the normative responses identified for the example used in the previous sections as well as the barriers identified that need to be overcome in order to achieve the desired solution. The same 'question and answer' process that was used for the previous Steps should be employed here.

For the purposes of this Toolkit, only two normative responses were given for each problem. In practice, however, there are usually more. The project developer should carry out the 'question and answer' process until the he/she has exhausted the number of barriers for each problem. This process is an integral part of the key steps approach offered in this Toolkit.

The Problem Statement

The majority of farmers in country/region/community X lack the necessary technical capacity and physical and financial resources to adapt and overcome worsening climatic conditions.

The Normative Response

Technical Capacity

1. School children and adults receiving a high level of education in agronomy and adaptation to climate change
2. Government investing in and expanding an agricultural extension service highly skilled in implementing adaptation to climate change measures
3. (Fill in normative response)

Physical Resources

1. Investing a considerably larger portion of the annual budget in the agricultural sector than is presently allocated
2. Taking climate change into account when investing in infrastructure for the agricultural sector
3. (Fill in normative response)

Financial Resources

1. Government investing in the agricultural sector
2. Agricultural productivity per unit land area increased across the country
3. (Fill in normative response)

Key Barriers

Technical Capacity

1. Not sensitized to the educational needs of the agricultural sector
2. Lack necessary technical skills for supporting climate-resilient policy formulation
3. (Fill in key barrier)

Physical Resources

1. Government strategies, policies and legislation in the agricultural sector do not take climate change into account
2. Limited scientific demonstration of successful adaptation interventions in the agricultural sector
3. (Fill in key barrier)

Financial Resources

1. Alternative livelihoods are largely untested and consequently rural populations are hesitant to take the risk of establishing new businesses
2. Rural populations have a culture of subsistence farming and do not necessarily seize new business opportunities as a result
3. (Fill in key barrier)



Information and Resources to Undertake the Task

There are a number of pragmatic measures that can be taken to identify barriers. The critical ones are outlined below.

- » Organize a discussion with stakeholders about the perceived challenges and opportunities that exist in realizing the normative responses that have previously been identified
- » Prepare an inventory of key items as they emerge and include a plan for structural organization in the future
- » Ensure that the discussion on barriers is contextualized to issues at the local, sub-national, and national levels

It is necessary to make a list and review all potential initiatives before making a selection. It is important to note that one initiative is unlikely to tackle all barriers.

Definition and Types of Barriers

Barriers can be a combination of information constraints, institutional failures, capacity constraints, economic constraints, and political factors. They are specific to the national, sub-national, and local level conditions.

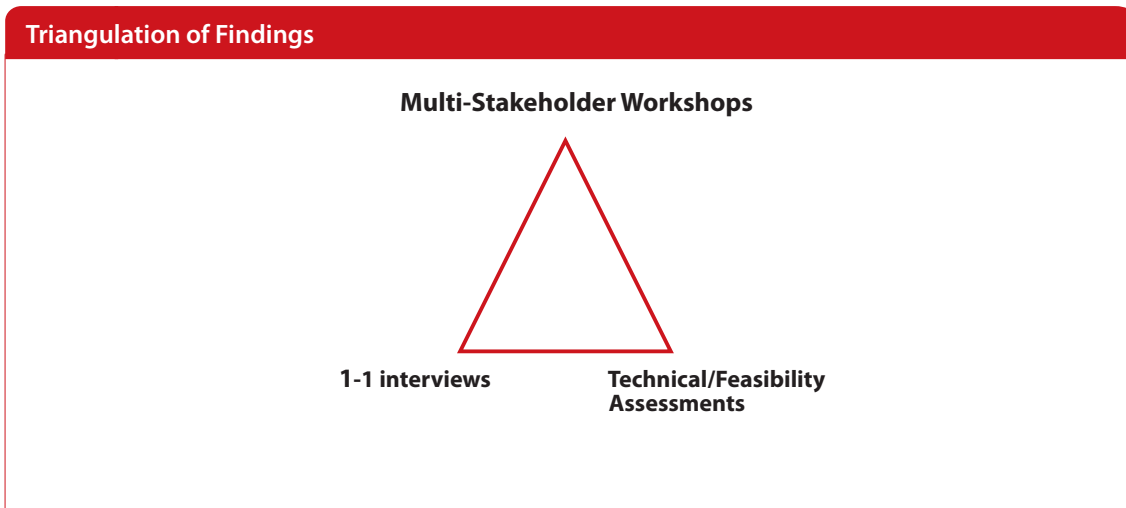
- » Weak institutional capacity of relevant public and private entities to support/facilitate necessary behavioral adjustments
- » Rapid turnover in Ministries, Directorates, and others
- » Weak governance and shortage of staff with relevant skills and necessary mandates
- » Lack of political will
- » Absence of necessary climate-resilient development strategies and supportive policies
- » Unreliable/inadequate information to support necessary decision-making (from basic data to results of policy relevant analytical and feasibility assessments)
- » Financial constraints to support implementation
- » Overlap of responsibilities between institutions leading to inefficient and ineffective implementation of adaptation measures
- » Local communities' limited awareness regarding the issues, limited access to information/knowledge
- » Enforcement difficulties for policies that have been designed and introduced

Additional Considerations

It is important to 'triangulate' information on key barriers as it emerges from the process. Particular areas to document and organize are:

- » Stakeholder discussions
- » One-on-one interviews with targeted stakeholders in public/private institutions, academia, NGOS, and civil society as well as technical and non-technical experts
- » Findings from scientific documentation, risk/economic assessments, and/or other technical assessments.

Triangulation of Findings

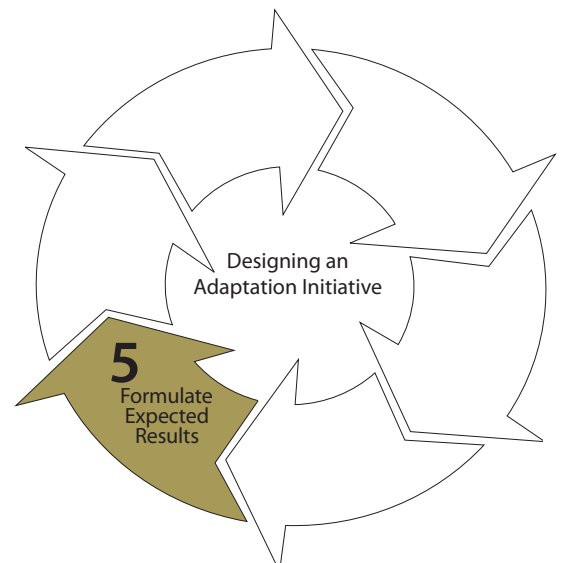


WHAT ARE THE EXPECTED OUTCOMES/ KEY RESULTS OF THE INITIATIVE?



STEP 5 Formulate Expected Results

So far, this Toolkit has provided guidance on how to identify the problem (Step 1), how to identify causes (Step 2), how to articulate the normative response (Step 3), and how to identify and articulate barriers (Step 4) that need to be overcome. The next step is to formulate and outline the key results that the initiative is expected to achieve. It is important that expected results from the initiative are clearly articulated, with sound indicators for measuring success. In addition, the formulation of expected results should consider linkages to other climate change motivated initiatives or existing development concerns to maximize the impact of each project.



Understanding the Task

An Example of a Results-Based Management Structure

The following is an example of a Results-Based Management structure employed by Development Agencies when programming resources from the LDCF and SCCF.

Goal

The goal is aligned with an overarching strategy (e.g., Poverty Reduction Strategy Papers) and/or programme. It is a higher-order purpose toward which a number of distinct initiatives contribute. Implicit in the articulation of a goal is the pursuit of long-term benefits.

Objective

The objective is essentially an articulation of the overall intent/impact of a single initiative. It is usually expressed as an overarching purpose that can be achieved by the initiative on its own. Benefits accrue to target beneficiaries when outcomes are realized. Ideally, each initiative should have a single and well defined objective that is both achievable and measurable.

Outputs

The outputs are described as the tangible products and services that the initiative will produce. These are the direct result of inputs/activities.

Approaching the Task

Formulating the expected results of an adaptation initiative, like with any project, must be approached with care. The following are guiding principles that may be useful to bear in mind during this stage of project design.

1. Be clear about how the expected results from the initiative (especially those relying on adaptation funds) differ from expected results from baseline development initiatives (financed by regular development funds—e.g., ODA). This is necessary to avoid duplication and parallel interventions. Also, it is critical to maximize the potential for the adaptation funding to catalyze changes that would be different from business-as-usual development. It will frequently be necessary to define what is likely to occur without an intervention (i.e., baseline development) as well as the value-added benefits (additionality) of the adaptation interventions.
2. Consider lessons learned when formulating the expected results. It is important to consider what has or has not been successful in the past to avoid making similar mistakes in the future. Spend the time required to design an initiative that will provide lessons and input to future projects.

Lessons that will be of particular value for iteratively adjusting strategies, policies, and measures for promoting adaptation include:

- » **Quantification of cost-effectiveness of the intervention.** How far did the intervention reduce the effects of long-term climate change, including variability on the vulnerability of the project beneficiaries? This will require monitoring of a control group to effectively attribute changes in vulnerability to project interventions.
 - » **Economic evidence of the returns to different adaptation investments** will help governments work out where they should invest their marginal adaptation dollar.
 - » **Returns on adaptation investments in natural capital and built capital** help governments determine where they should invest their marginal adaptation dollar.
 - » **Role of the private sector in servicing/supplying adaptation solutions.**
 - » **Role of Government in providing policy, regulatory or financial support to replicate interventions.**
3. Structure the adaptation initiative to be financially, socially, and environmentally feasible as well as cost-effective. Different types of costs/benefits of the proposed responses should be ascertained to develop a realistic work-plan for the project.
 4. Avoid focusing discussion on activities or inputs when articulating key results. These are important and should be addressed, but given budgetary and other operational implications it is more effective to discuss such matters in the context of desired results.



Information and Resources to Undertake the Task

The following pragmatic steps can be taken to identify and formulate expected results.

1. Discuss with stakeholders overarching key results that need to be achieved in order to overcome the identified barriers.
2. Prioritize the expected key results in consideration of a range of factors, including:
 - a) limited funding; b) defined time-line for implementation; and c) planned and ongoing initiatives that are relevant.
3. Use an appropriately amended generic tool such as Multi-Criteria-Analysis to prioritize results.
4. Agree on key results and then articulate tangible products and services that must be realized in order to deliver the expected results.
5. Sketch the likely inputs that are required for the products and services to be delivered, including related associated costs.
6. Revisit and question decisions as well as consider key inputs, including budgetary considerations and the implementation timeline.
7. Allocate sufficient time for a detailed discussion among stakeholders.
8. Use an independent moderator/facilitator, if possible, to guide and manage the discussions.
9. Use a standard description that clearly delineates the hierarchy of key results, outputs, activities, and inputs to guide the discussion. If stakeholders are clear about this hierarchy from the outset, the discussions are more likely to be focused and productive.
10. Consider an institution, or group of institutions, that may be required to play a prominent role during implementation. Assign an institution or group of institutions that may be required to play a prominent role during the implementation phase as a lead institution. Define the terms of reference for implementation for this institution (e.g., monitoring and reporting results).
11. Define an appropriate monitoring and evaluation framework for the initiative. This is a critical part of project design and implementation. Adequate budgetary resources should be allocated for this equal to approximately 5-7% of the overall budget for the initiative.



ADDITIONALITY IN THE CONTEXT OF CLIMATE CHANGE ADAPTATION

Within Decision 3 of the Eleventh Conference of the Parties (COP 11), the UNFCCC defines the additional costs of climate change as the costs imposed on vulnerable countries to meet their immediate adaptation needs. Currently, operationalized adaptation funds such as those of the UNFCCC's LDCF and SDCF, both managed by the GEF, provide resources to meet the 'additional costs' of adapting to climate change. The UNFCCC's newly emerging Adaptation Fund also adopts this principle (AFB/B.7/4, August 31, 2009) and defines an adaptation initiative as including: "a set of activities aimed at addressing the adverse impacts of and risks posed by climate change."

The 'additional costs' of managing climate change risks/opportunities, 'additionality of climate change adaptation,' 'additional cost reasoning,' or 'adaptation alternatives' effectively refer to the fundamental idea that is reflected in Decision 3, COP 11. The articulation of 'additionality' involves a two-step process. In the first step, a baseline scenario is established. This is defined as 'business-as-usual' development with no consideration of the likely implications of long-term climate change. In the second step, an alternative scenario is defined. The alternative scenario describes those key results/outcomes that are to be achieved by a set of interventions (activities) that explicitly address climate change concerns. This includes, as the operational guidelines of the UNFCCC's AF outlines, an "altered plan to build adaptive capacity/increase resilience."

Additonal Considerations

The following provides a list of additional items to consider when formulating a plan for expected initiative results.

Key Indicators, Risks and Assumptions

- » Provide a narrative of the impact and performance indicators, risks and assumptions underlying the initiative, and risk reduction plan

Cost-effectiveness

- » Outline the cost-effectiveness of the proposed outcomes, which can include the results of a financial feasibility assessment, a cost-effectiveness analysis and/or a cost-benefit analysis

Sustainability

- » Describe the main factors affecting financial sustainability of the project beyond the duration of the adaptation grant
- » Describe how the proposed initiative ensures continuation of benefits after completion of project implementation including environmental, social, institutional and financial sustainability



- » Describe how this problem affects national development ambitions/Millennium Development Goals and/or relates to national plans/programmes, including programmes that include a Disaster-Risk-Reduction component
- » Describe the exit strategy and what will happen when the financial support (presumably from a grant) ends. Does the project simply end and benefits cease to flow?

Replicability

- » Explain how the project is replicable
- » Describe the proposed approach to knowledge transfer (e.g., dissemination of lessons, training workshops, information exchange, national and regional forum, etc.) and provide the budget associated with these efforts

Cross-Cutting

- » Create a plan for stakeholder involvement
- » Include stakeholder identification (list of stakeholder groups, type of organization, contact information, type(s) of involvement in project, etc.)
- » Summarize type and method of information disseminated, number of consultations held, and similar activities that occurred during the preparation phase
- » List activities planned during implementation and evaluation (topics, groups involved outcomes, etc.)
- » Outline stakeholder participation and include long-term involvement in decision making and implementation, and roles and responsibilities of relevant stakeholders in project implementation
- » Explain social issues and their impacts on beneficiaries and vulnerable groups, especially indigenous communities, women, and displaced households, and how the marginal groups are going to be involved in the project implementation



**REVIEW FIRST FIVE STEPS &
COMPLETE CHECKLISTS**

STEP 6 | Review and Complete Checklists

This section provides the user with a chance to review the first five steps addressed in Chapter 2. Complete the checklists below to ensure that all critical elements of the adaptation initiative are addressed in the design.



Activities to be done	Yes/ No	Comments
Making the Case		
1. Key stakeholders properly identified and consulted		
2. Decision makers or local community leaders consulted		
3. Stakeholder consultation table developed		
4. Potential roles, responsibilities and contacts of key stakeholders identified		
5. National Communications to the UNFCCC and other relevant reports referenced and consulted		
6. National and sectoral, regional and local development plans consulted		
7. Hard historical climate data consulted and analyzed		
8. Climate change problem clearly identified and stated		
9. Non-climate change problem identified		
10. Immediate, underlying and root causes identified		
11. Vulnerable groups, areas or sectors identified		
12. Level of vulnerability assessed		
13. The preferred situation formulated		
14. Barriers to the preferred situation identified		
15. Responses identified		

Designing the initiative		
1. Specific attitudes and priorities of key stakeholders assessed		
2. One objective of the initiative identified		
3. Outcomes of the initiative identified		
4. Outputs of the initiative identified		
5. Outcomes and outputs prioritized		
6. Justifications provided (e.g., baseline and alternative scenario for the selected outcomes described)		
7. Feasibility of the selected outcomes assessed		
8. Logical Framework Analysis established		
9. Indicators, risks and assumptions for each outcome/output identified		
10. Indicators are S.M.A.R.T. (Simple, Measurable, Achievable, Realistic, Timebound)		
11. Risk Analysis Matrix developed		
12. Strategy to mitigate identified risks developed		
13. Cost of selected outcomes and outputs identified		
14. Co-financing identified		
15. Funding plan established		
16. Corresponding budget established		
Ownership, Sectoral Linkages, Sustainability and Replicability		
1. Linkages between the initiative concept and national, sub-national, and/or local development plans, strategies, and policies established		
2. Ownership assessed and stated		
3. Outcomes and outputs sustainability and replicability assessed		
4. Potential benefits detailed		
Monitoring and Evaluation (M&E)		
1. M&E requirements budgeted		
2. Indicators clearly identified		
3. Relevant and illustrative baseline information provided		
4. Targets, milestones, sources of data, frequency, and responsibility clearly identified		
5. Types and number of reports identified		
6. Evaluations identified		
7. Framework for learning and knowledge sharing presented		

CHAPTER 2: KEY STEPS

Step 6: Review and Complete Checklists

Institutional Arrangements		
1. Capacity of institutions potentially involved assessed		
2. Capacity development plan provided		
3. Management arrangements clearly presented		
4. Links between central institutions and sub-national ones stated		
5. Management diagram provided		



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3

Building Consensus

Harnessing Stakeholder Consensus for Designing Adaptation Initiatives

Understanding the Task

There are several key topics covered in this section that are vital components of consensus building.

- » Stakeholder involvement
- » Interdisciplinary expert team
- » Critical data and information required

This discussion attempts to provide a framework for consensus building and to illustrate how to engage key stakeholder groups in the process.

Stakeholder consultation is integral when designing and implementing an adaptation initiative. The purpose of engaging stakeholders is to define the problem, identify causes, articulate the normative response, identify key barriers to overcome in reaching the desired situation, and to design appropriate responses that will achieve the desired solution.

At a very fundamental level, stakeholder involvement is critical for strengthening ownership and ensuring relevance to local priority needs. Stakeholder involvement is necessary to avoid duplication, maximize synergies, ensure coordination, and consider lessons from failed or less successful past efforts. Further, given the nature of adaptation and its intrinsic link to core development, stakeholder involvement is required to effectively pinpoint where synergies with other national/sub-national programmes or projects, including those funded by local or international development partners, can be promoted.

Approaching the Task

The following provide guidance on how to effectively engage stakeholders.

Set Up an Interdisciplinary Team

A critical step in the stakeholder analysis process is establishing an effective team that is interdisciplinary and includes scientific experts as well as policy and socio-economic experts. The team should encourage the active participation of various stakeholders, including community leaders. The team members should be experts from different fields and representatives from various relevant institutions. This mix will permit an optimal analysis of the problem at hand from a variety of viewpoints.

Engage Stakeholders Early

Early engagement of relevant stakeholders is critical to any adaptation initiative to ensure commitment and ownership of the process, i.e., buy-in. This is especially true at the community level, where many autonomous adaptation measures are already taking place, and where a wealth of traditional knowledge provides a basis for the design of adaptation measures.

Pursue Inter-Sectoral Engagement

An inter-sectoral engagement, including the participation of the national focal point to the UNFCCC and the relevant focal points from key line Ministries (including National Planning and Finance), is a recommended part of this process. Key stakeholders from government, the private sector, civil society, non-governmental organizations, academia, as well as international development organizations of relevance should be involved in the process.

Manage the Number of Stakeholders

The number and span of stakeholders will vary depending on the size of the adaptation initiative. A judicious balance must be found in engaging stakeholders at different levels. An initial bottom-up approach is predicated (involving the direct beneficiaries first and foremost), but it is also important to incite the interest and commitment of government agencies and other actors from civil society, key research institutions, and non-governmental organizations, especially for more programmatic-based approaches.



Methods for Engaging Stakeholders

There are a variety of ways in which planners can consult and engage stakeholders at all levels. It is important to keep in mind that the techniques will vary depending on the type of stakeholder.

Focus Group Discussions/Group Work

Focus group discussions can lead to the identification of autonomous adaptation efforts that are already ongoing as well as evident adaptation needs that require more systematic interventions and investments. Focus group discussions are usually guided by a series of open-ended questions to foster discussion. Information obtained from focus groups can be greatly affected by the dynamics of the particular group (e.g., gender relations, local hierarchies, power relationships, etc.). Women and children have been identified as being among the most vulnerable groups affected by climate change, meaning that these stakeholder groups should be involved from the very beginning. Gender-specific focus groups might be necessary. Also, facilitator-group dynamics will need to be taken into consideration. For example, a male facilitator would not necessarily illicit the same responses from an all female focus group as a woman facilitator would.

Awareness-Raising Campaigns

The objective of awareness-raising campaigns is to engage local stakeholders and build sufficient momentum at the community level for new adaptation initiatives. Such campaigns include tangible communication activities that explain the links between local priorities, which might not be explicitly linked to climate change, and the impacts of climate change. Local stakeholders such as households, local organizations, influential leaders and educators should be involved in these campaigns. They should explain how communal risk contexts are changing, how this will effect individual households and livelihood groups, and what can potentially be done to increase preparation and protection from climate-induced shocks and stresses. Materials should be translated into local dialects and should use a variety of appropriate communication tools (e.g., local radio, drama, flyers, posters, video screenings, etc.). The photo on page 29 is an example of how visual art was used to communicate the potential impacts of climate change at the community-level. It includes an interpretation of current coping strategies and how they may be changed in the future. It should be noted that awareness-raising campaigns increase awareness and expectations. Ideally, such campaigns should take place with a concrete follow-up or investment perspective for tangible risk reduction activities.

Information and Resources to Undertake the Task

Tasks	Activities
Define project and scope	<ul style="list-style-type: none"> » Define the stakeholder context (who needs to be involved for what purposes given the objective of designing an adaptation initiative) » Review the effectiveness, opportunities and gaps for key governance and institutional systems to facilitate adaptation » Review the existing enabling environment and policy formulation and implementation process for entry points for promoting adaptation » Define the project objectives and expected outcomes » Develop a communication plan
Establish project team	<ul style="list-style-type: none"> » Select an inter-disciplinary team to design the intervention
Review and synthesize existing information on vulnerability and adaptation	<ul style="list-style-type: none"> » Review and synthesize existing information on vulnerability and climate change risk, based on previous studies, expert opinion, and policy context » Describe policies and measures in place that influence the ability to successfully cope with climate variability as well as manage likely implications of long-term climate change » Identify indicators of vulnerability and adaptive capacity
Design project for adaptation	<ul style="list-style-type: none"> » Select approach and method for formulating an adaptation initiative that is operational and financially viable » Describe process for integrating findings of assessments of future vulnerability and adaptation, and for implementing options and recommendations into the design of the adaptation initiative » Develop monitoring and evaluation plan for the initiative » Develop terms of reference for project implementation

Source: Adapted from APF, Technical Paper 1, 2004)

Additional Considerations

1. Prepare a list of critical persons who need to be consulted in designing an adaptation project. The guiding questions may be useful.
2. Validate this list with other partners involved in the design of the initiative. This includes those who may be funding the initiative, the UNFCCC Focal Point of the country, and likely institutions/organizations who may be involved in carrying out day-to-day work.
3. Organize a series of consultations (in appropriate format with independent facilitators) to discuss:
 - » The problem to be addressed (see Section 2, Step 1)
 - » Likely causes (see Section 2, Step 2)
 - » Preferred responses (see Section 2, Step 3)
 - » Barriers that need to be overcome (see Section 2, Step 4)
 - » What the project will try to achieve by way of key results (see Section 2, Step 5)



4. Review and validate findings of technical experts entrusted with preparing the project design including implementation arrangements. A series of consultations/engagements with key stakeholders will be required until consensus is reached on the scope of the initiative.

Diverse participation is key to gaining understanding of both the context and perceived causes of the problem. It also helps with the identification of desired outcomes and barriers. Bringing a range of stakeholders together can facilitate agreement on important elements of the eventual response strategy, including priority areas for action.

It is more likely that participants will agree with and be more committed to successful implementation of the initiative if stakeholders are involved in the decision-making process from the outset. In addition, the entire process fosters knowledge-sharing and can help build adaptive capacity as stakeholders are no longer mere recipients of a prescriptive solution that is imposed from outside. Early engagement can help improve the likelihood of equity in decision making and help foster positive conflict resolution.

Questions to Identify Key Stakeholders for an Adaptation Initiative

The questions listed below serve as a guide for identifying appropriate stakeholders to design and implement an adaptation initiative.

- » Who is directly affected by climate change, including variability?
- » Who might already have experiences in this domain?
- » Who could be the potential leaders in this initiative?
- » Who might have access to the funds necessary to make this initiative possible?
- » Who can help inform the discussion on problem identification based on a thorough understanding of the issues?
- » Who can help inform the discussion on potential response measures to manage the short, medium, and long-term implications of climate change, including variability?
- » Who is in a position to influence policy adjustments to support adaptation in the context of the identified problem?
- » Who can advise on the governance, institutional, policy, economic and other systems required to ensure that the response measures deliver long-term results and benefits?
- » Who can provide assistance in preparing a monitoring system for measuring the effectiveness of response measures?

CHAPTER 3: BUILDING CONSENSUS

Harnessing Stakeholder Consensus for Designing Adaptation Initiatives

Level/Scale of the Initiative	Examples of Types of Stakeholders
National Level	<ul style="list-style-type: none">» Central government entities (e.g., line ministries)» Ministerial departments and directorates» Research councils, climate change and sustainable development think tanks, academic institutions» International aid and development organizations (bilateral, multilateral)» International and national NGOs» Private sector entities with national reach
Sub-National Level	<ul style="list-style-type: none">» Decentralized and regional governments (e.g., province/district authorities)» Multilateral and bilateral international aid organizations» NGOs/CBOs with regional offices» Private sector entities with regional range» Volunteer organizations
Local Level	<ul style="list-style-type: none">» Community-based organizations (CBOs)» Local NGOs» Private sector enterprises» Direct beneficiaries (e.g., households)» Traditional and religious leaders, village elders» Volunteer organizations



THE PARTICIPATORY RURAL APPRAISAL TOOL

Participatory Rural Appraisal (PRA) emerged from Rapid Rural Appraisal as a method utilized to gain input from local beneficiaries. PRA allows for initiative practitioners to plan for context-appropriate interventions. It promotes information sharing, analysis and action among stakeholders through group animation and exercises. The key premise is that local populations are capable of making their own appraisal, plans and needs analysis. PRA primarily focuses on the collection of qualitative data and reflects a combination of techniques that are particular to each development intervention context.

PRA is not prescriptive nor should it be interpreted as a blueprint. The PRA team should be as interdisciplinary as possible to represent a mixed group of local beneficiaries and should include national representatives and expatriates, who have diverse educational backgrounds and experiences. Additionally, PRA is based on transparent procedures. Some common tools used include:

- » Semi-structured interviewing
- » Focus group discussions
- » Preference ranking
- » Mapping and modeling
- » Seasonal and historical diagramming



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4 Tools and Methodologies

Key Tools and Methodologies for Designing an Adaptation Initiative

This section outlines a list of tools and methods to evaluate impacts of vulnerability and adaptation to climate change that are readily available for use. Please note that the list below does not indicate UNDP's endorsement of any specific tool.

Complete Frameworks and Supporting Toolkits

The complete frameworks and associated toolkits presented in this chapter span a broad range of approaches. The IPCC Technical Guidelines and the U.S. Country Studies Program represent examples of first generation approaches to the assessment of vulnerability and adaptation. They have an analytical thrust, and focus on an approach that emphasizes the identification and quantification of impacts. The APF is a second-generation assessment and places the assessment of vulnerability at the center of the process. The AIACC approach (technically a collection of projects rather than an explicit framework) incorporates elements of both first generation and second-generation assessments. The NAPA Guidelines provide some conceptual and procedural oversight for the process of producing a document that identifies national priorities for adaptation. The UKCIP report provides guidance to those engaged in decision making and policy processes. It lays out an approach for integrating climate adaptation decisions and more generally climate influenced decisions into the broader context of institutional decision-making. The UKCIP framework is distinctive in that it casts the assessment process in risk and decision under uncertain terms.

Tools		Links to Website
1.	IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptations	http://www.ipcc.ch/publications_and_data/publications_and_data_reports.htm
2.	U.S. Country Studies Program (USCSP)	http://www.gcrio.org/CSP/webpage.html
3.	UNDP Adaptation Policy Framework (APF)	http://www.undp.org/climatechange/adapt/apf.html
4.	Assessments of Impacts and Adaptations to Climate Change in Multiple Regions and Sectors (AIACC)	http://www.aiaccproject.org/
5.	Guidelines for the Preparation of National Adaptation Programmes of Action (NAPA)	http://unfccc.int/files/cooperation_and_support/ldc/application/pdf/annguide.pdf
6.	United Kingdom Climate Impacts Programme (UKCIP) Climate Adaptation: Risk, Uncertainty and Decision Making	http://www.ukcip.org.uk/index.php?option=com_content&task=view&id=62

Cross-Cutting Issues and Multi-Sector Approaches

The tools presented in this part encompass a broad range of applications. Some groups of tools address important cross-cutting themes such as use of climate or socio-economic scenario data. Others, such as decision analysis, provide more detail on tools that might be most applicable to a particular step of the vulnerability and adaptation assessment process. Others still, such as stakeholder analysis, encompass not only a set of tools but also, in some instances, a partial framework that prescribes a process or an approach to undertaking several steps of a complete assessment.

General Tools		
1.	IPCC-TGICIA Guidelines on the Use of Scenario Data for Climate Impact and Adaptation Assessment	http://www.ipcc-data.org/guidelines/TGICA_guidance_sdciaa_v2_final.pdf
2.	IPCC-TGICIA Guidelines on the Use of Scenario Data for Climate Impact and Adaptation Assessment	http://www.ipcc-data.org/guidelines/TGICA_guidance_sdciaa_v2_final.pdf
3.	The Climate Impacts LINK Project	http://badc.nerc.ac.uk/data/link/
4.	NCEP Global Ocean Data Assimilation System (GODAS)	http://www.cpc.ncep.noaa.gov/products/GODAS/
5.	RClimDex	http://cccma.seos.uvic.ca/etccdi/
6.	SimCLIM	http://www.climsystems.com/
7.	UKCIP02 Climate Change Scenarios	http://www.ukcip.org.uk/index.php?id=161&option=com_content&task=view
8.	Climate Information and Prediction Services (CLIPS) Project and Regional Climate Outlook Forums (RCOFs)	http://www.wmo.int/pages/prog/wcp/wcasp/clips/outlooks/climate_forecasts.html

Development and Application of Scenarios

The documents and techniques presented here address the development and use of scenario data in the vulnerability and adaptation assessment process.

Climate Downscaling Techniques		
1.	Statistical Down Scaling Model (SDSM)	https://co-public.lboro.ac.uk/cocwd/SDSM/
2.	MAGICC/SCENGEN	http://www.cru.uea.ac.uk/~mikeh/software/
3.	COSMIC2 (Country Specific Model for Intertemporal Climate Vers. 2)	Request at: ljwillia@epri.com
4.	PRECIS (Providing Regional Climates for Impacts Studies)	http://precis.metoffice.com/other_links.html



CHAPTER 4: TOOLS AND METHODOLOGIES

Key Tools and Methodologies for Designing an Adaptation Initiative

Decision Tools		
The tools described in this section assist analysts in making choices between adaptation options		
1.	Tool for Environmental Assessment and Management (TEAM)	http://www.epa.gov/eims/global/team1.pdf
2.	UKCIP Adaptation Wizard	http://www.ukcip.org.uk/index.php?Itemid=273&id=147&option=com_content&task=view
3.	Adaptation Actions	http://www.ukcip.org.uk/index.php?option=com_content&task=view&id=286
4.	Business Area Climate Impacts Assessment Tool (BACLIAT)	http://www.ukcip.org.uk/index.php?id=82&option=com_content&task=view
5.	Community-based Risk Screening Tool – Adaptation & Livelihoods (Cristal)	http://www.cristaltool.org/

Stakeholder Approaches

Stakeholder approaches in general emphasize the importance of ensuring that the decisions to be analyzed, how they are analyzed, and the actions taken as a result of this analysis are driven by those who are affected by climate change and those who would be involved in the implementation of adaptations. The stakeholder approaches presented here represent a way of analyzing the institutional and organizational context of the adaptation strategy planning process more than they do specific tools to be applied to an assessment.

Stakeholder Approaches		
1.	Community-Based Disaster Risk Management Field Practitioners' Handbook	http://www.adpc.net/pdr-sea/publications/12Handbk.pdf
2.	Guidelines on Climate Watches	www.proventionconsortium.org/toolkit.htm
3.	Natural Disaster Mitigation in Drinking Water and Sewerage Systems: Guidelines for Vulnerability Analysis	http://www.paho.org/English/DD/PED/natureng.htm

Sector-Specific Tools

The tools described in this section are examples of tools that an analyst might consider employing within a given sector and tend to be applicable to only one sector. The following sectors are included: agriculture, water, coastal resources, and human health.

CHAPTER 4: TOOLS AND METHODOLOGIES

Key Tools and Methodologies for Designing an Adaptation Initiative

Agriculture Sector Tools

The agricultural sector tools presented here range from sector-wide economic analyses to farm-level crop models.

1.	APSIM (Agricultural Production Systems Simulator)	http://www.apsim.info/apsim/Publish/Docs/Documentation.xml
2.	WOFOST	http://ecobas.org/www-server/rem/mdb/wofost.html
3.	ACRU (Agricultural Catchments Research Unit)	http://www.beeh.unp.ac.za/acru
4.	Process Soil and Crop Models: CENTURY	http://www.nrel.colostate.edu/projects/century5/
5.	Information and Decision Support System for Climate Change Studies in South East South America (IDSS-SESA Climate Change)	http://sedac.ciesin.columbia.edu/aiacc/methods.html
6.	Decision Support Systems Linking Agro-Climatic Indices with GCM-Originated Climate Change Scenarios	http://cres.anu.edu.au/outputs/anusplin.php#1
7.	AgroMetShell	http://www.hoefslot.com/agrometshell.htm
8.	Agroclimatic Water Stress Mapping	http://www.fao.org/nr/climpag/hot_2_en.asp
9.	Local Climate Estimator (New_LocClim)	http://www.fao.org/nr/climpag/pub/en3_051002_en.asp
10.	FAOclim 2.0	http://www.fao.org/nr/climpag/pub/en1102_en.asp
11.	CLIMWAT 2.0	http://www.fao.org/nr/water/infores_databases_cropwat.html
12.	CM Box	http://www.fao.org/nr/climpag/aw_6_en.asp
13.	CLOUD (Climate Outlooks and Agent-based Simulation of Adaptation in Africa)	http://www.geog.cam.ac.uk
14.	CRAM (Canadian Regional Agriculture Model)	http://www.gams.com/docs/document.htm
15.	Process Crop Models: Decision Support System for Agrotechnology Transfer (DSSAT) developed under the International Consortium for Agricultural Systems Applications (ICASA)	http://www.icasa.net/
16.	Irrigation Model: CROPWAT	http://www.fao.org/nr/water/infores_databases_cropwat.html
17.	Process Crop Models: Alfalfa 1.4	http://www.ipm.ucdavis.edu/IPMPROJECT/order.html
18.	Process Crop Models: GLYCIM	http://eco.wiz.uni-kassel.de/model_db/mdb/glycim.html



Additional Sections in 2010

This Toolkit is presented as an organic document. Additional lessons are likely to emerge from UNDP's own efforts as well as those of other development agencies and institutions. Many lessons are likely to emerge from initiatives at the local level. This Toolkit will be systematically and continuously updated on a bi-annual basis.

There are other related issues relevant to designing an adaptation initiative. UNDP will prepare the following additional sections to this Toolkit over the coming year.

- 1. Formulating a Workplan Using Results-Based Management***
- 2. Methodologies to Assess the Risks and Assumption of Identified outcomes***
- 3. Programme-Based vs. Project-Based Approaches to Adaptation***
- 4. Monitoring and Evaluations***
- 5. Best Practices for Effective Institutional Arrangements***

If you are interested in making contributions to this Toolkit, please contact the UNDP Adaptation Team at adaptation@undp.org.



REFERENCES

Assessments of Impacts and Adaptations to Climate Change (AIACC) Project. *AIACC Vulnerability and Adaptation Training*, 2002.

Awolowo, Obafemi. *Food Security, Climate Variability and Climate Change in Sub Saharan West Africa*. A Final Report Submitted to AIACC. Project no. AF 23, 2006.

Climate Change Projects Office (CCPO). Department of Trade and Industry; *A Beginner's Guide to the Clean Development Mechanism*, 2004.

CCPO in Association with Department for Environment, Food and Rural Affairs (Defra). *The Joint Implementation and Clean Development Mechanism Processes Explained*, 2004.

Common Country Assessment (CCA) and United Nations Development Assistance Framework. *Guidelines for UN Country Teams on Preparing a CCA and UNDAF*. Updated February 2009.

Crane-Droesch, Andrew. *A Guide to the Vulnerability Reduction Assessment*. Community-Based Adaptation Project, 2009.

Danish Climate and Development Action. *A Tool Kit for Climate Proofing Danish Development Cooperation*. Danish International Development Assistance (Danida), 2005.

European Commission. *Aid Delivery Methods, Project Cycle Management Guidelines*. Volume 1, March 2004.

Global Environment Facility (GEF). *GEF Funding for Adaptation to Climate Change, Power point presentation*. 2009.

GEF. *Detailed Status Report of GEF-3 & GEF-4 LDCF-SCCF-SPA Projects Spreadsheet*. June 2009.

Gitonga, Stephen. *Overview of the CBA Project, Powerpoint Presentation*. GEF- Small Grants Programme, UNDP. 2007.

Germany Agency for Technical Cooperation (GTZ). *Participatory Monitoring and Evaluation (PM&E) with Pastoralists: a Review of Experiences and Annotated Bibliography*, 2002.

Halsnoes, Kirsten, Troerup, Sara. *Experiences from the Danish. Climate and Development Action Programme*, 2006.

International Institute for Sustainable Development (IISD) & International Institute for Environmental Development (IIED). *A Summary of the Third International Workshop on Community-Based Adaptation to Climate Change*. Community-Based Adaptation to Climate Change Bulletin, February 2009 (www.iisd.ca/YMB/SDCAB/).



International Institute for Sustainable Development (IISD), International Union for Conservation of Nature (IUCN), Stockholm Environmental Institute (SEI), and Intercooperation. *A Project Planning and Management Tool. Summary of Community-Based Risk Screening Tool-Adaptation & Livelihoods (CRiSTAL)*, 2008.

IISD, IUCN, SEI and Intercooperation. *Report on Mali Testing*, 2005.

IISD, IUCN, SEI and Intercooperation. *Report on Tanzania Testing*, 2006.

IISD, IUCN, SEI and Intercooperation. *Report on Nicaragua Testing*, 2006.

IISD, IUCN, SEI and Intercooperation. *Report on Sri Lanka Testing*, 2006.

IISD, IUCN, SEI and Intercooperation. *A User's Manual for the Microsoft Excel®-Based CRiSTAL decision support tool*, 2007.

Intergovernmental Panel on Climate Change (IPCC). *Working Group II: Impacts, Adaptation and Vulnerability. Chapter two: Methods and tools*, 2001.

Klein, J.T. *Mainstreaming Climate Adaptation into Development*. A Stockholm Environment Institute Briefing Note for the European Parliament Temporary Committee on Climate Change, 2008.

Leary, Neil & Kulkarni, Jyoti. *A Global Environment Facility Enabling Activity in the Climate Change Focal Area*. Draft Final Report of the AIACC Project, 2007.

Le Groupe-Conseil Baastel sprl. *Evaluation of SDC's Contribution Towards Biodiversity: Impact in the Andean Region*. March 2009.

Le Groupe-Conseil Baastel sprl. *Results-Based Management Practical Training*. July 2009.

OXFAM. *Suffering the Science; Climate Change, People and Poverty*. Briefing Paper, 2009.

Pickering, Jonathan. *Additionality as a Criterion for the Just Allocation of Climate Finance for Developing Countries*. Australian National University, 2009.

Riché, Béatrice. *Climate Change Vulnerability Assessment in Zambia*. IUCN Forest Conservation Programme, 2007.

United Nations. *Common Country Assessment (CCA) and United Nations Development Assistance Framework (UNDAF)*, 2009.

UNDAF. *Technical Brief Assumptions and Risks 2007: v2.0*.

United Nations Development Group (UNDG). *Quality Support & Assurance, Good Practices/Lessons Learned-UNCT Perspectives*, 2003.

UNDG. *Good Practices from the 2005 UNDAFs; Guidelines for UN Country Teams on Preparing a CCA and UNDAF*. 2009.

United Nations Development Programme (UNDP). *A Guide to the Vulnerability Reduction Assessment*. By Andrew Crane Drosch, Nickey Gaseb, Pradeep Kurukulasuriya, Andre Mershon, Katiella Mai Moussa, Dale Rankine & Alejandro Santos. UNDP Working Paper, 2008.

- UNDP. *Monitoring and Evaluation Framework for Adaptation to Climate Change*. UNDP-Draft, 2007.
- UNDP. *Training Manual Supporting UNDP's Programming on Climate Change in Africa*. UNDP-Working Draft, 2008.
- UNDP. *UNDP Project Document Template for Adaptation Projects*, 2008.
- UNDP Evaluation Office (EO). *Handbook on Monitoring and Evaluating for Results*. New York, NY, 2002.
- United Nations Development Programme & Global Environment Facility (GEF). *Adaptation Policy Frameworks for Climate Change; Developing Strategies, Policies and Measures*. 2005.
- UNDP & Global Environment Facility (GEF). *The Community-Based Adaptation Programme Responding to Climate Change One Community at a Time Flyer*, 2009.
- UNDP. *Scoping and Designing an Adaptation Project*. By Kristie L. Ebi, Bo Lim, and Yvette Aguilar. UNDP Adaptation Policy Framework (AFP), Technical Paper 1, 2004.
- United Nations Framework Convention on Climate Change (UNFCCC). With the services of Erica Pinto, Robert C. Kay, Ailbhe Travers CZM pty. Ltd & Stratus Consulting Inc. *Compendium on Methods and Tools to Evaluate Impacts of, and Vulnerability and Adaptation to, Climate Change*. 2008.
- UNFCCC. *Bali Action Plan*, 2007.
- Organisation for Economic Co-operation and Development (OECD)/Development Assistance Committee (DAC). *Policy Guidance on Integrating Climate Change Adaptation into Development Co-operation*, 2009.
- OECD/DAC. *Survey on Monitoring the Paris Declaration: Making Aid more Effective by 2010*. 2008.

UNDP Strategic Priority on Adaptation (SPA) Project Concepts

- Niger Project Concept: Development of sustainable agricultural techniques for adapting to climate change in three villages in the municipality of Roubou, Department of Dakoro, 2009.
- Sady Shakirov Project Concept: Kazakhstan Autumn/winter irrigation as an adaptive mechanism for efficient use of water resources in Southern Kazakhstan, 2009
- Shymkent Project Concept: Kazakhstan: Forest protection belts to combat increasing aridity in Shyrkyn Village, 2009.
- Community Based Adaptation (CBA). Fasitootai, Samoa: Reducing Climate Change-driven erosion through protection and conservation of Mangroves and Coral Reefs, 2009
- CBA. Gagaemauga, Samoa: Community-Based Adaptation for Gagaemauga 3 District, 2009.



UNDP Least Developed Countries Fund (LDCF)/Special Climate Change Fund (SCCF) Project Documents (2007-2009)

Bangladesh: *Community-based Adaptation to Climate Change through Coastal Afforestation in Bangladesh. LDCF Full Size Project (FSP)* Bhutan: *Reducing Climate Change-induced Risks and Vulnerabilities from Glacial Lake Outburst Floods in the Punakha-Wangdi and Chamkhar Valleys. LDCF FSP.*

Burkina Faso: *Strengthening Adaptation Capacities and Reducing the Vulnerability to Climate Change in Burkina Faso. LDCF FSP.*

Ecuador: *Adaptation to Climate Change through Effective Water Governance in Ecuador. SCCF FSP.*

Ethiopia: *Coping with Drought and Climate Change. SCCF FSP* Tanzania: *Incorporating Climate Change in integrated Water Resources Management in Pangani River Basin (Tanzania). SCCF FSP.*

Zimbabwe: *Coping with Drought and Climate Change. SCCF FSP.*

Cambodia: *Promoting Climate-Resilient Water Management and Agricultural Practices in Rural Cambodia. LDCF FSP.*

Samoa: *Integrating Climate Change Risks in the Agriculture and Health Sectors in Samoa (ICCRA&HSS). LDCF FSP.*

Niger: *Implementing NAPA Priority Interventions to Build Resilience and Adaptive Capacity of the Agriculture Sector to Climate Change in Niger. LDCF FSP.*

Mozambique: *Coping with Drought and Climate Change. SCCF Medium Size Project. Pacific: Pacific Islands Adaptation to Climate Change. SCCF FSP.*

Africa Adaptation Programme Project Documents

Ghana Project Document: *Developing capacity and financing options for mainstreaming climate change adaptation in Ghana, with a focus on early warning systems. 2009*

Namibia Project Document: *Building the foundation for a national approach to Climate Change Adaptation (CCA) in Namibia. 2009*

Burkina Faso Project Document: *Strengthening capacity to address climate change adaptation concerns in the preparation and implementation of development plans, programmes and projects. 2009*

Project Document: *Supporting Integrated and Comprehensive Approaches to Climate Change Adaptation in Africa: Inter-Regional Technical Support Component*. 2009

Niger Project Document: *Mainstreaming climate change adaptation in Niger*. 2009

Mozambique Project Document: *Adaptation Action and Mainstreaming in Mozambique*. 2009

Senegal Project Document: *Mainstreaming climate change adaptation into sustainable development in Senegal: with a focus on climate change impacts on coastal zones and agriculture*. 2009

Additional websites

Adaptation Learning Mechanism (ALM)

<http://www.adaptationlearning.net/>

UNFCCC Adaptation Fund

http://unfccc.int/cooperation_and_support/financial_mechanism/adaptation_fund/items/3659.php

http://unfccc.int/files/press/releases/application/pdf/af_board_press_release.pdf

http://unfccc.int/cooperation_and_support/financial_mechanism/adaptation_fund/items/4768.php

Participation and Civic Engagement Tools and Methods

<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTSOCIALDEVELOPMENT/EXTPCENG/0,,contentMDK:20509330~menuPK:1278210~pagePK:148956~piPK:216618~theSitePK:410306,00.html>

Social and Human Sciences Best Practices on Indigenous Knowledge

<http://www.unesco.org/most/bpik19-2.htm>

Raised Beds and Waru Waru Cultivation

<http://www.oas.org/dsd/publications/Unit/oea59e/ch27.htm>

CRiSTAL Tool

<http://www.cristaltool.org>



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