

LEAST DEVELOPED COUNTRIES

NATIONAL ADAPTATION PLANS

Technical guidelines for the national adaptation plan process

LDC EXPERT GROUP, DECEMBER 2012



United Nations
Framework Convention on
Climate Change

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PREFACE

The Least Developed Countries Expert Group (LEG) was established in 2001 to support least developed countries (LDCs) in addressing the adverse impacts of climate change. Since that time, the LEG, in accordance with its original mandate, has provided technical guidance and advice to LDCs on the preparation and implementation of their national adaptation programmes of action (NAPAs). Through its new mandate, received at the sixteenth session of the Conference of the Parties (COP) in 2010 in Cancun, Mexico, the LEG now also provides technical guidance and advice on: the revision and update of NAPAs; the strengthening of gender considerations and considerations regarding vulnerable communities; the integration of NAPAs into development planning; the identification and implementation of medium- and long-term adaptation; and the implementation of the LDC work programme. Furthermore, the LEG also provides technical guidance and support to the national adaptation plan (NAP) process.

These technical guidelines have been developed by the LEG, with input and feedback from the Global Environment Facility (GEF) and its agencies, and experts from other organizations, to support the NAP process, following a request by the COP. They offer a range of options for dealing with each element of the NAP process, and are based on the guiding principles of the NAP process. The NAP process was established to build on the rich experiences of the LDCs in addressing adaptation through the NAPAs, and through it, to address medium- and long-term adaptation. The process aims to assist LDCs to reduce their vulnerability to the impacts of climate change, by building adaptive capacity and resilience, and by facilitating the integration of climate change adaptation into development planning. As laid out in the initial guidelines that were adopted at COP 17, the technical guidelines are framed around the four elements of the NAP process: laying the groundwork and addressing gaps; preparatory

elements; implementation strategies; and reporting, monitoring and review.

The technical guidelines are not prescriptive, and countries can decide on the specific steps for their national process. They are developed in a way that seeks to enhance the coherence of adaptation and development planning within countries, rather than duplicating efforts undertaken or underway. They are intended to facilitate country-owned, country-driven action, that seeks to harness and build upon national-level capacity, with support from various partners, as appropriate. They are designed in a way that allows countries to monitor and review it on a regular basis, and update their NAPs in an iterative manner.

These technical guidelines will assist the LDCs in comprehensively addressing adaptation in a coherent and strategic manner. They will assist countries to develop clearly defined adaptation programmes that country-owned, country-driven, and that catalyze action beyond the implementation of adaptation projects. The LEG recognizes that LDCs will continue to rely on the active support by the LEG and other partners, and stands ready to provide any support regarding the application of these guidelines, and on the overall NAP process.



A handwritten signature in dark ink, appearing to read 'P. Latasi'.

Pepetua Election Latasi
Chair of the LEG
December 2012



ABBREVIATIONS AND ACRONYMS:

Article 6	Article 6 of the UNFCCC on education, training and public awareness	MEA	Multilateral environmental agreements
CARICOM	Caribbean Community	M&E	Monitoring and evaluation
CBA	Cost-benefit analysis	NAP	National adaptation plan
CEA	Cost-effectiveness analysis	NAPA	National adaptation programme of action
COP	Conference of the Parties	NGO	Non-governmental organization
EU	European Union	OECD	Organisation for Economic Co-operation and Development
FAO	Food and Agriculture Organization	PRSP	Poverty reduction strategy paper
GEF	Global Environment Facility	SBI	Subsidiary Body for Implementation
GCF	Green Climate Fund	SCCF	Special Climate Change Fund
GCM	Global climate model	TNA	Technology needs assessment
IFAD	International Fund for Agricultural Development	UKCIP	United Kingdom Climate Impacts Programme
IPCC	Intergovernmental Panel on Climate Change	UNDP	United Nations Development Programme
IVR	Impacts, vulnerability and risk	UNEP	United Nations Environment Programme
LDCF	Least Developed Countries Fund	UNFCCC	United Nations Framework Convention on Climate Change
LDCs	Least developed countries	WHO	World Health Organization
LEG	Least Developed Countries Expert Group	WMO	World Meteorological Organization
MCA	Multi-criteria analysis	WRI	World Resources Institute



PART I

1. INTRODUCTION
2. INTRODUCING THE
TECHNICAL GUIDELINES

1. INTRODUCTION

1.1 DEVELOPING A COMMON UNDERSTANDING OF THE NATIONAL ADAPTATION PLANS AND THE NATIONAL ADAPTATION PLAN PROCESS

1.1.1 OBJECTIVES OF THE NATIONAL ADAPTATION PLAN PROCESS

Adaptation to climate change is becoming a routine and necessary component of planning at all levels. At its seventeenth session, the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) acknowledged that national adaptation planning can enable all developing and least developed country (LDC) Parties to assess their vulnerabilities, to mainstream climate change risks and to address adaptation. The COP also acknowledged that, because of their development status, climate change risks magnify development challenges for LDCs, and recognized the need to address adaptation planning in the broader context of sustainable development planning.¹ With this in mind, the COP established the national adaptation plan (NAP) process as a way to facilitate effective adaptation planning in LDCs and other developing countries.

The agreed objectives of the national adaptation plan process are:

- (a) To reduce vulnerability to the impacts of climate change, by building adaptive capacity and resilience;
- (b) To facilitate the integration of climate change adaptation, in a coherent manner, into relevant new and existing policies, programmes and activities, in particular development planning processes and strategies, within all relevant sectors and at different levels, as appropriate.²

The COP agreed that planning for adaptation at the national level is a continuous, progressive and iterative process, the implementation of which should be based on

nationally identified priorities, including those reflected in the relevant national documents, plans and strategies, and coordinated with national sustainable development objectives, plans, policies and programmes.³

The COP also agreed that enhanced action on adaptation should:

- Be undertaken in accordance with the Convention;
- Follow a country-driven, gender-sensitive, participatory and fully transparent approach, taking into consideration vulnerable groups, communities and ecosystems;
- Be based on and guided by the best available science and, as appropriate, traditional and indigenous knowledge, and by gender-sensitive approaches, with a view to integrating adaptation into relevant social, economic and environmental policies and actions, where appropriate;
- Not be prescriptive, nor result in the duplication of efforts undertaken in-country, but rather facilitate country-owned, country-driven action.⁴

1.1.2 FRAMING ADAPTATION

Many societies have a long history of coping with variable climate, at several scales, from diurnal to seasonal and annual variations, and over space. However, global climate change is expected to far exceed the range in climate that societies are accustomed to. While the exact nature of the change is difficult to predict with certainty, evidence of wide-ranging changes and impacts is growing, and the area of climate modeling to project future changes is a very active field of research.

Adaptation has been described extensively in the literature, and yet there is no universal agreement on a precise definition. The context clearly matters, and adaptation can be viewed as an adjustment, process or outcome. Below is a selection of definitions.

¹ Decision 5/CP.17.

² Decision 5/CP.17, paragraph 1.

³ Decision 5/CP.17, paragraph 2.

⁴ Decision 5/CP.17, paragraphs 3 and 4.

The Intergovernmental Panel on Climate Change (IPCC) uses a wide definition that includes adaptation by ecosystems as well as human societies and the possible exploitation of the potential benefits of climate change: “Adaptation is the adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities”.⁵

The United Nations Development Programme (UNDP) emphasizes the use of strategies to respond to climate change impacts: “Adaptation is a process by which strategies to moderate, cope with and take advantage of the consequences of climate events are enhanced, developed and implemented”.⁶

Adaptation can be viewed as an adjustment, process or outcome

The LEG has built upon the IPCC’s definition and, taking a practical approach, defines adaptation in the context of each system under consideration. Its definition of adaptation is as follows:⁷ “Adaptation to climate change is defined as human-driven adjustments in ecological, social or economic systems or policy processes, in response to actual or expected climate stimuli and their effects or impacts”.

Adaptation planning and design is closely linked to development planning. In most practical cases, adaptation to climate change is naturally embedded in the fabric of development. Adaptation can take the form of activities designed to enhance the adaptive capacity of a system, or actions that modify socioeconomic and environmental

systems to avoid or minimize the damage caused by climate change. Methods for achieving this include implementing new activities that are exclusively in response to climate change, and modifying existing activities to make them more resilient to current, as well as future, climate change risks (“climate-proofing”).

In describing adaptation, reference is often made to the timing of the adaptation intervention (anticipatory or reactive), the economic sphere in which the adaptation takes place (private or public) and whether or not adaptation is facilitated by institutions (autonomous or planned). These distinctions are not always mutually exclusive, and in many cases do not influence the way adaptation is actually undertaken.

The “framing” of adaptation therefore varies case by case, owing to the complex nature of adaptation. It is therefore very important for a wide range of stakeholders to be involved in the process of planning and implementing adaptation activities to ensure that the assessment and subsequent results are understood and are useful in decision making. In this sense, adaptation can be seen as a way to help stakeholders to achieve their collective development and adaptation goals considering a changing climate.⁸

1.1.3 WHO WILL DEVELOP NATIONAL ADAPTATION PLANS?

The NAP process was established to enable developing countries, and LDCs in particular, to formulate and implement NAPs. Within a country, the institutional arrangements for the development and implementation of NAPs will vary, and will be driven by national circumstances. Countries that have already embarked on a NAP-like process typically appoint a government agency to lead efforts on climate change adaptation. This agency typically has a mandate to coordinate the efforts of all other agencies or ministries, and to facilitate assessments and planning, including through outreach, capacity-building efforts and

5 Parry ML, Canziani OF, Palutikof JP, van der Linden PJ and Hanson CE (eds). 2007. *Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press.

6 Lim, B, and Spanger-Sieghed, E (eds). 2005. *Adaptation Policy Framework for Climate Change. Developing Strategies, Policies and Measures*. Cambridge: Cambridge University Press. Available at <http://www.preventionweb.net/files/7995_APF.pdf>.

7 <http://unfccc.int/essential_background/library/items/3599.php?such=j&symbol=CCCC/GEN/250%20E#beg>. Modified after Smit B, Burton I, Klein RJT, and Street R. 1999. *The science of adaptation: a framework for assessment*. Mitigation and Adaptation Strategies for Global Change. 4: pp. 199–213.

8 Fankhauser S, Smith J and Tol R. 1999. *Weathering climate change: some simple rules to guide adaptation decisions*. Ecological Economics. 30(1): pp. 67–78; Willows R and Connell R (eds.). 2003. *Climate Adaptation: Risk, Uncertainty and Decision-making*. UKCIP Technical Report. Available at <<http://www.ukcip.org.uk/wordpress/wp-content/PDFs/Risk.pdf>>; Parry ML, Canziani OF, Palutikof JP, van der Linden PJ and Hanson CE (eds). 2007. *Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press.

BOX 1. GLOSSARY OF KEY TERMS

Adaptation human-driven adjustments in ecological, social or economic systems or policy processes, in response to actual or expected climate stimuli and their effects or impacts (LEG, 2011). Various types of adaptation can be distinguished, including anticipatory and reactive adaptation, private and public adaptation, and autonomous and planned adaptation (IPCC Fourth Assessment Report (AR4), 2007).

Adaptation benefits The avoided damage costs or the accrued benefits following the adoption and implementation of adaptation measures (IPCC AR4, 2007).

Adaptation costs Costs of planning, preparing for, facilitating and implementing adaptation measures (IPCC AR4, 2007).

Adaptive capacity (in relation to climate change impacts) The ability of a system to adjust to climate change (including climate variability and extremes) in order to moderate potential damages, to take advantage of opportunities or to cope with the consequences (IPCC AR4, 2007).

Maladaptation Any changes in natural or human systems that inadvertently increase vulnerability to climatic stimuli; an adaptation that does not succeed in reducing vulnerability but increases it instead (IPCC Third Assessment Report, 2001).

Climate change Refers to any change in climate over time, whether due to natural variability or as a result of human activity (IPCC AR4, 2007).

Climate variability Variations in the climate (as measured by comparison with the mean state and other statistics such as standard deviations and statistics of extremes) at all temporal and spatial scales beyond that of individual weather events. Variability may be due to natural internal processes within the climate system (internal variability) or to variations in natural or anthropogenic external forcing (external variability) (IPCC AR4, 2007).

Resilience The ability of a social or ecological system to absorb disturbances while retaining the same basic structure and ways of functioning, the capacity for self-organization and the capacity to adapt to stress and change (IPCC AR4, 2007).

Vulnerability The degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude and rate of climate variation to which a system is exposed, its sensitivity and its adaptive capacity. Therefore adaptation would also include any efforts to address these components (IPCC AR4, 2007).

Mainstreaming or integration The integration of (adaptation) objectives, strategies, policies, measures or operations such that they become part of the national and regional development policies, processes and budgets at all levels and stages (Lim and Spanger-Sieghred, 2005).

Sources:

McCarthy JJ, Canziani OF, Leary NA, Dokken DJ, White KS (eds). 2001. *Climate Change 2001: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Third Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press.

Parry ML, Canziani OF, Palutikof JP, van der Linden PJ and Hanson CE (eds). 2007. *Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge: Cambridge University Press.

Lim, B, and Spanger-Sieghred, E (eds). 2005. *Adaptation Policy Framework for Climate Change. Developing Strategies, Policies and Measures*. Cambridge: Cambridge University Press. Available at <http://www.preventionweb.net/files/7995_APF.pdf>.

the convening of relevant agencies and other stakeholders to identify and rank national priorities for adaptation.

1.1.4 WHAT WILL THE NATIONAL ADAPTATION PLANS AND THE NAP PROCESS INCLUDE?

The NAP process is envisioned as a better way of doing business, of fully considering climate change concerns in planning and decision-making processes. It will encompass all the arrangements necessary to develop the knowledge to support decision-making, and required capacity-building to facilitate all actions that are needed for a strategic country-owned adaptation planning process. As with any planning process, the NAP process may have variable and specific outputs at given points in time, including comprehensive national adaptation plans, programmes and policies. The structure and form of these national adaptation plans will vary by country, and may include sectoral plans and sub-national plans to provide the necessary guidance in addressing adaptation needs where they matter.

The structure and form of national adaptation plans produced under the NAP process will vary by country

The NAPs, as strategic national plans, would provide guidance to processes at the national level and beyond. These processes would encompass not only government agencies and ministries, but also communities, the private sector, local municipalities, non-governmental organizations, and other relevant stakeholders. The NAPs would identify priority adaptation programmes, and provide mechanisms by which policies can gradually be modified, to become more resilient.

Information sharing is an important part of the process. Thus, adaptation priorities and planned activities (policies, projects and programmes) for a given period, and how these would be implemented, will be compiled and communicated on an ongoing basis. Such plans would be reviewed and updated frequently. The NAP process should include a monitoring and evaluation mechanism, results of which would feed back into the ongoing process

and be used in producing updated NAPs, and other relevant plans, on a periodic basis.

1.1.5 ROLE OF THE LEAST DEVELOPED COUNTRIES EXPERT GROUP

The LEG has been requested by the COP to provide technical guidance and support to the NAP process, as appropriate. The COP also requested the LEG, in carrying out its mandate to support the identification and implementation of medium- and long-term adaptation in LDCs, to prioritize support for the formulation and implementation of NAPs.⁹ The COP further requested the LEG to prepare technical guidelines for the NAP process, based on the initial guidelines included in the annex to decision 5/CP.17.

The LEG discussed how the NAP process in LDCs can be supported at its twenty-second meeting, in September 2012. It proposed priority areas for supporting LDCs in laying the groundwork and preparing NAPs, as contained in document FCCC/SBI/2012/27. During early 2013, the LEG will indicate which of these areas it can support, and will work to encourage relevant organizations to provide support to countries in the other areas.

1.2 BUILDING UPON NAPAS IN THE NAP PROCESS: LESSONS LEARNED AND GUIDING ELEMENTS

1.2.1 HOW DOES THE NAP PROCESS DIFFER FROM THE NAPA PROCESS?

National adaptation programmes of action (NAPAs) were designed to address urgent and immediate needs of LDCs. They were created to act as a channel through which LDCs could access support quickly and take advantage of win-win measures that would avoid increased damages and be more expensive to implement in the future. NAPAs were designed more than 10 years ago, when many LDCs were experiencing new and heightened levels of vulnerability to floods, drought and other adverse effects of climate change. New and additional science from the IPCC has since added to the knowledge about climate change and its impacts, and many LDCs have started to build their awareness and capacity to plan for medium- and long-term adaptation.

9 Decision 5/CP.17, paragraphs 13 and 14.

The NAP process is designed to offer LDCs an opportunity to take a more considered approach, working towards transformational change in their capacity to address adaptation. It takes a medium- and long-term approach to reducing vulnerability to the adverse effects of climate change that is integrated with national development planning processes and strategies. In doing so, the NAP process will build upon the achievements and lessons learned from the NAPA process. This includes the institutional arrangements and capacity that have been built, awareness-raising efforts and assessments that have been undertaken.

While the NAPA process was designed to produce one national adaptation programme of action, the NAP process has been designed to create a comprehensive system through which countries can integrate climate change adaptation into national planning, and produce national adaptation plans on an ongoing basis. These plans would be monitored and reviewed, then updated periodically. Their form is to be defined by the countries themselves, depending on their needs.

1.2.2 SUMMARY OF KEY EXPERIENCES AND LESSONS LEARNED FROM THE NAPAS TO INFORM THE NAP PROCESS

The following experiences and lessons learned from the NAPA process, drawn from documents, workshops and interviews with LDC Parties, may serve as a useful reference for countries before embarking on their NAP process:

- Taking a country-driven approach proved very useful. Locally defined criteria for ranking vulnerabilities and prioritizing project activities built confidence and buy-in across all stakeholders;
- NAPAs raised awareness of climate change across all levels of government and society in the LDCs, and built the base for national adaptation planning. The collected data and initial assessments provide a good basis for more comprehensive assessments and planning;
- The NAPA process involved the establishment of multidisciplinary NAPA teams, comprising national experts from government agencies, civil society and local communities, to prepare the NAPA and coordinate its implementation. Engaging national experts ensured a successful NAPA preparation process, and equally contributed to enhancing the experience and capacity of the

national experts in addressing adaptation. The implementation of NAPA projects was smoother and more effective in those LDCs that were able to sustain country teams throughout all stages of the NAPA process. However, in most LDCs, support for the NAPA teams ceased with the conclusion of the NAPA preparation phase, often leading to the disbanding of the teams;

- Review and monitoring of NAPAs benefited from support provided by the LEG through regular interactions and surveys with LDC Party representatives. It also benefited from the LEG's collaboration with the Global Environment Facility (GEF) and its agencies to discuss progress, bottlenecks and strategies to address them;
- Coordinated efforts to support LDCs led to positive results in the implementation of NAPAs. The LEG collaborated with the GEF and its agencies, including through an established dialogue at LEG meetings, to explore ways to support LDCs effectively in implementing their NAPAs with the help of funds from the Least Developed Countries Fund (LDCF). This effort resulted in a simplified project cycle and refined concepts that made it much easier for LDCs to access funds of the LDCF;
- Available financial resources were too limited, particularly for the larger LDCs, to fully assess and address the needs of all sectors and all vulnerable regions of the country;
- Since clear guidance on policy and project design was not provided at the early stages of NAPA preparation, most LDCs were not able to develop an implementation strategy that matched subsequent guidance on the implementation of NAPAs under the LDCF;
- While project partners can provide useful support to LDCs in accessing resources, their internal structures and procedures can also slow down the process of disbursement of funds;
- While NAPAs have raised the awareness of many stakeholders, in particular the most vulnerable communities, they have also raised their expectations. Managing those expectations has become challenging for some LDCs. This has been due to the extensive time between the completion of the NAPA and the commencement of implementation of project activities, mainly as a result of difficulties encountered in accessing resources from the LDCF;

Despite the challenges, the NAPA process has built enormous capacity and awareness at the national level for many LDCs, and improved the working relationships between national stakeholders and agencies, marking a positive step towards addressing adaptation. In addition, the lessons from the NAPA process so far have provided a concrete basis for accelerating efforts to address the urgent and immediate needs identified by LDCs in their NAPAs. These lessons will also play a significant role in informing the NAP process.

1.2.3 TOWARDS GUIDING PRINCIPLES FOR THE NAP PROCESS

The guiding principles for the NAP process build on those of the NAPA process, which included (i) a participatory process involving stakeholders, (ii) a multidisciplinary and complementary approach, building upon relevant existing plans and programmes, (iii) the contribution to sustainable development, (iv) the particular consideration of marginalized groups such as women, (v) a country-driven approach, (vi) sound environmental management, (vii) cost-effectiveness, (viii) simplicity and (ix) the flexibility of procedures based on individual country circumstances.

As a result, the NAP process:

- Is not prescriptive. These guidelines may assist LDCs to undertake the steps and activities that can ensure effective adaptation. According to their level of progress with adaptation thus far, countries can select which steps and activities to undertake in order to move forward;
- Seeks to enhance the coherence of adaptation and development planning within countries, rather than duplicate efforts;
- Facilitates country-owned, country-driven action. The LDCs have full ownership of the NAP process within their countries. The NAP process seeks to harness and build upon national-level capacity, with support from various partners, as appropriate;
- Is designed so that countries can monitor and review it on a regular basis, and update their NAPs in an iterative manner. This is important, given that better quality climate data and projections, as well as other information useful for the planning process, will increasingly become available, and the impacts of climate change in the medium and long-term will be better understood;
- Is designed to identify gaps in capacity and adaptation on an ongoing basis, and to address these gaps.



BOX 2. INTEGRATING A GENDER PERSPECTIVE INTO THE NAP PROCESS

In many countries, women face historical disadvantages, which include limited access to decision-making and economic assets.^a The dynamics of gender can thus lead to a situation in which women are more vulnerable to the adverse impacts of climate change. Women's disproportionate dependence on natural resources and their predominant roles in the community and in the household can make them particularly vulnerable when the resources on which they depend are adversely impacted, become scarcer or are harder to access due to climate change.^b

Integrating a gender perspective into the NAP process can help to ensure that there is equal participation of men and women in the decision-making processes, as well as in the implementation of adaptation activities. Furthermore, it can help to ensure that the NAP process and the activities it entails will not exacerbate gender inequalities. It can lead to better adaptation, and more resilient communities.

Women can act as key active agents of adaptation in societies. Their often deep understanding of their immediate environment, their experience in managing natural resources (water, forests, biodiversity and soil) and their involvement in climate-sensitive work such as farming, forestry and fisheries should be harnessed.^c An evaluation conducted by the World Bank, as well as various other studies, have found that projects are more successful when gender considerations and dynamics are integrated into their planning and implementation.^d

Integrating gender considerations into the NAP process could entail a number of activities. These include:

- Assessing what information is available regarding particularly vulnerable groups including women, and further researching on this topic in the country;
- Harnessing the potential of women as agents of change within their communities, and investing in this potential as part of the NAP process;

- Tailoring and implementing the NAP activities based on an understanding of gender dynamics and the potentially disproportionate impacts of climate change on women;
- Ensuring the participation of the most vulnerable groups, including women, in the NAP process. This includes integrating the perspectives of women and drawing on their unique adaptation knowledge and local coping strategies when formulating the NAP;
- Undertaking outreach to ensure that different stakeholders understand the gender dynamics of climate change;
- Using sex-disaggregated data in vulnerability and adaptation assessments;
- Monitoring and reporting on the integration of gender considerations into the NAP process;
- Evaluating the integration of gender considerations into adaptation and making improvements if necessary.

Further reading:

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Canadian International Development Agency (CIDA). 1997. *Guide to Gender-Sensitive Indicators*. Hull: CIDA. Available at <[http://www.acdi-cida.gc.ca/INET/IMAGES.NSF/vLUIImages/Policy/\\$file/WID-GUID-E.pdf](http://www.acdi-cida.gc.ca/INET/IMAGES.NSF/vLUIImages/Policy/$file/WID-GUID-E.pdf)>.

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2. INTRODUCING THE TECHNICAL GUIDELINES

2.1 PURPOSE OF THE GUIDELINES AND INTENDED AUDIENCE

These technical guidelines are issued by the LEG, as part of the UNFCCC process, to Parties and relevant organizations in response to the mandate given to the LEG by the COP. Their purpose is to provide Parties, as well as organizations assisting the Parties with adaptation, with technical guidance on the development of NAPs, covering such areas as:

- Establishing a national process to coordinate adaptation planning at all relevant scales and with a medium- and long-term view in mind;
- Identifying capacity gaps, and building capacity for planning and implementing adaptation and for integrating climate change adaptation into national development planning processes;
- Preparing national adaptation plans that contain activities, policies and programmes for adapting to climate change;
- Establishing a monitoring and evaluation system of adaptation needs and measures, and plans to iteratively address emerging needs;
- Designing a communication strategy on climate change;
- Establishing plans for collaboration across sectors and within administrative units such as cities and local governments.

The initial guidelines adopted by the COP¹⁰ for the formulation of NAPs focused on LDCs and how they could build upon their experience in preparing and implementing NAPAs. The present technical guidelines elaborate on those initial guidelines and offer a range of options for dealing with each element of the NAP process, drawing on the best available knowledge. The technical guidelines are generic, and can be used by LDCs as well as other developing countries that would like to employ the modalities of the NAPs in the elaboration of their own planning efforts.

All agencies and organizations working on adaptation in LDCs, and other developing countries, are invited to use these guidelines in carrying out their work and in

reporting on their activities under the Convention. The guidelines are designed to increase the effectiveness and efficiency of adaptation efforts that target, or are located in LDCs; in order to achieve the long-term benefits of adaptation and the transformation of all operations that are needed for countries to build adaptive capacity and to become more climate-resilient.

The guidelines build on lessons learned from countries already developing national adaptation plans and strategies. They outline how relevant sectors and other management units can respond and report to national governments on their plans and programmes to address adaptation to climate change, including efforts to cooperate across sectors and within specific areas such as regions and cities. While the guidelines do not prescribe particular methodologies for different steps, they give examples of useful methods and tools that authorities can use to develop their adaptation options, and how these can be aggregated or scaled up into an adaptation plan at the national level.

These guidelines are supported by a web-based portal of case studies, examples, knowledge systems and sources of further information, which can be accessed at <<http://unfccc.int/NAP>>.

2.2 GENERAL APPROACH

These technical guidelines for the NAP process are designed to support countries in their planning and implementation of adaptation at the national level. There are numerous other existing guides and resource materials for different levels and decision units, and it is assumed that parts of them will be applicable to the development of a national adaptation plan. The following assumptions were made when developing the technical guidelines:

- There is no single approach that applies to all adaptation planning needs in a country, and particular methods will need to be developed and applied based on specific circumstances;
- Maximum flexibility is expected, and those actors formulating NAPs in the country will use all available and appropriate tools, beyond what a given agency, assisting in implementation, has devel-

¹⁰ Decision 5/CP.17, annex.

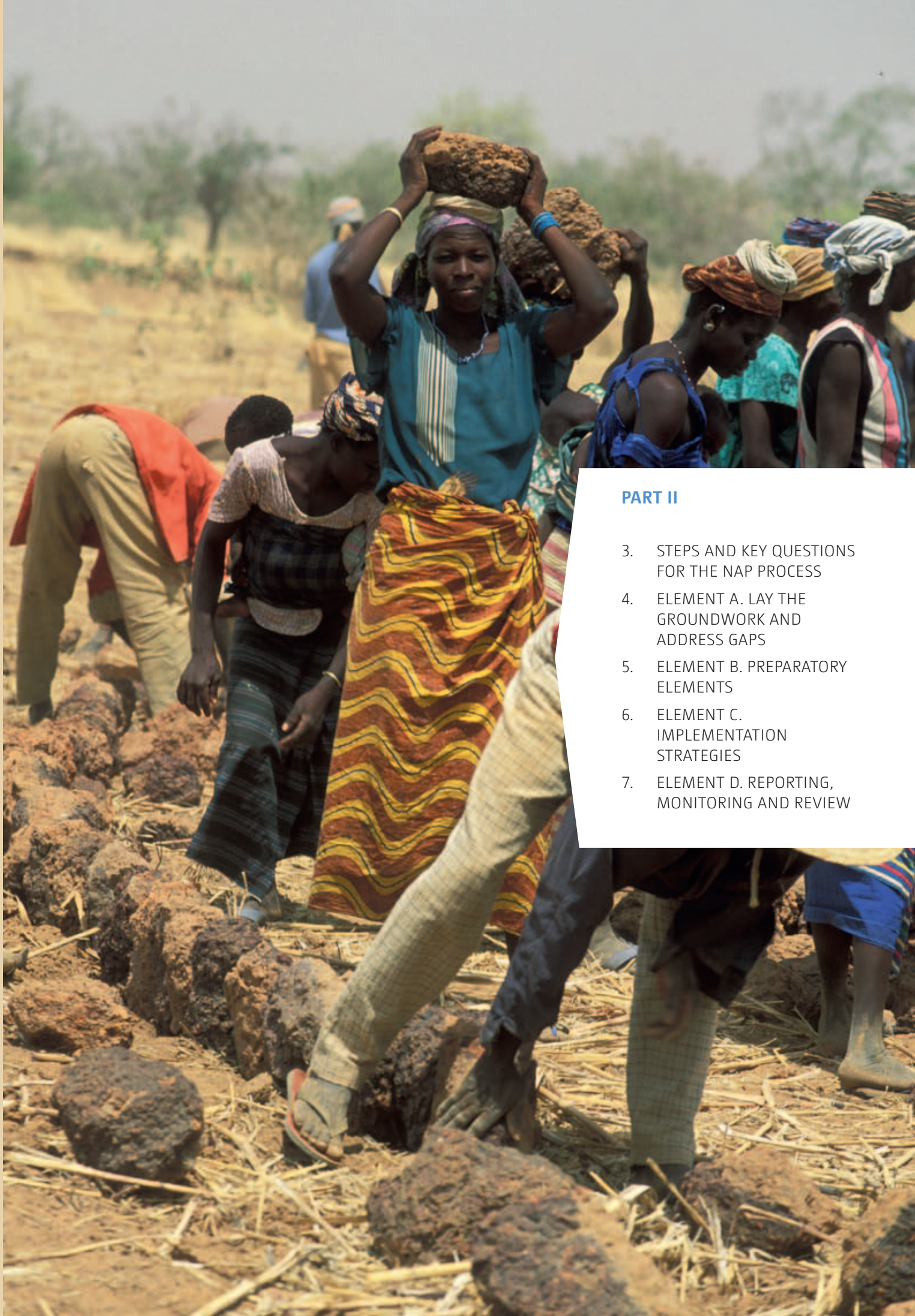
oped. This is particularly useful in cases where the adaptation assessments cover areas that are beyond the comparative advantage of one agency;

- Complementarity of approaches is desirable and encouraged, for example between the so-called science-first (or top-down) and policy-first (bottom-up) assessment approaches. It is unlikely that one approach will be entirely adequate, so successful adaptation planning will require a careful mix of the two approaches;
- The exact number of steps is not considered important in these guidelines. The NAP process is designed to be flexible, with countries able to choose those steps and elements that are needed to accomplish the planning process, without prescribing specific steps and tasks that must be followed. The terminology used is not bound to a particular philosophy of approach, and users are encouraged to fully define their steps and the sequence of such steps, in an appropriate and logical order;
- Each of the elements, steps and subsequent activities build on each other. Hence, processes initiated

in one activity will subsequently feed into one or more further activities of the NAP process, and many will be continuous. Furthermore, although some activities may sound similar to one another, the level of detail differs according to the context of the step;

- The quantity and quality of data available in and to LDCs is currently limited. Given the long-term nature of the NAP process, it is expected that plans will be put in place to enhance the knowledge base, in addition to their required design and implementation of adaptation measures. This requires deliberate effort;
- Lastly, it is assumed that the national process will manage demand for external support, rather than being support-driven. Agencies and organizations that provide support are encouraged to work through the national processes to coordinate their support and ensure the sustainability of national adaptation efforts.





PART II

3. STEPS AND KEY QUESTIONS FOR THE NAP PROCESS
4. ELEMENT A. LAY THE GROUNDWORK AND ADDRESS GAPS
5. ELEMENT B. PREPARATORY ELEMENTS
6. ELEMENT C. IMPLEMENTATION STRATEGIES
7. ELEMENT D. REPORTING, MONITORING AND REVIEW

3. STEPS AND KEY QUESTIONS FOR THE NAP PROCESS

The initial guidelines given in the annex to decision 5/CP.17 propose four elements as the building blocks of the NAP process. These technical guidelines build on the four elements by proposing steps for each one leading to 17 steps in total (see table 1). Key guiding questions are provided to facilitate implementation of the steps (see table 2). In addition, indicative activities or tasks, which a country may undertake under each of the 17 steps, are described, based on a broad literature review and inputs from experts and stakeholders during a meeting organized by the LEG to review an earlier draft of the guidelines.¹¹ The indicative activities are presented in the sections that follow below for each element in tables 3A to 3D (see an aggregated table 3 in annex 6 for a complete listing of all the suggested activities for the steps).

The NAP process is designed to be flexible and non-prescriptive, hence countries may apply the suggested steps based on their circumstances, choosing those steps that add value to their planning process and sequencing NAP activities based on their needs to support their decision-making on adaptation. In the spirit of decision 5/CP.17, the individual activities are not intended to be followed consecutively or completely. In addition, there are several cross-cutting themes which will need to be taken into consideration in more than one of the recommended steps and activities. Examples of these cross-cutting themes are communication and outreach, stakeholder involvement, and education and training.

A GUIDE TO USING THE TECHNICAL GUIDELINES: ENSURING FLEXIBILITY IN SELECTING ACTIVITIES UNDER EACH STEP TO DEFINE A ROAD MAP FOR THE NAP PROCESS

A list of indicative activities for each step of the NAP technical guidelines is described in the following sections. Countries may find it useful to scope their work towards setting up a NAP process by going through a list of the steps and indicative activities to identify what activities are needed, based on the extent to which adaptation activities have already been undertaken. By doing this, the country would identify “entry points”, and would sequence the steps with the selected activities, into a road map to be followed as part of the national process.

¹¹ LEG Technical meeting to review the draft NAP guidelines, 29 – 31 October 2012, Bonn, Germany.



TABLE 1. STEPS UNDER EACH OF THE ELEMENTS OF THE FORMULATION OF NATIONAL ADAPTATION PLANS, WHICH MAY BE UNDERTAKEN AS APPROPRIATE^a

ELEMENT A. LAY THE GROUNDWORK AND ADDRESS GAPS

1. Initiating and launching of the NAP process
2. Stocktaking: identifying available information on climate change impacts, vulnerability and adaptation and assessing gaps and needs of the enabling environment for the NAP process
3. Addressing capacity gaps and weaknesses in undertaking the NAP process
4. Comprehensively and iteratively assessing development needs and climate vulnerabilities

ELEMENT B. PREPARATORY ELEMENTS

1. Analysing current climate and future climate change scenarios
2. Assessing climate vulnerabilities and identifying adaptation options at the sector, subnational, national and other appropriate levels
3. Reviewing and appraising adaptation options
4. Compiling and communicating national adaptation plans
5. Integrating climate change adaptation into national and subnational development and sectoral planning

ELEMENT C. IMPLEMENTATION STRATEGIES

1. Prioritizing climate change adaptation in national planning
2. Developing a (long-term) national adaptation implementation strategy
3. Enhancing capacity for planning and implementation of adaptation
4. Promoting coordination and synergy at the regional level and with other multilateral environmental agreements

ELEMENT D. REPORTING, MONITORING AND REVIEW

1. Monitoring the NAP process
2. Reviewing the NAP process to assess progress, effectiveness and gaps
3. Iteratively updating the national adaptation plans
4. Outreach on the NAP process and reporting on progress and effectiveness

^a Elements A to D for the formulation of national adaptation plans are given in the annex to decision 5/CP.17. The steps are numbered here for ease of reference, however, it is understood that countries will choose which steps are applicable for their country-specific situation, and in what order they would be undertaken.

TABLE 2. MAIN ELEMENTS AND STEPS OF THE NATIONAL ADAPTATION PLAN (NAP) PROCESS AND KEY QUESTIONS TO BE ADDRESSED UNDER EACH STEP

Steps	Key Questions
A. Lay the Groundwork and Address Gaps	
1. Initiating and launching of the national adaptation plan (NAP) process	- What is the overall national approach and strategy for the NAP process and what kind of mandate is needed to drive it? - What institutional arrangements are required at the national level to coordinate, lead and monitor the NAP process? - What outputs are expected from the NAP process, and when? - What will the reporting arrangements to various stakeholders in the country be? - What technical and financial arrangements are needed and can be mobilized to sustain the process in the short- to long-term?
2. Stocktaking: identifying available information on climate change impacts, vulnerability and adaptation and assessing gaps and needs of the enabling environment for the NAP process	- Where do we stand regarding effective short- and long-term adaptation activities? - What data and knowledge are available to assess current and future climate risks, vulnerability and adaptation? - How can the storage and management of this data and knowledge best be coordinated? - What gaps can be identified regarding the capacity, adequacy of data and information, and required resources to engage in the NAP process? - What barriers exist to effectively plan for, design and implement adaptation?
3. Addressing capacity gaps and weaknesses in undertaking the NAP process	- How can enabling institutional and technical capacity gaps best be addressed, and which resources are required? - How can long-term capacity development be institutionalized? - How can each of the barriers to adaptation planning be lifted? - Where are there opportunities for integrating climate change adaptation into development planning?
4. Comprehensively and iteratively assessing development needs and climate vulnerabilities	- What key development goals are sensitive to climate change? - How can climate risks to development and potential co-benefits of adaptation and development be identified?
B. Preparatory Elements	
1. Analysing current climate and future climate change scenarios	- Which climatic patterns in the country, according to observed data, are most important in terms of adjustment, adaptation or acclimatization of social systems? - What risks does climate change hold for the country? - What are major current climate hazards? - What is the estimated range of uncertainty for possible future climate scenarios? - What are appropriate indices of climate trends which could support planning and decision-making?
2. Assessing climate vulnerabilities and identifying adaptation options at sector, subnational, national and other appropriate levels	- Which systems, regions, or groups work towards key development goals such as food security, poverty alleviation, economic development, etc? - What are the main climate vulnerabilities of those systems/regions that are key to achieve the main development goals? - What are the expected impacts of climate change? - What are viable cost-effective adaptation options to reduce the impacts of climate change or to exploit opportunities?
3. Reviewing and appraising adaptation options	- What are the costs and benefits of each adaptation option? - How best can the adaptation options be implemented, and what are the conditions for success? - Is it possible to identify co-benefits between the adaptation options and development?

Steps	Key Questions
4. Compiling and communicating national adaptation plans	- How will priority sectoral and subnational adaptation options be aggregated into national adaptation plans? - How will inputs of all relevant stakeholders be incorporated into producing the national plans? - How can the national adaptation plans and related outputs best be communicated and disseminated at the national level?
5. Integrating climate change adaptation into national and subnational development and sectoral planning	- How can adaptation best be integrated into ongoing development planning processes? - What kind of opportunities can be generated through the integration? - How can the process of integration be facilitated?
C. Implementation Strategies	
1. Prioritizing climate change adaptation in national planning	- How can adaptation work best be prioritized for implementation at the national level considering development needs, climate vulnerabilities and risks as well as existing plans? - What criteria can be used to define priority actions?
2. Developing a (long-term) national adaptation implementation strategy	- What is the most appropriate strategy for the implementation of adaptation activities including timing, target areas/beneficiaries, responsible authorities and sequencing of activities? - How can the implementation build on and complement existing adaptation activities? - What are the potential costs of implementing the NAPs and how can these costs be met?
3. Enhancing capacity for planning and implementing adaptation	- How can technical and institutional capacities and regulations for long-term planning and implementation of adaptation be maintained and enhanced at different levels? - What can be learned from other international experiences and international cooperation on adaptation planning?
4. Promoting coordination and synergy at the regional level and with other multilateral environmental agreements	- How can the cross-sectoral and regional coordination of adaptation planning be promoted and enhanced? - How can synergy with other multilateral environmental agreements in the planning and implementation process be identified and promoted?
D. Reporting, Monitoring and Review	
1. Monitoring the NAP process	- Which areas of the NAP process are key for its effectiveness and should thus be the focus of the monitoring process? - What information and metrics are needed to monitor progress, effectiveness, gaps and lessons of the NAP process?
2. Reviewing the NAP process to assess progress, effectiveness and gaps	- What will be the time interval for reviewing the NAP process? - How would progress, effectiveness and gaps best be quantified and assessed and which information from outside of the NAP process is required?
3. Iteratively updating the national adaptation plans	- What are the frequency and/or triggers for an update of the NAPs and related outputs? - Which of the previous steps of the NAP process would be repeated in order to produce an update of the NAPs? - How can the updating of the NAPs be aligned with other development planning processes to ensure harmonization and the identification of co-benefits?
4. Outreach on the NAP process and reporting on progress and effectiveness	- How can NAP documents best be disseminated to the UNFCCC secretariat and other stakeholders? - What kind of information needs to be included in reporting on progress and effectiveness of the NAP process in national communications? - What other channels can be used to report on progress to the COP and other stakeholders?

ELEMENT A

LAY THE GROUNDWORK AND ADDRESS GAPS

STEP A.1.

Initiating and launching the NAP process

STEP A.2.

Stocktaking: identifying available information on climate change impacts, vulnerability and adaptation and assessing gaps and needs of the enabling environment for the NAP process

STEP A.3.

Addressing capacity gaps and weaknesses in undertaking the NAP process

STEP A.4.

Comprehensively and iteratively assessing development needs and climate vulnerabilities

4. ELEMENT A. LAY THE GROUNDWORK AND ADDRESS GAPS

This element on laying the groundwork and addressing gaps aims to create a national mandate and strategy for the NAP process that establishes clear responsibilities for government ministries and departments, and specifies key milestones and expected outputs of the NAP process and the frequency of such outputs over time. During this stage, countries are encouraged to give consideration to the establishment of strong coordinating and cooperating mechanisms whose roles and expectations are clear and in which stakeholders are enabled to participate. This element also aims to identify weaknesses and gaps in “enabling environments” that are necessary for the formulation of comprehensive adaptation plans, programmes and policies. It encourages countries to consider institutional arrangements, the adequacy of scientific information and how climate change will impact on specific development goals and activities.

The main outputs of this element could include: a national mandate and strategic plan for the NAP process; the designation of a multi-stakeholder secretariat or coordinating committee to spearhead the process; results of a gap and needs analysis, and recommendations on how to address these; synthesis of available data and knowledge; and a programme to communicate and build capacity for the formulation and implementation of the NAP.



**TABLE 3A. SUGGESTED STEPS AND INDICATIVE ACTIVITIES FOR
ELEMENT A ON LAYING THE GROUNDWORK AND ADDRESSING
GAPS FOR THE NAP PROCESS**

Element A. Lay the groundwork and address gaps	
Steps	Indicative activities
1. Initiating and launching the NAP process	a. Conduct briefings to policymakers about climate change adaptation challenges and opportunities, and the NAP process in particular b. Designate the spearheading or coordinating mechanism c. Create or enhance a national vision and mandate for the NAP process d. Operationalize the NAP process through access to support e. Define a NAP framework and strategy as well as a road map, including sequencing of various NAPs and a monitoring and evaluation plan for the NAP process
2. Stocktaking: identifying available information on climate change impacts, vulnerability and adaptation and assessing gaps and needs of the enabling environment for the NAP process	a. Conduct a stocktaking of ongoing and past adaptation activities b. Synthesize available analyses of the current and future climate at the broad national and/or regional level c. Conduct a gap analysis to assess strengths and weaknesses regarding the capacity, data and information, and resources required to effectively engage in the NAP process d. Assess potential barriers to the planning, design and implementation of adaptation activities
3. Addressing capacity gaps and weaknesses in undertaking the NAP process	a. Develop and enhance enabling institutional and technical capacity for the formulation of the NAP b. Identify and enhance awareness of potential opportunities for integrating climate change adaptation into development planning at different levels c. Design and implement programmes on climate change communication, public awareness-raising and education
4. Comprehensively and iteratively assessing development needs and climate vulnerabilities	a. Compile information on main development objectives, policies, plans and programmes b. Identify synergies between development and adaptation objectives, policies, plans and programmes with a view to identifying risks to investment and opportunities for collaboration and realizing co-benefits (start with climate-proofing), including economic benefits

ELEMENT A

LAY THE GROUNDWORK AND
ADDRESS GAPS

STEP A.1.

Initiating and launching the NAP process

STEP A.2.

Stocktaking: identifying available information on climate change impacts, vulnerability and adaptation and assessing gaps and needs of the enabling environment for the NAP process

STEP A.3.

Addressing capacity gaps and weaknesses in undertaking the NAP process

STEP A.4.

Comprehensively and iteratively assessing development needs and climate vulnerabilities

4.1 STEP A.1. INITIATING AND LAUNCHING THE NAP PROCESS

Overview: Step 1 consists of the initiation of the NAP process at the national level through an appropriate mandate and the mobilization of relevant institutional arrangements and support. In countries where work relevant to the NAP process is already under way and appropriate mandates exist, this step would enhance those efforts and proceed to producing a road map for steps that would still need to be undertaken. The mandate will help to establish a clear vision for the NAP process including expectations and outputs. It will also help to create leadership and ensure stakeholder participation. Many of the subsequent steps depend on a country's vision of its NAP process.

For each step, key guiding questions are given, followed by a list of indicative activities that could be carried out – with the full understanding that a country will define its unique set of activities based on its circumstances, and that some of these activities, once initiated, would be ongoing and would overlap or merge with subsequent activities in later steps.

Key questions

- What is the overall national approach and strategy for the NAP process and what kind of mandate is needed to drive it?
- What institutional arrangements are required at the national level to coordinate and lead the NAP process?
- What outputs are expected from the NAP process, and when?
- What will be the reporting arrangements to various stakeholders in the country?
- What technical and financial arrangements are needed and can be mobilized to sustain the process in the short- to long-term?

Indicative activities

- a. Conduct briefings to policymakers about climate change adaptation challenges and opportunities, and the NAP process in particular
- b. Designate the spearheading or coordinating mechanism
- c. Create or enhance a national vision and mandate for the NAP process
- d. Operationalize the NAP process through access to support
- e. Define a NAP framework and strategy as well as a road map, including sequencing of various NAPs and a monitoring and evaluation plan for the NAP process

A.1.A CONDUCT BRIEFINGS TO POLICYMAKERS ABOUT CLIMATE CHANGE ADAPTATION CHALLENGES AND OPPORTUNITIES, AND THE NAP PROCESS IN PARTICULAR

In order for policymakers to make informed decisions on the NAP process and its design over the medium- and long-term, and in order for the public to support a major national approach, it would be useful for the country's UNFCCC climate change focal point to undertake a targeted awareness campaign. This campaign could, for example, consist of briefings to policymakers, which could receive support from relevant organizations where needed. Such briefings could include a description of the experienced and expected economic and social impacts of climate

change and the actions required to adapt, highlighting opportunities that the NAP process would present to the country. The campaign should introduce and describe the NAP process, based on the COP decisions and the NAP guidelines, to ensure all stakeholders have the same understanding of its benefits, such as its process-based approach.

A good understanding of the NAP process is key to a successful launch of activities.

Selected references

Background to the NAP process:

Decisions: 1/CP.16, 5/CP.17 and 12/CP.18. Available at <<http://unfccc.int/6057.php>>.

General awareness-raising:

LEG materials on the NAP process available at <unfccc.int/NAP>, including: LEG. 2012. *The National Adaptation Plan Process – a brief overview*. <http://unfccc.int/files/adaptation/application/pdf/nap_overview.pdf>.

Sayers, R. 2006. *Principles of Awareness-Raising: Information Literacy, a Case Study*. Bangkok: UNESCO Bangkok. Available at <<http://unesdoc.unesco.org/images/0014/001476/147637e.pdf>>.

General information on climate change for public awareness:

IPCC website. Available at <<http://www.ipcc.ch>>.

UNEP GRID-Arendal website. Available at <<http://www.grida.no/>>.

UNFCCC. *Climate Change Information Network (CC:iNet)*. Available at <http://unfccc.int/cc_inet/cc_inet/items/3514>.

A.1.B DESIGNATE THE SPEARHEADING OR COORDINATING MECHANISM

In order to operationalize an effective NAP process, it will be necessary for governments to designate the government agency (or agencies) or institutions responsible for spearheading the process. This will entail mobilizing dedicated human resources and ensuring that the designated coordinating mechanism has the tools and means to reach the NAP governmental and non-governmental stakeholders. Much as with NAPAs, a multidisciplinary team of lead experts with functioning networks in each sector would be useful. Appropriate levels of authority, a hosting arrangement, accountabilities, access to information and data sharing protocols as well as adequate financial, human and logistical resources would be key considerations for the operations of this coordinating mechanism. These considerations could be included in the funding proposal submitted to the GEF and other funding agencies for the NAP process (see section A.1.D).

The coordinating institution will oversee the activities of the NAP process, maintain a communications and outreach function, and coordinate the collection of information on the NAP activities for monitoring and evaluation purposes. For the reporting to the Convention, it would also be useful to collect information on support needed and support received. The monitoring and evaluation system should be established during early stages of the process to guide data collection for the reporting and to facilitate learning-by-doing.

In many cases, the agency that is responsible for climate change activities would be designated to spearhead the NAP process. This should be communicated early and widely, to facilitate coordination of subsequent adaptation planning activities.

ELEMENT A

LAY THE GROUNDWORK AND
ADDRESS GAPS

STEP A.1.

Initiating and launching the NAP process

STEP A.2.

Stocktaking: identifying available information on climate change impacts, vulnerability and adaptation and assessing gaps and needs of the enabling environment for the NAP process

STEP A.3.

Addressing capacity gaps and weaknesses in undertaking the NAP process

STEP A.4.

Comprehensively and iteratively assessing development needs and climate vulnerabilities

A.1.C CREATE OR ENHANCE A NATIONAL VISION AND MANDATE FOR THE NAP PROCESS

In order to initiate the mandate and institutional arrangements for the NAP process, the coordinating mechanism (see A.1.B) would present a recommendation on the creation and structure of the NAP process to a national policymaking body (such as the cabinet, senate or parliament). A proposal on the overall vision for the NAP would be included in this recommendation. Some countries may initiate their NAP process through an act of parliament, a national directive, an executive order signed by the President, a national policy or another appropriate instrument, based on the regular procedure for national planning of the country. Such an instrument does not need to represent the overall starting point for the NAP process. In some cases, the process of creating a national mandate would take a long time, in which case other activities may already be initiated to lay the groundwork for the formulation of the NAP.

Many countries that have embarked on a NAP-like process have found it useful to create or strive for a formal and binding national instrument in the form of a decree (e.g. Norway), an Act (e.g. the United Kingdom) or an executive order (e.g. the United States of America). Several LDCs have enacted national climate change policies to facilitate their work on aspects of climate change including adaptation, and in cases where this is equivalent to a national policy that could drive the NAP process, they could be a starting point, without requiring the creation of a new mandate or policy.



Once the mandate for the NAP process has been produced, it should be communicated formally to all government offices, and widely to the public using conventional means. In cases where the mandate already existed through published national climate change strategies, the relevant information should be communicated well.

Possible elements of a national mandate for the NAP process are given in Box 3. Examples of mandate instruments, using an act or an executive order, are given in the annex for the United Kingdom and the United States of America, respectively.

BOX 3. POSSIBLE ELEMENTS OF A NATIONAL MANDATE FOR THE NAP PROCESS

A national mandate for the NAP process could include specifications on the following, inter alia:

- Designation of a leader for the NAP process (e.g. someone to head the process, supported by a committee, department or ministry, or board);
- Elaboration of specific steps to be taken to implement the mandate, such as the elaboration of a framework and strategy;
- A budget for the NAP process, or an indication of allocated national resources and plans for raising additional funds;
- Reporting instructions on the outcomes of the NAP process over time;
- An indicative timeline of key milestones and outputs of the NAP process;
- Instructions on how the formal outputs would be processed and approved including endorsement, nature of public and stakeholder involvement and input, and an indication of triggers for revisions and updates of the NAP.

Selected references

Sample national mandates for NAP-like processes:

USA. Federal Leadership in Environmental, Energy and Economic Performance. *Executive Order 13514*. Available at <http://www.whitehouse.gov/assets/documents/2009fedleader_eo_rel.pdf>.

UK Climate Change Act 2008. Available at <<http://www.legislation.gov.uk/ukpga/2008/27/contents>>.

A.1.D OPERATIONALIZE THE NAP PROCESS THROUGH ACCESS TO SUPPORT

The COP has provided guidance to the GEF, as the operating entity of the financial mechanism of the Convention for the operation of the Least Developed Countries Fund (LDCF), to provide funding from the LDCF to LDC Parties to meet the agreed full cost, as appropriate, of activities to enable the preparation of the NAP process as described in the elements contained in paragraphs 2–6 of the initial guidelines for the formulation of national adaptation plans in the annex to decision 5/CP.17.¹²

¹² Decision 12/CP.18, paragraph 1.

ELEMENT A

LAY THE GROUNDWORK AND
ADDRESS GAPS

STEP A.1.

Initiating and launching the NAP
process

STEP A.2.

Stocktaking: identifying available
information on climate change
impacts, vulnerability and
adaptation and assessing gaps and
needs of the enabling environment
for the NAP process

STEP A.3.

Addressing capacity gaps and
weaknesses in undertaking the
NAP process

STEP A.4.

Comprehensively and iteratively
assessing development needs
and climate vulnerabilities

The LDC Parties will use modalities developed by the GEF to access the LDCF (funding as well capacity-building and technical support that would be delivered through support programmes implemented under the LDCF in response to paragraph 23 of decision 5/CP.17).¹³

Funding and support from the LDCF would be complemented by other, multi-lateral, bilateral and national sources. As part of a proposal to access resources from the LDCF, whether through direct access or through a GEF agency, a flexible and adapted work plan would be developed, given that the NAP process will evolve based on national circumstances and will be flexible to accommodate developments as they happen.

Selected references

Access to support:

The LDCF. Available at <<http://www.thegef.org/gef/LDCF>>.

UNDP. 2012. *Readiness for Climate Finance. A framework for understanding what it means to be ready to use climate finance.* New York: UNDP. Available at <http://www.undp.org/content/dam/undp/library/Environment%20and%20Energy/Climate%20Strategies/Readiness%20for%20Climate%20Finance_12April2012.pdf>.

A.1.E DEFINE A FRAMEWORK AND STRATEGY AS WELL AS A ROAD MAP, INCLUDING SEQUENCING OF VARIOUS NAPS AND A MONITORING AND EVALUATION PLAN, FOR THE NAP PROCESS

Framework and road map

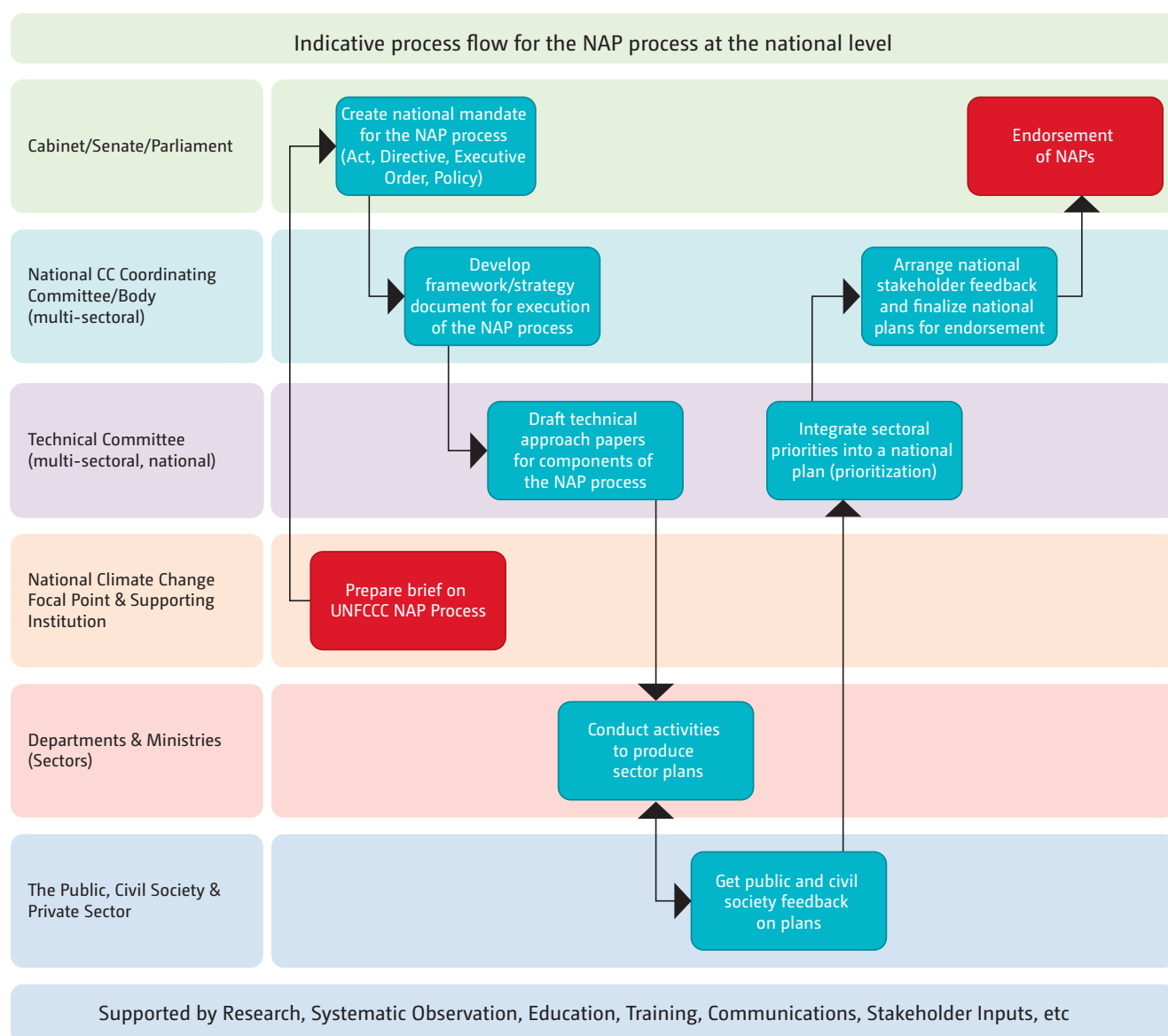
Once a country decides to embark on the NAP process, it will be useful to develop a strategy document. Such a document would elaborate on specific goals and objectives for the national process and other elements of the national mandate for the NAP process. It can also articulate how the government will lead the process and work with subnational entities to carry out the planning and implementation of adaptation, taking into account the medium- to long-term nature of the NAP process. The strategy would identify strategic actions to ensure success of the NAP process. It would respond directly to elements of the national mandate, and develop instructions for ministries or departments and other stakeholders to follow. The strategy for the NAP process would build on existing activities and past efforts on adaptation in the country.

Finally, the strategy would define a road map to be followed for the NAP process, including a nationally-specific, sequential set of steps and activities guided by the lists in tables 1, 2 and 3 (Table 3 can be found in Annex 6) and respective responsibilities. A sample flow of responsibilities for a national adaptation plan process until the endorsement stage is shown in figure 1.

¹³ Further details on accessing the LDCF are available from the GEF at <<http://www.thegef.org/gef/LDCF>>.

The road map would indicate when and how to produce national plans as outputs of the process. In some cases, a country may develop a national adaptation plan that addresses issues of national strategic importance, or cross-cutting issues, to be followed by specific sector-wide adaptation plans, or plans for specific subnational regions or systems (e.g. an urban area or river/lake basin). In other cases, a country may decide to develop several national plans, e.g. by sector or by another theme. The road map would present the national approach and indicate a timeline for production, review and update of the adaptation plans.

FIGURE 1. POSSIBLE FLOW OF RESPONSIBILITIES FOR A NATIONAL ADAPTATION PLAN PROCESS UNTIL THE ENDORSEMENT STAGE



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The framework and strategy for the NAP process would be an important step in implementing the national mandate for the NAP process. It would present a road map (steps of the process) as well as inputs, outputs, outcomes and the timing of main steps of the process. It would also present plans for monitoring and evaluation, and a schedule for updating the NAP. The strategy could also provide an indicative list of stakeholders who will be invited to participate in the process. See box 4 for examples of national frameworks and strategies for adaptation planning processes.

BOX 4. EXAMPLES OF NATIONAL ADAPTATION FRAMEWORKS AND STRATEGIES

Australia and Germany provide two examples of national adaptation frameworks or strategies. Australia's national adaptation framework was developed as part of its Plan of Collaborative Action on Climate Change in 2006.^a The long-term goal of this framework is to position Australia to reduce the risks of climate change impacts and realize any opportunities. The framework outlined the future agenda of collaboration between the Australian subnational governments to address key demands from business and the community for targeted information on climate change impacts, and to fill critical knowledge gaps which inhibit effective adaptation. A key focus of the framework is to help decision-makers to understand and incorporate climate change into policy and operational decisions at all scales and across all vulnerable sectors. The framework was designed to guide efforts by jurisdictions over a five- to seven-year period to:

- Support decision-makers with practical guides and tools to assist in managing climate change impacts;
- Establish a new centre for climate change adaptation to provide decision-makers with robust and relevant information on climate change impacts, vulnerability and adaptation options;
- Provide, for the first time, climate change projections and regional scenarios at scales relevant to decision-makers;
- Generate the knowledge to understand and manage climate change risks to water resources, biodiversity, coasts, agriculture, fisheries, forestry, human health, tourism, settlements and infrastructure;
- Work with stakeholders in key sectors to commence developing practical strategies to manage the risks of climate change impacts;
- Assess the implications of climate change and possible adaptation actions for important regions such as the Murray-Darling Basin, parts of western Australia, the tropical north and the drying regions of eastern Australia.

In the case of Germany, a strategy for adaptation to climate change was developed with the long-term objective of reducing the vulnerability of natural, social and economic systems and to maintain and improve their capacity to adapt to the inevitable impacts of climate change.^b

The strategy set out to:

- Identify and define possible long-term climate impacts for Germany and its regions;
- Identify and communicate dangers and risks, by quantifying and making transparent their probability, damage potential, uncertainty factors, and time components;
- Create and raise awareness among stakeholders;
- Provide a basis for decision-making that enables the various stakeholders to take precautions and to gradually incorporate the impacts of climate change into their private, business and public planning and activities;
- Indicate options for action, coordinate and define responsibilities, and draw up and implement measures.

a <<http://www.climatechange.gov.au/government/initiatives/national-climate-change-adaptation-framework.aspx>>.

b <http://www.bmu.de/files/english/pdf/application/pdf/das_gesamt_en_bf.pdf>.

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Monitoring and evaluation

Monitoring refers to an ongoing process of tracking and reviewing activities, their results and the surrounding context by collecting data on previously defined indicators. The purpose of monitoring is to be able to intervene in processes as it becomes obvious that they deviate from their original objective, target or standard, or that gaps remain which need to be addressed. Monitoring also includes the documentation of experiences and capturing of lessons learned, with a view to identifying best practices and to improve how activities are carried out.

The purpose of evaluation or assessment is to identify to which degree the objective or target of an intervention has been reached and why, and whether it could have been done better or more efficiently by using an alternative measure.

In the design of an M&E protocol, goals and objectives of the monitoring and evaluation would be defined, and a few areas of the NAP process would be selected for detailed monitoring, to facilitate the assessment of progress and effectiveness, and to help in identifying gaps that must be addressed over time. Specific indicators could then be developed and tracked to provide decision-makers and policymakers

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with useful information regarding the type, timing and extent of potentially required adjustments to the process and applicable support measures.

The monitoring and evaluation can focus on the process of planning – and look at such factors as inputs, leadership, outputs, outcomes and impacts of the NAP process – or it can focus on climate change and adaptation, and track changes in climate, impacts and vulnerabilities over time, with a view to showing progress in adaptation and the impact of adaptation measures that are implemented.

It is essential not to see the development of M&E systems as the last step of the adaptation process, although it is frequently illustrated last in adaptation frameworks. In fact, only a rigorous monitoring and evaluation of each phase of the adaptation process will lead to successful adaptation in the long-term as corrective actions can be taken and important lessons captured. Especially since adaptation is still a new field in the development context and approaches to address it must be flexible, M&E systems are of primary importance to gradually improve strategies and interventions. Thus, considerations of how to design an appropriate M&E system must be part of the development of adaptation strategies and interventions from the very beginning.

The selected references given below summarize good practices for monitoring and evaluation, and give many suggestions for designing systems that are cost-effective.



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Lonsdale KG, Gawith MJ, Johnstone K, Street RB, West CC and Brown AD. 2010. *Attributes of well-adapting organisations: a report prepared by UK Climate Impacts Programme for the Adaptation Sub-Committee*. Oxford: UKCIP. Available at <http://www.ukcip.org.uk/wordpress/wp-content/PDFs/UKCIP_Well_adapting_organisations.pdf>.

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4.2 STEP A.2. STOCKTAKING: IDENTIFYING AVAILABLE INFORMATION ON CLIMATE CHANGE IMPACTS, VULNERABILITY AND ADAPTATION AND ASSESSING GAPS AND NEEDS OF THE ENABLING ENVIRONMENT FOR THE NAP PROCESS

Overview: Step 2 establishes the knowledge base for developing a NAP, drawing on available data and information. A gap analysis will identify areas that require strengthening in order for the country to successfully undertake the NAP process. Potential barriers to the design and implementation of adaptation will be identified and a plan to address them developed.

Key questions

- Where do we stand regarding effective short- and long-term adaptation activities?
- What data and knowledge are available to assess current and future climate risks, vulnerability and adaptation?
- How can the storage and management of this data and knowledge best be coordinated?
- What gaps can be identified regarding the capacity, adequacy of data and information, and required resources to engage in the NAP process?
- What barriers exist to effectively design and implement adaptation?

Indicative activities

- a. Conduct a stocktaking of ongoing and past adaptation activities and their effectiveness
- b. Synthesize available analyses of the current and future climate at the broad national and/or regional level
- c. Conduct a gap analysis to assess strengths and weaknesses regarding the capacity, data and information, and resources required to effectively engage in the NAP process
- d. Assess potential barriers to the planning, design and implementation of adaptation

A.2.A CONDUCT A STOCKTAKING OF ONGOING AND PAST ADAPTATION ACTIVITIES

Many activities already exist in LDCs that have been designed and implemented as part of the NAPA process to address urgent and immediate adaptation needs, or that are being implemented by other stakeholders including NGOs and civil society groups. Relevant initiatives include, for example, sector-specific or location-specific studies on vulnerability and economic impacts of climate change and technology needs assessments. It would be useful for countries to compile information on such ongoing and past adaptation activities (projects, programmes, policies and capacity-building efforts) and to analyse how these activities have been developed, the support and funding received, the timelines, and their overall effectiveness. When synthesized, this information would give an indication of the status of the country's enabling environment for adaptation.

While the NAP process is not intended to produce only a list of projects and programmes on adaptation, it is still worthwhile to take stock of current and past activities, in order to identify collected data and information, early results, existing arrangements and capacities, and to start building a community of adaptation practitioners at the national level that could become key contributors to the NAP process. A valuable output of the stocktaking would be a database of ongoing and past adaptation activities, and where available, information on results (outputs and

outcomes) and effectiveness of such activities. Such a database would be a useful basis for reporting on capacity-building and related activities in the country, and ideally would compile information that can complement existing efforts at the regional and international levels to document adaptation actions.

A.2.B SYNTHESIZE AVAILABLE ANALYSES OF THE CURRENT AND FUTURE CLIMATE AT THE BROAD NATIONAL AND/OR REGIONAL LEVEL

An additional form of stocktaking within a country would be a synthesis of the state of the science on current climate variability and existing vulnerabilities, projected climatic changes, associated impacts and future vulnerabilities, and any outcomes of past adaptation efforts in reducing vulnerability. This would develop a basis for further planning and guide efforts to improve this knowledge base.

The work would include compiling and synthesizing available assessments of current climate and any existing climate scenarios. This synthesis would indicate what the major sources of climate risk are, and would help inform decisions on where efforts should be directed for future data collection and analysis. Building up databases of impacts and vulnerabilities would be useful to inform future adaptation assessments. In cases where such assessments are lacking or are inadequate, this would indicate a gap that would need to be addressed, as described in section A.3.

The NAP process in a given country is likely to employ several assessment approaches. Many countries have found it useful to build up databases of impacts and vulnerabilities, which can then be used to inform adaptation assessments. In addition, most countries have already identified some existing information from past assessments of impacts, vulnerability and adaptation options. In some cases, information will exist on results and outcomes of adaptation activities which have already been undertaken.

In addition to national assessments, regional and global assessments can also be a useful source and guide for the synthesis of impacts, vulnerability and adaptation. The latest IPCC assessment reports as well as special reports such as the 2011 report on extreme events and disasters¹⁴ provide examples of studies, including regional ones, that can guide national efforts in synthesizing available information. Some countries have started to downscale climate models, which can provide additional insight on the types of impacts to be expected.

The long-term goal of the synthesizing exercise would be to arrive at a structured system or database that systematically documents expert knowledge on impacts of climate change in a way that avoids redundant assessments. The compilation of amassed knowledge and data can take various shapes and formats, such as Internet-based databases that can be accessed and maintained by a variety of users or “state of the knowledge” reports that can be produced at early stages of the NAP



14 IPCC. 2012. *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation (SREX)*. IPCC Special Report. Cambridge: Cambridge University Press. Available at <<http://www.ipcc-wg2.gov/SREX>>.

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process. A country may want to select its preferred form of synthesizing data according to such criteria as feasibility, availability, costs and expected benefits.

As more and more data is collected on observed impacts and vulnerabilities, it is possible that good knowledge bases can be built which can then guide the selection of adaptation measures. The LEG is exploring the construction of such knowledge bases, with a view to exploring development and application of “expert-based systems.” An example of a planning approach based on an inventory of adaptation options which are ranked according to specific criteria is available for the Netherlands.^a

^a De Bruin K, Dellink, RB, Ruijs, AJW, Bolwidt, L, van Buuren, A, Graveland, J, de Groot, RS, Kuikman, PJ, Reinhard, S, Rötter, RP, Tassone, VC, Verhagen, A, van Ierland, EC. 2009. *Adapting to climate change in the Netherlands: an inventory of adaptation options and ranking of alternatives*. Climatic Change 95 (1-2): pp. 23-45.

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A.2.C CONDUCT A GAP ANALYSIS TO ASSESS CAPACITIES AND WEAKNESSES, ADEQUACY OF AVAILABLE DATA AND INFORMATION, AND RESOURCES TO EFFECTIVELY ENGAGE IN THE NAP PROCESS

The activities of synthesizing available information and knowledge of climate change in support of the NAP process would provide an indication of the adequacy of existing data and information, and help identify any major gaps and the resources that may be required to strengthen collection of new data and new analyses. In addition to assessing existing data and information the gap analysis would also include an assessment of capacity and capacity constraints, institutional strengths and weaknesses, and resources required for an effective engagement in the NAP process.

In order to address adaptation effectively national adaptation systems need strong capacity in areas such as the following:

- Overall coordination of adaptation work at the national level;
- Assessment of the impacts and risks of, and vulnerability to, climate change at multiple scales, regions and sectors;

- Development of strategies, frameworks and/or plans to address the impacts, vulnerabilities and risks;
- Prioritization of adaptation needs, implementation of specific adaptation projects, programmes or activities to address those needs, and securing of resources for implementation;
- Information management (collection, analysis and dissemination of information in support of adaptation activities);
- Review, monitoring and evaluation of the capacity, efforts and resources to address climate change adaptation.

Adaptation capacity gaps and needs vary among countries, depending on multiple factors that include: the nature of climate change impacts, vulnerabilities and risks; the nature of planning and implementation processes; and experience with past and ongoing adaptation initiatives.

Under the Convention, several processes exist that have already supported Parties in assessing and establishing capacity that will be useful for the NAP process. For example, a capacity-building framework for developing countries was established in 2001 to build countries' capacity to implement the Convention and prepare for their effective participation in the Kyoto Protocol process. The capacity built through this framework, assists countries in promoting sustainable development while meeting the objective of the Convention.¹⁵ The framework divides capacity for sustainable development into three categories, namely: individual, institutional and systemic,¹⁶ all of which would also be required for undertaking adaptation.

Additional processes established under the Convention have assisted developing countries to identify, and in some cases to build, foundational capacities for addressing climate change adaptation. These include:

- The NAPA process.¹⁷ The urgent and immediate priority projects identified in countries' NAPAs contain various activities that are related to building capacity to address climate change, such as improving institutional and human resource capacity, strengthening early warning systems including data and modelling capacity, improving climate change education and awareness, and developing and/or strengthening policy frameworks to address climate change;¹⁸
- The Nairobi work programme on impacts, vulnerability and adaptation to climate change;¹⁹
- National communications;²⁰

¹⁵ Decision 2/CP.7.

¹⁶ FCCC/SBI/2007/5, paragraph 22.

¹⁷ <<http://unfccc.int/2719>>.

¹⁸ Countries' submitted NAPAs are available at <<http://unfccc.int/4585>>.

¹⁹ <<http://unfccc.int/3633>>.

²⁰ <<http://unfccc.int/1408>>.

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- Technology needs assessments (TNAs).²¹ Under the TNA process, countries indicated the need for capacity-building to fully engage in the development, deployment, diffusion and transfer of environmentally sound technologies;²²
- National economic, environment and development study (NEEDS) for climate change.²³

Other processes outside the Convention have also assisted developing countries to assess their capacity needs related to adaptation and/or to address those needs. The national capacity self-assessment process²⁴ revealed that many countries lack clarity in their organizational set-up to adequately finance environmental management, and that they continue to lack a comprehensive and adequate set of environmental policies, with missing or unenforced legislative and regulatory instruments that further hinder environmental management.²⁵

An important step in addressing adaptation at the national level would therefore be to perform a systematic capacity gap analysis of the national adaptation structures and systems, and to set up a strategy to address shortcomings. This will involve the identification of options for strengthening and/or establishing various institutions, bodies, programmes, facilities, policies and legislative frameworks.

A national adaptive capacity (NAC) framework developed by the World Resources Institute²⁶ provides such a systematic approach for assessing institutional strengths and weaknesses that may help or hinder adaptation. It provides questions that can assess institutional capacity at the national level for performing the core set of functions that underpin adaptation (see table 4). This framework could be adapted to the NAP process and used as a tool for undertaking the gap analysis.

21 <<http://unfccc.int/ttclear/jsp/TNAREports.jsp>>.

22 FCCC/SBSTA/2009/INF.1.

23 <<http://unfccc.int/5630>>.

24 <<http://www.thegef.org/gef/pubs/NCSA>>.

25 GEF, UNDP and UNEP. 2010. *National Capacity Self-Assessments: Results and Lessons Learned for Global Environmental Sustainability*. Available at <<http://www.thegef.org/gef/pubs/NCSA>>.

26 Dixit A, McGray H, Gonzales J and Desmond M. 2012. *Ready or Not: Assessing Institutional Aspects of National Capacity for Climate Change Adaptation*. Washington, D.C.: World Resources Institute. Available at <<http://www.wri.org/publication/ready-or-not>>.

TABLE 4. INSTITUTIONAL FUNCTIONS FOR ADAPTATION

ASSESSMENT	Assessment is the process of examining available information to guide decision-making. Adaptation is likely to require iterative assessments over time, including assessments of a country's vulnerability, climate change impacts, adaptation practices and the climate sensitivity of development activities. Example: In India, a regional vulnerability assessment of the north-east of the country was conducted to inform investment in adaptation under the Indo-German Northeast Climate Change Adaptation Program. It assessed projected climate change, poverty metrics and ecosystem health, among other vulnerability factors, and enabled comparison of vulnerability among different districts (Ravindranath et al. 2011).
PRIORITIZATION	Prioritization means assigning special importance to particular issues, areas, sectors or populations. For adaptation, prioritization at the national level usually takes into account where climate impacts will be most severe and who among the country's population is the most vulnerable. Effective prioritization will engage a wide range of stakeholders, will be made transparent to the public and will enable review and adjustment of priorities as circumstances change. Countries can have different approaches for setting priorities and may incorporate a wide range of values and concerns in this prioritization process. Example: In Bangladesh's 2008 national climate change strategy, six "pillars" were identified as national priorities: 1. Food security, social protection, and health; 2. Comprehensive disaster management; 3. Infrastructure; 4. Research/knowledge management; 5. Mitigation and low-carbon development; 6. Capacity-building/institutional strengthening (Government of the People's Republic of Bangladesh, 2009).
COORDINATION	Adaptation requires action by disparate actors at multiple levels, both within and outside of government. Coordination of their activities helps avoid duplication or gaps and can create economies of scale in responding to challenges. Coordination may begin as a process of establishing relationships, sharing information and raising awareness, but may move toward the management of joint decision-making and action. It may be horizontal (e.g. among ministries), vertical (e.g. among national, global and subnational actors) or among stakeholders (e.g. between government and business). Example: In Nepal, the Ministry of Environment has taken the lead in coordinating all climate change-related activities. The national adaptation programme of action (NAPA) was created with the help of six thematic working groups that each coordinated a particular issue area, with representatives from several ministries in each group (Government of Nepal, 2010). Building on this NAPA process, the government has recently established the Multi-Stakeholder Climate Change Initiatives Coordination Committee (MCCICC), under the Secretary of the Ministry of Environment. The committee aims to foster a unified and coordinated climate change response in Nepal.
INFORMATION MANAGEMENT	Information management consists of collecting, analysing and disseminating information in support of adaptive activities. Relevant information will vary across sectors, countries and climate change impacts but, at a minimum, typically covers climate variables, the status of natural and human systems, and existing coping strategies. Providing or accessing existing information for conducting vulnerability assessments is critical for most adaptation activities. Good information management will ensure that information is useful and accessible to stakeholders. It may also involve general awareness-raising or building the capacity of stakeholders to use information for adaptation. Example: In the United Kingdom, a quasi-governmental organization known as the United Kingdom Climate Impacts Programme (UKCIP) published climate change scenarios and associated adaptation decision tools on behalf of the government. These scenarios were widely used to research the possible impacts of climate change to support adaptation decision-making. Since October 2011, the Environment Agency has taken over the management of UKCIP.
CLIMATE RISK MANAGEMENT	The four functions above assess aspects of adaptive capacity relevant to a broad range of climate-related challenges in a country. However, most countries face specific climate risks that loom larger than others. The Climate Risk Management function provides an opportunity to examine institutional aspects of the specific capacities needed to address such risks. Addressing climate risks requires a process of identifying the specific risks to a given priority, evaluating the full range of options for addressing the risks, then selecting and implementing risk reduction measures. Countries typically treat risk management on a sector-by-sector or issue-specific basis. For example, many countries have highly climate-sensitive agriculture and water sectors and may focus adaptation investments on building the capacity for managing climate risks in these sectors. In other cases, a country may prioritize treatment of climate risks to a particularly vulnerable group, such as the elderly. Example: In Vietnam, sea level rise in the Mekong River delta has put significant amounts of agricultural land at risk, threatening the livelihoods of farmers. The government has initiated large-scale restoration and rehabilitation of mangroves, as well as the construction of dikes, to prevent saline water from inundating agricultural lands (WRI, 2011).

Source: Dixit A, McGray H, Gonzales J and Desmond M. 2012. *Ready or Not: Assessing Institutional Aspects of National Capacity for Climate Change Adaptation*. Washington, D.C.: World Resources Institute. Available at <<http://www.wri.org/publication/ready-or-not>>.

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A.2.D ASSESS POTENTIAL BARRIERS TO THE PLANNING, DESIGN AND IMPLEMENTATION OF ADAPTATION ACTIVITIES

This activity is aimed at identifying potential barriers to adaptation planning and to the implementation of adaptation activities, to guide efforts to enhance implementation. It is useful to distinguish the two types of barriers so that they can be addressed at different stages of the NAP process (e.g. in the early stages or during implementation).

Barriers to adaptation planning are any institutional, material, cultural or policy constraints that are likely to interfere with the development of a NAP as framed by the country's vision and approach. Barriers to implementing adaptation are "obstacles that tend to delay, divert, or temporarily block the adaptation process, but which can be overcome with concerted effort, creative management, change of thinking, prioritization, and any related shifts in resources, land uses,

or institutions”.²⁷ Ekstrom et al.²⁸ have developed a comprehensive, systematic approach to identifying specific barriers that occur at each stage of the adaptation process, along with diagnostic questions to ascertain how actors, context and the system that is being managed in the light of climate change contribute to the existence of these barriers.

Early recognition of barriers to adaptation planning would be a useful input into the country’s NAP process so that these can be addressed directly and immediately (see section A.3 below). Barriers to implementing adaptation should be addressed as part of the implementation strategy of the NAP, by ensuring that specific activities are targeted towards their elimination. A consultative process involving all relevant stakeholders can be used to identify obstacles and their root causes.

Selected references

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ELEMENT A

LAY THE GROUNDWORK AND
ADDRESS GAPS

STEP A.1.

Initiating and launching the NAP process

STEP A.2.

Stocktaking: identifying available information on climate change impacts, vulnerability and adaptation and assessing gaps and needs of the enabling environment for the NAP process

STEP A.3.

Addressing capacity gaps and weaknesses in undertaking the NAP process

STEP A.4.

Comprehensively and iteratively assessing development needs and climate vulnerabilities

4.3 STEP A.3. ADDRESSING CAPACITY GAPS AND WEAKNESSES IN UNDERTAKING THE NAP PROCESS

Overview: This step designs and implements projects, programmes and other actions to address gaps, weaknesses and barriers identified in the previous steps. These capacity-building efforts would be designed to equip teams and institutions involved in adaptation with the necessary skills and thus build an appropriate enabling environment.

Key questions

- How can enabling institutional and technical capacity gaps best be addressed and which resources are required?
- How can long-term capacity development be institutionalized?
- How can each of the barriers to adaptation planning be lifted?
- Where are there opportunities for integrating climate change adaptation into development planning?

Indicative activities

- Develop and enhance enabling institutional and technical capacity for undertaking the NAP process
- Identify and enhance awareness of potential opportunities for integrating climate change adaptation into development planning at different levels
- Design and implement programmes on climate change communication, awareness-raising and education

A.3.A DEVELOP AND ENHANCE ENABLING INSTITUTIONAL AND TECHNICAL CAPACITY FOR UNDERTAKING THE NAP PROCESS

Once gaps in institutional arrangements and in technical capacity have been identified (see Step A.2), this activity would address them through a range of activities, projects and programmes.

Modalities for such activities are likely to include:

- Developing required technical skills through training and long-term technical education. This should include graduate training in various disciplines that contribute to adaptation planning. These capacity-building efforts would be carried out on a continuing basis;
- Identifying targets in capacity within subsequent years and working towards them, while using short-term training only as a stop-gap measure;
- Updating or creating new policies to facilitate work on adaptation.

Developing an M&E system for capacity

Continuous monitoring and evaluation of capacity would facilitate efforts to develop long-term capacity for adaptation planning, design and implementation. An M&E system for capacity could be established to assess progress, identify gaps and assess the effectiveness of the implementation of the measures to address those gaps. Table 5 provides a sample list of indicators applicable for monitoring adaptation capacity over time.

TABLE 5. SAMPLE INDICATORS FOR MONITORING ADAPTATION CAPACITY AT THE NATIONAL LEVEL

Components of the NAP process	Indicators for individual capacity	Indicators for institutional capacity	Indicators for societal or systemic capacity
Lay the groundwork and address gaps	- Number of skilled and certified impacts, vulnerability and risk (IVR) experts across different disciplines and sectors (e.g. agriculture, water, coastal zones, risk and hazard mapping) - Number of research and modelling facilities at the disposal of IVR experts - Number of training programmes to strengthen the capacity of national experts	- Funding for systematic observations at national and international levels - National and external research funding flows	National adaptation framework(s), project(s) or programme(s)
Preparatory elements	- Number of skilled and certified IVR experts across different disciplines and sectors (e.g. agriculture, water, coastal zones, risk and hazard mapping) - Number of skilled and certified vulnerability and adaptation (V&A) experts across different disciplines and sectors (e.g. agriculture, water, coastal zones, risk and hazard mapping) - National focal points on outreach and awareness on adaptation - Number of training programmes to strengthen the capacity of national experts	- Length of preparation phases for national reports (number of weeks or years for critical milestones) - Number of national reports on adaptation (including by sectors, regions, etc.) - Percentage of national network capacity maintained - Number of national and regional centres	- Policies and legislation created or reviewed - National outreach and awareness programmes
Implementation strategies	- Number of skilled and certified experts for different processes of implementation (e.g. developing and implementing projects, mainstreaming, accessing funding, gender, vulnerable communities, outreach and awareness) - Number of training programmes to strengthen the capacity of IVR experts	- Feedback on project development and implementation - Number of reports - Experiences in integrating climate change into development planning	- National outreach and awareness programmes - Experiences in integrating climate change into development planning - Report on removal of barriers and improvement of outcomes
Reporting, monitoring and review	Number of trained experts in reporting, monitoring and review		Number of reports on reporting, monitoring and review
Coordination	Institution(s) capacitated with the political and operational mandate to coordinate climate change adaptation at the national level	National coordination mechanisms at the political and technical levels, including across sectors as appropriate	Ranking of climate change in the national political agenda
Information management	Number of trained and certified experts in data and information management	- Number of national and regional data centres - Local database(s) on adaptation data and information - Archiving systems for climate change adaptation data and information - Sources of information for decision support	Policies on data and information management

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National Research Council. 2005. *Thinking Strategically: The Appropriate Use of Metrics for the Climate Change Science Program*. Committee on Metrics for Global Change Research, Climate Research Committee. Available at <https://download.nap.edu/catalog.php?record_id=11292>.

A.3.B IDENTIFY AND ENHANCE AWARENESS OF POTENTIAL OPPORTUNITIES FOR INTEGRATING CLIMATE CHANGE ADAPTATION INTO DEVELOPMENT PLANNING AT DIFFERENT LEVELS

This activity targets planners and policymakers. In order to successfully integrate climate change adaptation into planning, the NAP process needs to engage stakeholders at all levels of planning and develop a good understanding of climate change adaptation early in the process. The activity should create the opportunity for sharing information in a way that enhances mutual understanding and that could trigger development of the skills and competencies required to effectively integrate adaptation into development. In this way, it will help to identify appropriate entry points for integrating climate change adaptation into development planning at all levels, including consideration of how certain development objectives may be adjusted to take climate change risks and vulnerabilities better into account.

This activity could be implemented through workshops and short courses targeting development planners and managers, and could be supplemented by online training methods. Short publications and pamphlets could also be effective tools for creating awareness.

Selected references

Integrating adaptation into development planning:

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A.3.C DESIGN AND IMPLEMENT PROGRAMMES ON CLIMATE CHANGE COMMUNICATION, AWARENESS-RAISING AND EDUCATION

Effective and sustainable communications and awareness-raising programmes also need to target the general public. Related to this would be efforts to transform education curricula to incorporate climate change.



Awareness programmes should target specific stakeholder groups, using appropriate media and tools. A general website on climate change issues for the country that would also communicate and announce activities of the NAP process could be valuable.

Some countries have found it useful to have a specific website for communicating climate change information, e.g. regarding results of specific analyses, scenarios and tools. For example, the United Kingdom's climate projections website <<http://ukclimateprojections.defra.gov.uk>> shows maps and key findings on climate analyses and projections, as well as reports, guidance documents, case studies and tools.

In order to build lasting awareness and capacity for to adapt to climate change, educational systems would need to develop programmes that cover climate change at all appropriate levels of schooling. The Article 6 climate change information network (CC:iNet) at <http://unfccc.int/cc_inet/cc_inet/items/3514> contains many examples of initiatives on climate change education, training and public awareness.

Selected references

Education:

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Communication:

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4.4 STEP A.4. COMPREHENSIVELY AND ITERATIVELY ASSESSING DEVELOPMENT NEEDS AND CLIMATE VULNERABILITIES

Overview: Step 4 seeks to identify major development goals, objectives and policies, with a view to identifying risks to development investments, as well as any potential opportunities, that climate change may create. An important outcome of this work would be the initiation or enhancement of climate-proofing of main development efforts.

Key questions

- What key development goals and needs are sensitive to climate change?
- How can climate risks to development and potential co-benefits of adaptation and development be identified?

Indicative activities

- Compile information on main development objectives, policies, plans and programmes
- Identify synergies between development and adaptation objectives, policies, plans and programmes

A.4.A COMPILE INFORMATION ON MAIN DEVELOPMENT OBJECTIVES, POLICIES, PLANS AND PROGRAMMES

An important step in the first element of the NAP process is to identify aspects of current development efforts that are most at risk from climate change and to climate-proof these aspects. An initial activity would be the stock-taking of main development goals and objectives, as well as major development projects and programmes, taking note of time frames involved and schedules for updating the various plans. A good knowledge of different development policies and activities at different levels would provide a good basis for subsequent planning and integration of climate change concerns into the planning process.

Types of planning processes and related development plans that can be found in a country may include:

- National development and/or economic strategies;
- The national poverty reduction strategy papers;
- National policies on governance and local government;
- Medium- and long-term national development goals such as the Millennium Development Goals;
- National sectoral policies;
- Disaster preparedness and risk reduction frameworks, policies and plans;
- Multilateral agencies' strategies and action plans (e.g. World Bank Country Assistance Strategy (CAS), United Nations Development Assistance Framework (UNDAF), IFAD country strategic opportunities programme (COSOP), etc.);
- Regulations and procedures for strategic environmental assessments and environmental impact assessments;
- Bilateral and cooperation strategies;

- Budget processes (medium-term expenditure frameworks, public expenditure reviews).

A.4.B IDENTIFY SYNERGIES BETWEEN DEVELOPMENT AND ADAPTATION OBJECTIVES, POLICIES, PLANS AND PROGRAMMES

Part of the process of identifying linkages between development and climate change adaptation could include identifying and understanding the various processes, institutions, actors, mandates, existing policies and other factors that are relevant for the effort to integrate climate change into development.

This activity would facilitate the identification of risks to investment and opportunities for collaboration and realization of co-benefits, including economic benefits. Addressing these risks would lead to the climate-proofing of development efforts.

Possible aspects to be considered under this activity include: ²⁹

- Understanding the planning processes that shape the country's development and climate change priorities;
- Understanding the institutions and stakeholders in government, the non-governmental sector and the broader development community, including their activities and how they are related to one another;
- Identifying partners that can provide technical, financial and political support to the integration effort, and developing options for engaging these partners;
- Understanding the national decision-making process for the development and approval of policies, budgets and related measures. In particular, it would be important to determine how policies on climate change issues, that may be developed by a coordinating ministry, could be extended to be applicable broadly to other ministries in the country;
- Being aware of and understanding the political factors that may affect the integration of efforts either positively or negatively.

The preliminary assessment requires interaction with a wide range of stakeholders. This includes targeted discussion and workshops with government institutions and officials at various levels, non-governmental stakeholders and the development community. The assessments would need to remain limited in scope, depth and time frame. The aim is for the government to find, in a short time frame, the most adequate entry point(s) for integration and to start making efforts towards this. Later, in the integration process, the preliminary assessments would be complemented by extensive analytical work that could then be used to effectively shape the policy process.

²⁹ Modified from: UNDP-UNEP. 2009. *Mainstreaming Poverty–Environment Linkages into Development Planning: A Handbook for Practitioners*, pp.30–32. Available at <<http://www.unpei.org/PDF/PEI-full-handbook.pdf>>.

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ELEMENT B

PREPARATORY ELEMENTS

STEP B.1.

Analysing current climate and future climate change scenarios

STEP B.2.

Assessing climate vulnerabilities and identifying adaptation options at the sector, subnational, national and other appropriate levels

STEP B.3.

Reviewing and appraising adaptation options

STEP B.4.

Compiling and communicating national adaptation plans

STEP B.5.

Integrating climate change adaptation into national and subnational development and sectoral planning

5. ELEMENT B. PREPARATORY ELEMENTS

The first element covered activities in the inception phase of the NAP process: identifying the state of knowledge and capacity, and ensuring that a country has all the tools and means necessary to embark on the national adaptation planning cycle.

During the execution of the second element of the NAP process, a country is encouraged to conduct an in-depth impact, vulnerability and adaptation assessment. It is designed to involve all stakeholders in preparing a NAP that builds on, and can be integrated into, sectoral, subnational and national plans and strategies. During this process, capacity for integrating climate change adaptation into national and sectoral planning, as well as at other levels, would continue to be developed and enhanced.

The main outputs could include a climate risk analysis, vulnerability and adaptation assessments, plans at different subnational levels or sectors, an appraisal of adaptation options, duly approved and endorsed by a national process as predefined in the mandate developed for the NAP process at the beginning of the process. Such outputs and the NAPs would have a specified period of validity, and would be reviewed and updated in an iterative manner over time. It is important to note that the national plan would not require that there be subnational plans for all provinces, districts or states, or all sectors.

Various methods for assessing impacts, vulnerability and adaptation are described in the literature, and guidebooks and guidelines exist to support such assessments. Many countries will have had some experience in conducting these assessments through the NAPA or other processes. The current technical guidelines do not attempt to synthesize and summarize all available methods, but rather to illustrate the approaches available for different steps of the NAP process.

TABLE 3B. SUGGESTED STEPS AND INDICATIVE ACTIVITIES FOR ELEMENT B ON PREPARATORY ELEMENTS OF THE NAP PROCESS

Steps	Indicative activities
Element B. Preparatory elements	
1. Analysing current climate and future climate change scenarios	a. Analyse the current climate to identify trends in variables and indices that could be used to support planning and decision-making b. Characterize broad future climate risks and levels of uncertainty using scenario analysis at the national level or as part of a regional analysis including through climate and socioeconomic scenarios c. Communicate projected climate change information to all stakeholders and the public
2. Assessing climate vulnerabilities and identifying adaptation options at sector, subnational, national and other appropriate levels	a. Assess vulnerability to climate change at sector, subnational, national or appropriate levels (by applying applicable frameworks) b. Rank climate change risks and vulnerabilities c. Identify and categorize adaptation options at multiple scales to address priority vulnerabilities
3. Reviewing and appraising adaptation options	a. Appraise individual adaptation options, including economic, ecosystem and social costs and benefits, and possibilities for unintended (positive and negative) impacts of adaptation measures
4. Compiling and communicating national adaptation plans	a. Aggregate sectoral and subnational adaptation priorities into national adaptation plans through stakeholder ranking processes and make the drafts available for review b. Integrate review comments into the national adaptation plans and process endorsement at the national level as defined in the mandate for the NAP process c. Communicate and disseminate the national adaptation plans widely to all stakeholders in the country
5. Integrating climate change adaptation into national and subnational development and sectoral planning	a. Identify opportunities and constraints for integrating climate change into planning b. Build and enhance capacity for integrating climate change into planning c. Facilitate the integration of climate change adaptation into existing national and subnational planning processes

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5.1 STEP B.1. ANALYSING CURRENT CLIMATE AND FUTURE CLIMATE CHANGE SCENARIOS

Overview: Step 1 under the preparatory element aims to analyse current climate risks, including extremes, and evaluate how these determine current vulnerability to climate change. The analysis is then extended to identify future climate risks through the application of climate change scenarios. The results of this broad climate risk analysis would help to identify “adaptation deficits”, and would guide the selection of areas. Many countries have experience and expertise in these priority risk areas, developed through the national communications process, for example. Therefore, where relevant climate models or scenarios exist, they could be used for the NAP purpose without risk of duplication.

Key questions

- Which climatic patterns in the country, according to observed data, are most important in terms of adjustment, adaptation or acclimatization of social systems?
- What risks does climate change hold for the country?
- What are major current climate hazards?
- What is the estimated range of uncertainty for possible future climate scenarios?
- What are appropriate indices of climate trends which could support planning and decision-making?

Indicative activities

- a. Analyse the current climate to identify trends in variables and indices that could be used to support planning and decision-making
- b. Characterize broad future climate risks and levels of uncertainty using scenario analysis at the national level or as part of a regional analysis including through climate and socioeconomic scenarios
- c. Communicate projected climate change information to all stakeholders and the public

B.1.A ANALYSE CURRENT CLIMATE TO IDENTIFY TRENDS IN VARIABLES AND INDICES THAT COULD BE USED TO SUPPORT PLANNING AND DECISION-MAKING

Characterizing current and past climate is an important step in understanding directions of climate change and climate variability. The methods and tools for this analysis are very accessible, and often only require the input of daily climate data (temperature and rainfall).

Daily temperature and precipitation are the two most common and important climate variables for analysing climate change. Methods for quality control of station measurements of these two variables are well described in the literature, and several regional and global centres compile and redistribute daily station data. Climate assessment studies typically use climate data for the 30-year period from 1960 to 1990 to represent a baseline climate, and a projection beyond 1990 to represent a changed climate.

Climate scientists have identified a set of 27 core indices for analysing daily data of temperature and precipitation.³⁰ These have been well tested, and results at the regional and global levels are available. The 27 indices are given in annex 4, and a link to computer programmes for analysing these indices is given at <unfccc.int/NAP>. A subset of these would generally be adequate for analysing the current climate, and these can also be used to derive other variables, such as drought indices. Computer programs to analyse daily or monthly data using these 27 indices are readily available and routinely used in training activities on climate data analysis.

The problems with maintaining climate observational networks and climate information services in LDCs are well known, and remain an obstacle to effectively using climate information in the design and implementation of adaptation measures in LDCs.

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30 Alexander LV et al. 2006. *Global observed changes in daily climate extremes of temperature and precipitation*. Journal of Geophysical Research. 111: D09109. See also: Karl TR, Nicholls N and Ghazi A. 1999. *CLIVAR/GCOS/WMO workshop on indices and indicators for climate extremes: workshop summary*. Climatic Change. 42: pp.3–7; Peterson TC and co-authors. 2001. *Report on the Activities of the Working Group on Climate Change Detection and Related Rapporteurs, 1998–2001*. Rep. WCDMP-47, WMO-TD 1071. Geneva: WMO; Peterson TC. 2005. *Climate change indices*. WMO Bulletin. 54(2): pp.83–86.

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B.1.B CHARACTERIZE BROAD FUTURE CLIMATE RISKS AND LEVELS OF UNCERTAINTY USING SCENARIO ANALYSIS AT THE NATIONAL LEVEL OR AS PART OF A REGIONAL ANALYSIS INCLUDING THROUGH CLIMATE AND SOCIOECONOMIC SCENARIOS

As the time frame for the NAP process is the medium- and long-term, it will be beneficial for countries to build the capacity to work with scenarios. Many countries have already developed some experience in this regard, for example through downscaling exercises, or for the preparation of national communications. Some research centres are developing scenarios to cover most regions of the world, and access to this data would facilitate assessments in many LDCs. Despite advances in the modelling,³¹ lack of observed climate data in many LDCs presents a considerable challenge to improving the quality of downscaled climate scenarios. Besides these changes in climatic conditions, different socioeconomic pathways will also have to be taken into account in a scenario analysis.

The methods for developing and applying climate change scenarios are the focus of an IPCC task group (the TGCIA),³² and recommended methods and global scenarios data are maintained on the IPCC Data Distribution Centre website.³³

While a vulnerability and adaptation assessment can be completed without extensive analysis of climate data and scenarios, the analysis of climate data provides a scientific, quantitative basis for identifying how the climate is changing. This would provide an important basis for raising awareness for action. More practically, the results of such analyses can inform adaptation measures that require concrete data, such as in the case of designing irrigation schemes, or management of water flows in dams.

An important scientific consideration is the root cause of climate variability for a given region, such as El Niño/La Niña–Southern Oscillation (ENSO) and sea-surface temperatures, and the possible changes in these phenomena under climate change. These are areas of active research, and as scientific understanding improves, this knowledge should be integrated into adaptation planning.

In the absence of climate scenario analyses for a given region, a country may wish to coordinate the development of new scenarios with neighbouring countries, using the minimum set of emissions scenarios recommended by the IPCC³⁴ in order to guide medium- to long-term adaptation assessment and planning. Countries that have a well-developed national adaptation planning process, such as the United Kingdom and the United States of America, have applied climate models to de-

31 Moss RH et al. 2010. *The next generation of scenarios for climate change research and assessment*. Nature. 463: pp.747–756.

32 <<http://www.ipcc.ch/activities/activities.shtml#tabs-4>>.

33 <<http://www.ipcc-data.org>>.

34 For more details, see <<http://ipcc.ch/activities/activities.shtml#tabs-5>>.

velop climate change scenarios for their regions. The methods used are accessible to scientists all over the world, and many regional research centres in developing regions have the capacity to support LDCs in their efforts to apply them. In some regions, efforts are under way to build national capacity to run and process regional climate models. For example, under the Africa Adaptation Programme which was funded by Japan and implemented by UNDP, participating countries were assisted in developing capacity to install and run regional climate models locally, and use them to generate climate change scenarios.

The climate data analysis and modelling should be guided by what is needed to characterize climate changes and thus facilitate different planning approaches, such as:

- Taking a sectoral (e.g. agriculture) or even sub-sectoral (e.g. livestock) approach and delineating the individual and combined effects of changes in the climate variables on production methods, productivity and yields, assets, infrastructure, economic gains, in the short- and long-term;
- Taking a geographical approach and delineating the impacts of climate change on environmental assets, on key productive regions, or on rural versus urban settings;
- Assessing whether sectoral development goals become unattainable owing to climate change (e.g. aiming for a 4% annual growth rate in agriculture may not be realistic);
- Taking a socioeconomic approach and determining if changes in specific climate variables are likely to affect certain social groups or occupations more than others.

The methods and options for constructing local to regional climate change scenarios are many, as shown in table 6. Regardless of the model or scenario, key is that there is broad consensus in the country about climate change and its likely impacts, even if the projections have limitations. These limitations can probably be addressed in the very long-term (as part of a series of NAPs, for example), but for planning purposes, it would be useful to have a common starting point.



TABLE 6. OPTIONS FOR CONSTRUCTING LOCAL TO REGIONAL CLIMATE CHANGE SCENARIOS, LISTED IN ORDER OF INCREASING COMPLEXITY AND RESOURCE DEMAND

Method (application)	Advantages	Disadvantages
Sensitivity analysis	1. Easy to apply 2. Requires no future climate change information	1. Provides no insight into the likelihood of associated impacts unless benchmarked to other scenarios
Resource management, sectoral	3. Shows most important variables or system thresholds 4. Allows comparison between studies	2. Impact model uncertainty seldom reported or unknown
Change factors	1. Easy to apply 2. Can handle probabilistic climate model output	1. Perturbs only baseline mean and variance 2. Limited availability of scenarios for 2020s
Most adaptation activities		

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Method (application)	Advantages	Disadvantages
Climate analogues <i>Communication, institutional, sectoral</i>	1. Easy to apply 2. Requires no future climate change information 3. Reveals multi-sector impacts of or vulnerability to past climate conditions or extreme events, such as a flood or drought episodes	1. Assumes that the same socioeconomic or environmental responses recur under similar climate conditions 2. Requires data on confounding factors such as population growth, technological advance and conflict
Trend extrapolation <i>New infrastructure (coastal)</i>	1. Easy to apply 2. Reflects local conditions 3. Uses recent patterns of climate variability and change 4. Instrumented series can be extended through environmental reconstruction 5. Tools freely available	1. Typically assumes linear change 2. Trends (sign and magnitude) are sensitive to the choice or length of record 3. Assumes that climatology of a region does not change 4. Needs high-quality observational data for calibration 5. Confounding factors can cause false trends
Pattern-scaling <i>Institutional, sectoral</i>	1. Modest computational demand 2. Allows analysis of global climate model (GCM) and emissions uncertainty 3. Shows regional and transient patterns of climate change 4. Tools freely available	1. Assumes climate change pattern for 2080s maps to earlier periods 2. Assumes linear relationship with global mean temperatures 3. Coarse spatial resolution
Weather generators <i>Resource management, retrofitting, behavioural</i>	1. Modest computational demand 2. Provides daily or sub-daily meteorological variables 3. Preserves relationships between weather variables 4. Already in widespread use for simulating present climate 5. Tools freely available	1. Needs high-quality observational data for calibration and verification 2. Assumes a constant relationship between large-scale circulation patterns and local weather 3. Scenarios are sensitive to choice of predictors and quality of GCM output 4. Scenarios are typically time-slice rather than transient
Empirical downscaling <i>New infrastructure, resource management, behavioural</i>	1. Modest computational demand 2. Provides transient daily variables 3. Reflects local conditions 4. Can provide scenarios for exotic variables (e.g. urban heat island, air quality) 5. Tools freely available	1. Requires high-quality observational data for calibration and verification 2. Assumes a constant relationship between large-scale circulation patterns and local weather 3. Scenarios are sensitive to choice of forcing factors and host GCM 4. Choice of host GCM constrained by archived outputs
Dynamical downscaling <i>New infrastructure, resource management, behavioural, communication</i>	1. Maps regional climate scenarios at 20–50 km resolution 2. Reflects underlying land-surface controls and feedbacks 3. Preserves relationships between weather variables 4. Ensemble experiments are becoming available for uncertainty analysis	1. Computational and technical demand high 2. Scenarios are sensitive to choice of host GCM 3. Requires high-quality observational data for model verification 4. Scenarios are typically time-slice rather than transient 5. Limited availability of scenarios for 2020s

Source: Wilby, RL, Troni J, Biot Y, Tedd L, Hewitson BC, Smith DM and Sutton RT. 2009. *A review of climate risk information for adaptation and development planning*. International Journal of Climatology. 29: pp.1193–1215.

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B.1.C COMMUNICATE PROJECTED CLIMATE CHANGE INFORMATION TO ALL STAKEHOLDERS AND THE PUBLIC

An important component of outreach efforts on climate change is to develop general climate change knowledge products that can be understood by non-climate specialists. These can focus on the impacts and highlight the need for adaptation action, inviting input into the NAP process. All stakeholders of the NAP process should have access to information that they require, and a common interpretation of climate information should be aimed at. Technical support in the use and interpretation of climate information may be provided to stakeholders. Methods and examples of outreach efforts can be found in the information network clearing house, CC:iNet.³⁵ Creating a climate-aware citizenry requires sustained efforts, and to be useful, the information should relate to the needs of the people, distinguishing carefully between short-term weather forecast and medium- to long-term climate scenarios. The implementation of this activity should be aligned with broader communication and awareness-raising efforts described in section A.3.C.

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5.2 STEP B.2. ASSESSING CLIMATE VULNERABILITIES AND IDENTIFYING ADAPTATION OPTIONS AT THE SECTOR, SUBNATIONAL, NATIONAL AND OTHER APPROPRIATE LEVELS

Overview: Step 2 focuses on the assessment of vulnerability at specific planning levels within the national context, such as at the sectoral level. The information needed would be detailed and specific to a given geographical location or sector. In many cases, LDCs will likely conduct their adaptation assessment at the sector level, either for a given subregion or for the whole country, due to the sectoral organization of the administrative and planning structures. In some cases, other levels may be chosen for the assessments.

Key questions

- Which systems, regions, or groups work towards key development goals such as food security, poverty alleviation, economic development, etc?
- What are the main climate vulnerabilities of those systems/regions that are key to achieve the main development goals?
- What are the expected impacts of climate change?
- What are viable cost-effective adaptation options to reduce the impacts of climate change or exploit opportunities?

Indicative activities

- Assess vulnerability to climate change at sector, subnational, national or appropriate levels (by applying applicable frameworks)
- Rank climate change risks and vulnerabilities
- Identify and categorize adaptation options at multiple scales to address priority vulnerabilities

B.2.A ASSESS VULNERABILITY TO CLIMATE CHANGE AT SECTOR, SUBNATIONAL, NATIONAL OR OTHER APPROPRIATE LEVELS (BY APPLYING APPLICABLE FRAMEWORKS)

The approaches for assessing vulnerability will vary depending on such factors as major climate hazards and risks for the country, levels identified in the framework and strategy for the NAP process (whether to take a national assessment approach, or whether to address issues by sector or other subnational levels), and the nature of existing knowledge on impacts, vulnerabilities and risks.

A country will likely apply several vulnerability assessment approaches, and many of these are not necessarily mutually exclusive. They could include:³⁶

1. *A hazards approach.* Hazards to climate extremes are closely linked to disaster risk management. Although this framing is increasingly used along with broader approaches, it offers a rich suite of tools for dealing with climatic

³⁶ Elaborated based on Fünfgeld H and McEvoy D. 2011. Framing Climate Change Adaptation in Policy and Practice. Working Paper 1. Melbourne: Victorian Centre for Climate Change Adaptation Research. Available at <http://www.climateaccess.org/sites/default/files/Funfgeld_Framing%20Climate%20Adaptation%20in%20Policy%20and%20Practice.pdf>.

- hazards in a direct manner, especially in case of fast onset events such as floods and storm surges along coastal zones;
2. *Risk management approach.* This is currently the most common approach. Besides assessing the hazard, it includes concepts such as uncertainty and perceptions of the risks. Risk is defined in quantitative terms and, subject to the availability of data, measures to reduce risk are developed in response to these quantified estimates;
 3. *Vulnerability approach.* The vulnerability approach focuses on the social factors that determine the ability to deal with climate impacts. It uses a more subjective and qualitative approach, with an emphasis on interactions between climate and society. Many so-called bottom-up approaches explore these interactions. Vulnerability can be interpreted in terms of outcome vulnerability, or contextual vulnerability,³⁷ leading to different types of data collection, analyses and responses;
 4. *Resilience approach.* The resilience approach has been used widely in ecology, and is now also being applied to human systems. It underlines the uncertainty in assessments and scenarios arising from the changing state of a system and thus calls for a dynamic perspective on adaptive processes and especially their effects and feedbacks across different spatio-temporal scales which influence future adaptation options. This approach calls for constant readjustment and flexibility in the response to changing conditions, sometimes called “adaptive management”;
 5. *Ecosystem-based approaches for adaptation.* This approach focuses on adaptation activities that rely on goods and services provided by ecosystems, such as food and water production, and cultural services such as recreation. It also includes considerations of ecosystem integrity after the implementation of adaptation measures;
 6. *Expert-based approach.* This approach focuses on the ranking and prioritizing of adaptation options through a qualitative assessment based on stakeholder analysis and expert judgement, thus combining top-down (hazard-based) and bottom-up (vulnerability-based) approaches. It is particularly valuable in countries or cases where there is a large knowledge base on climate impacts. The adaptation planning can start by compiling potential measures to adapt to projected climatic changes and risks, followed by a contextual ranking using such methods as multiple-criteria analysis to arrive at viable and cost-effective adaptation measures.



Assessment approaches are mostly characterized into so-called top-down or bottom-up approaches, initially to indicate the motivation of the methods used (see figure 2). A typical national assessment is likely to combine these approaches depending on the components being addressed. A number of guidelines and toolkits are available for specific target groups or decision units (see the selected references below). Users are encouraged to apply any tools that they find accessible in terms of detail and data needs, as long as there is sufficient flexibility and transparency in working with the outputs so that the assessment and final outcomes are well understood by all stakeholders.

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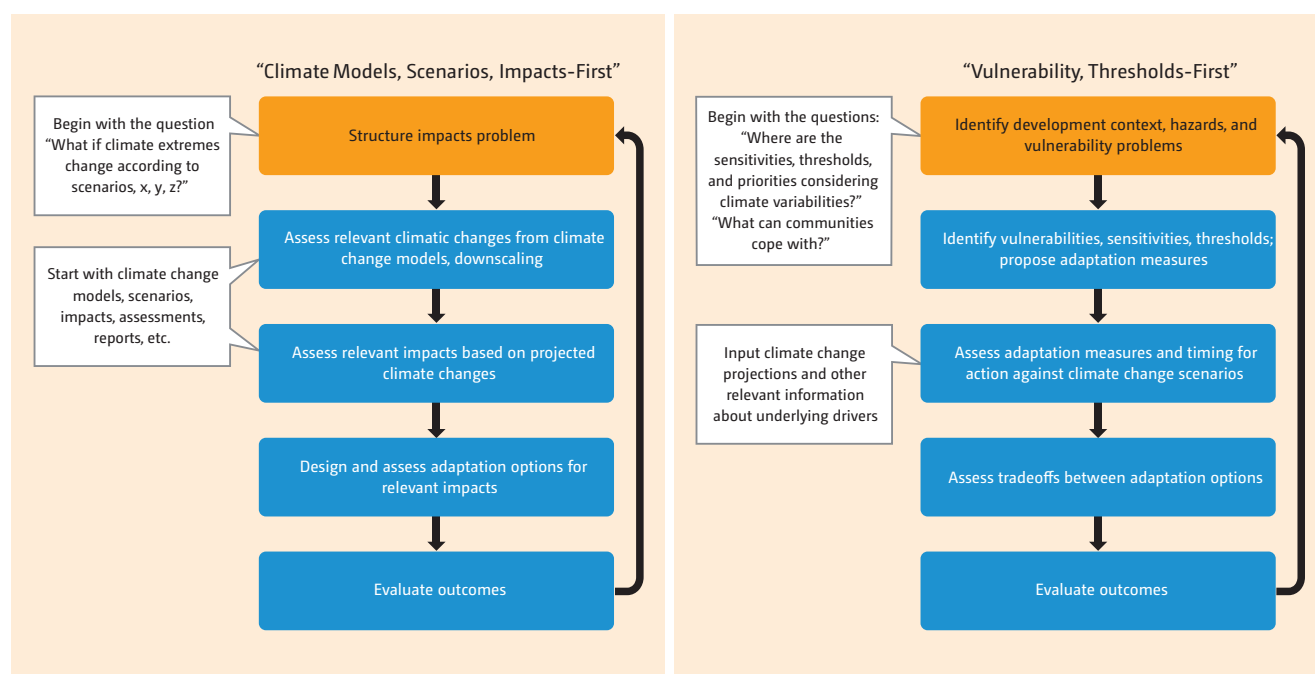
The output of the vulnerability assessment should be a compilation of vulnerabilities and a description of their context, root causes, trends and potential assumptions made. This will facilitate further analysis required for the ranking of the vulnerabilities and the identification of adaptation options. Factors that help characterize vulnerabilities include:³⁸

- Magnitude;
- Timing;
- Persistence and reversibility;
- Likelihood;
- Distributional aspects;
- Importance of the at-risk systems;
- Potential for adaptation;
- Thresholds or trigger points that could exacerbate the change.

It will be necessary to document the assessment process well, to facilitate updates to the results in the future when new information becomes available such as through new studies or new impacts are felt.

38 Rosenzweig C, DeGaetano A, Solecki W, Horton R, O'Grady M, Bader D. 2011. *ClimAID Adaptation Guidebook for New York State*. Annex II of Responding to Climate Change in New York State: The ClimAID Integrated Assessment for Effective Climate Change Adaptation Strategies in New York State. New York State Energy Research and Development Authority (NYSERDA). Albany, NY. Available at <<http://www.nyserda.ny.gov/Publications/Research-and-Development-Technical-Reports/Environmental-Reports/EMEP-Publications/~media/Files/Publications/Research/Environmental/EMEP/climaid/11-18-response-to-climate-change-in-nys-annexII.ashx>>.

FIGURE 2. TOP-DOWN SCENARIO, IMPACTS-FIRST APPROACH (LEFT PANEL) AND BOTTOM-UP VULNERABILITY, THRESHOLDS-FIRST APPROACH (RIGHT PANEL) – COMPARISON OF STAGES INVOLVED IN IDENTIFYING AND EVALUATING ADAPTATION OPTIONS UNDER CHANGING CLIMATE CONDITIONS³⁹



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B.2.B RANK CLIMATE CHANGE RISKS AND VULNERABILITIES

One of the most critical steps in adaptation planning and implementation is to understand the risks and vulnerabilities that a society, country or region faces with regard to climate change. Once identified, risks and vulnerabilities must be ranked with respect to their threats or impacts. The ranking subsequently informs the nature of the decisions or actions that need to be undertaken to address them.

Common criteria for ranking climate risks include:

- The order of magnitude of the potential climate change impact. Some impacts can be quantified (number of people harmed, area of land affected, economic damages, etc.), while others need to be expressed in qualitative terms;
- Probability, likelihood and level of confidence. The probability of a certain climate hazard occurring or changing, the likelihood of that hazard resulting in a certain impact and the level of confidence in those estimations are very important for ranking prevailing risks;
- Reversibility. Impacts that will have irreversible consequences could be ranked higher;
- Urgency of action. Those risks that require urgent attention and action, either because they have the potential to cause immediate damage or because they will have irreversible and highly damaging consequences in the longer-term, are ranked higher;
- Other factors such as policy relevance, connectivity or cross-cutting risks across sectors or regions, and the importance of systems at risk have for national development;
- Biophysical sensitivity to the effects of climate change;
- Types of impacts, such as loss of human lives, threats to livelihoods, increases in the prevalence and severity of diseases, constraints on and shocks to economic development, increases in the magnitude and frequency of floods, droughts and other disasters, recurring or persistent famine, human displacement, and disruptions to social and political systems.

The ranking of climate risks should be the product of a consultative process. Various methods can be used to rank or score the identified criteria. For example, the thresholds used to classify the magnitude of climate impacts would draw widely on expert judgement to correctly categorize each risk, whereas the degree of uncertainty of given climate models is usually expressed in quantitative probabilistic terms and could be the object of some averaging or comparison (see box 5). Many countries also have experience in using multi-criteria analyses, gained for example through the NAPA exercises, which could be replicated here. Most importantly, given the fact that this ranking will determine the priorities for action in the future, it is crucial that the ranking be the object of as broad a consensus as possible, including among the general public. Some form of public consultations, such as a survey, could be used to validate the ranking, to ensure that the most urgent and important risks are being considered from both an objective and a subjective perspective.

BOX 5. PRIORITIZING VULNERABILITIES UNDER THE NEW YORK STATE INTEGRATED ADAPTATION ASSESSMENT^a

Vulnerabilities are prioritized depending upon those systems or regions where a failure or reduction in function is likely to carry the most significant consequences. Another tool used in risk assessment is a matrix that assesses the magnitude of consequence of an event against the likelihood of the event occurring. For climate adaptation assessments, there are at least three layers of uncertainty that need to be considered to yield an assessment of an approximate overall risk of a particular climate hazard and a particular impact (see figure 3 below). The overall risk rating can then assist in the creation of adaptation strategies. Risk categories to be considered include:

The probability of a given climate hazard – The general probability for change in a climate hazard (such as temperature or extreme precipitation events) occurring. Using climate risk information as a guide, these can be defined as:

- **High** probability of the climate hazard occurring;
- **Medium** probability of the climate hazard occurring;
- **Low** probability of the climate hazard occurring.

The likelihood of impact occurrence – The likelihood that a change in a given climate hazard (e.g. temperature rise) will result in a particular impact (e.g. material failure). Examples of likelihood categories include:

- **Virtually certain/already occurring** – Nearly certain likelihood of the impact occurring over the life of the infrastructure, and/or the climate hazard may already be impacting infrastructure;
- **High** likelihood of the impact occurring over the life of the infrastructure;
- **Moderate** likelihood of the impact occurring over the life of the infrastructure;
- **Low** likelihood of the impact occurring over the life of the infrastructure.

The magnitude of the consequence – The combined impacts, should a given hazard occur, taking into account such factors as:

- **Internal operations**, including the scope and duration of service interruptions, reputational risk, and the potential to encounter regulatory problems;
- **Capital and operating costs**, including all capital and operating costs to the stakeholder and revenue implications caused by the climate change impact;
- **Number of people impacted**, including considerations related to any impacts on vulnerable populations (including, but not limited to seniors, low-income communities, mentally or physically disabled citizens, homebound residents, and children);
- **Public health**, including worker safety;
- **Economy**, including any impacts to the city's economy, the price of services to customers, and clean-up costs incurred by the public;
- **Environment**, including the release of toxic materials and impacts on biodiversity, the state's ecosystems, and historic sites.

a Rosenzweig C, DeGaetano A, Solecki W, Horton R, O'Grady M, Bader D. 2011. ClimAID Adaptation Guidebook for New York State. Annex II of Responding to Climate Change in New York State: The ClimAID Integrated Assessment for Effective Climate Change Adaptation Strategies in New York State. New York State Energy Research and Development Authority (NYSERDA). Albany, NY. Available at <<http://www.nyserda.ny.gov/Publications/Research-and-Development-Technical-Reports/Environmental-Reports/EMEP-Publications/~media/Files/Publications/Research/Environmental/EMEP/climaid/11-18-response-to-climate-change-in-nys-annexII.ashx>>.

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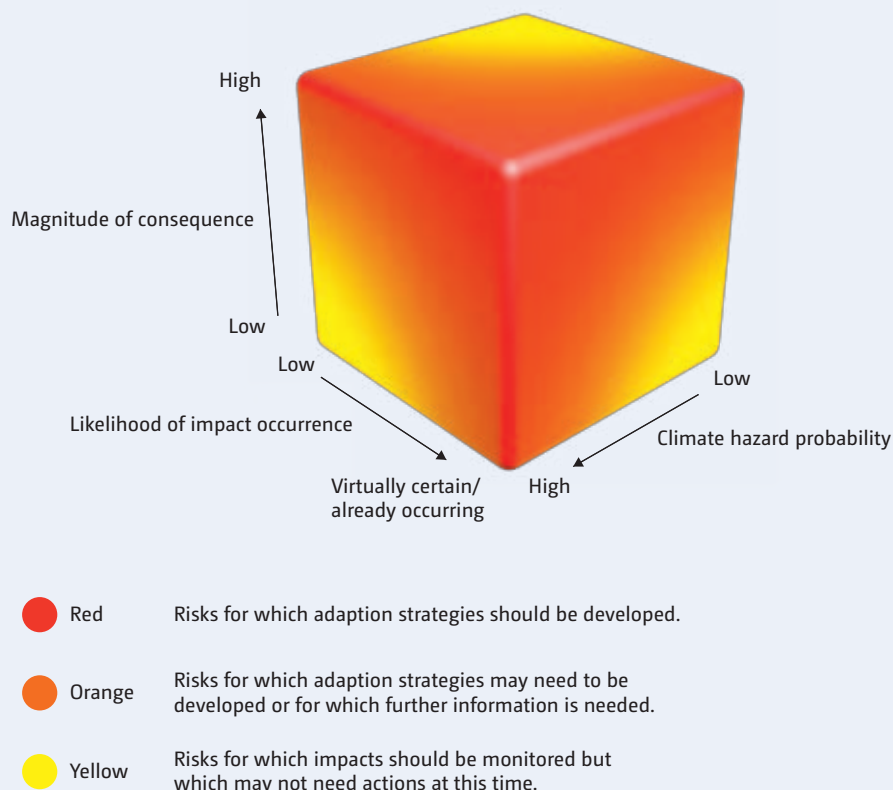
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FIGURE 3. THREE-DIMENSIONAL CLIMATE RISK ASSESSMENT MATRIX



Selected references

Ranking climate change risk and vulnerabilities:

ClimateNE. 2009. *Economic Evaluation of Climate Change Impacts*. Available at <<http://www.climate-northeast.com/contentControl/documentControl/Economic%20Evaluation%20of%20Climate%20Change%20Impacts.pdf>>.

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Schneider SH et al. 2007. *Assessing key vulnerabilities and the risk from climate change*. In: Parry ML, Canziani, OF, Palutikof JP, van der Linden PJ and Hanson CE (eds.). *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge and New York: Cambridge University Press, pp.779–810. Available at <<http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter19.pdf>>.

Wheeler D. 2011. *Quantifying Vulnerability to Climate Change: Implications for Adaptation Assistance*. Centre for Global Development, Working Paper 240. Available at <http://www.cgdev.org/files/1424759_file_Wheeler_Quantifying_Vulnerability_FINAL.pdf>.

B.2.C IDENTIFY AND CATEGORIZE ADAPTATION OPTIONS AT MULTIPLE SCALES TO ADDRESS PRIORITY VULNERABILITIES

Once vulnerabilities and risks have been ranked, adaptation options must be identified to address them. Adaptation options may include management and operational strategies, infrastructural changes, policy adjustments or capacity-building. Some actions may involve adjusting current development activities (climate-proofing or building resilience), while others may be new, or require major transformations in operations. Other considerations include the spatial scale of the action (local to regional), and an indication of its timing and urgency, based on the expected level and severity of the impacts.

Useful resources for this activity include the experiences of planning processes in other regions where options for addressing particular vulnerabilities have already been explored.

Selected references

Identifying adaptation options:

Adger WN et al. 2007: *Assessment of adaptation practices, options, constraints and capacity*. In: Parry M.L. et al.

(eds.). *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*. Cambridge University Press. Cambridge, UK. Pp. 717–743. Available at <<http://www.ipcc.ch/pdf/assessment-report/ar4/wg2/ar4-wg2-chapter17.pdf>>.

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Rosenzweig C. et al. 2011. *Climate adaptation guidebook for New York State*. New York State Energy Research and Development Authority. Available at <<http://www.nyserda.ny.gov/Publications/Research-and-Development/Environmental/EMEP-Publications/Response-to-Climate-Change-in-New-York.aspx>>.

UKCIP. 2009. *Identifying Adaptation Options*. Available at <http://www.ukcip.org.uk/wordpress/wp-content/PDFs/ID_Adapt_options.pdf>.

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5.3 STEP B.3. REVIEWING AND APPRAISING ADAPTATION OPTIONS

Overview: Step 3 aims to select priority adaptation options in light of their contribution to short- and long-term sustainable socioeconomic development, their costs, effectiveness and efficiency. Categorizing adaptation options in terms of low regrets or high risk might be one way of undertaking this process. It will also be important to take lessons learned from the piloting of various adaptation initiatives and projects into account, in order to ensure that the conditions for success are in place.

Key questions

- What are the costs and benefits of each adaptation option?
- How best can the adaptation options be implemented, and what are the conditions for success?
- Is it possible to identify co-benefits between the adaptation options and development?

Indicative activities

- Appraise individual adaptation options, including economic, ecosystem and social costs and benefits, and possibilities for unintended (positive and negative) impacts of adaptation measures

B.3.A APPRAISE INDIVIDUAL ADAPTATION OPTIONS, INCLUDING ECONOMIC, ECOSYSTEM AND SOCIAL COSTS AND BENEFITS, AND POSSIBILITIES FOR UNINTENDED (POSITIVE AND NEGATIVE) IMPACTS OF ADAPTATION MEASURES

The selection of the most appropriate or relevant adaptation strategies would include considerations of a set of criteria that is in line with national goals for sustainable development. The process would need to take into account where climate impacts are likely to be most severe and who or which systems are most vulnerable. The criteria to be used at the national level may include:

- **Timing/urgency for action:** those actions for which further delay could increase vulnerability or lead to increased costs at a later stage;
- **Cost:** general cost of proposed strategies, including human and other resources, and where relevant, economic costs and benefits;
- **Co-benefits:** whether the strategies would have negative or positive impacts on other sectors or systems, including on vulnerable populations or the environment/ecosystems, or synergies with other multilateral environmental agreements;
- **Efficacy:** the extent to which the measure is able to effectively reduce the risk; 'No regrets'. 'No regrets' solutions are those that will have a positive impact even if climate change impacts do not occur. Such measures are especially useful when the type or degree of climate change impact is still linked to a high degree of uncertainty;
- **Flexibility or robustness:** measures that allow for adjustment or change in the future if climate change impacts are different from what had been expected;

- Overall contribution of the measures to **poverty reduction**, which will help to enhance adaptive capacity;
- Contribution to sustainable development and **strategic relevance** to national development goals;
- Social and political **acceptance**;
- Economic, social, technological and environmental **feasibility**.

One way to apply the above criteria would be to utilize stakeholder input and create a decision matrix using scores (e.g. 1=low to 3=high) for each option or strategy against the listed criteria. A simple averaging of the scores for each criterion could indicate which adaptation strategies should be implemented or prioritized. See box 6 for a broader discussion of methods for ranking.

Table 8 provides an example of evaluating adaptation measures in agriculture. Possible adaptation measures are evaluated against a set of criteria including cost, technical feasibility, additional positive benefits, likelihood of being effective and time frame for carrying out the measure. A similar approach could be used with the use of the criteria listed above, adapted to the situation and context at hand.

TABLE 7. EXAMPLE OF ADAPTATION MEASURES AND EVALUATION CRITERIA IN AGRICULTURE

Proposed measures	Low cost?	Technically feasible?	Additional positive benefits (social, economic, environmental)?	Likely to be effective?	Achievable in the short-term or long-term?
Provide forecasts and information on water availability	Variable	Yes	Yes	Yes, if information is used for decision-making	Short
Develop improved varieties and genetic seed banks	No	Yes	Depends	Yes, though testing will be needed	Long
Create public-private partnerships to coordinate and mobilize resources	Variable	Yes	Yes	Not all the time	Medium
Introduce agroforestry systems	Yes	Yes	Yes, positive environmental impacts	Yes	Medium
Improve post-harvest storage and management	Variable	Yes	Yes	Somewhat, has to be done in conjunction with resilient seed	Short-medium
Strengthen local technical capacities (e.g. best practices)	No	Yes	Yes	Yes, if designed appropriately	Short-medium
State-led public policy on agriculture, nutrition, food security	No	Yes	Possible positive health benefits	No, not most of the time	Long
Improve water resources management	Variable	Yes	Yes	Yes, if done correctly	Short-medium
Improved irrigation	Yes	Yes	Yes, for example could reduce conflict over water by increasing efficiency of use	Yes, but depends on how much is done	Medium
Better land-use planning	Yes	Yes, with data and proper analysis	Yes, if considering other factors	Yes, if enforced	Long

Source: Adapted from: Adaptation Partnership. 2012. *Assessing Climate Change Vulnerability and Building Resilience in the Agricultural Sector to Promote Economic Development and Food Security in Central America*. An Adaptation Partnership Workshop. Available at <<http://www.adaptationpartnership.org/sites>>.

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BOX 6. RANKING AND PRIORITIZATION METHODS

The overall goal of ranking or prioritization is usually to identify the most important, yet feasible, decisions or measures to be taken that fit with the national vision on adaptation and the national goals for environmental, social and economic development. Both ranking and prioritization can be applied at different temporal and spatial scales. Decision-making criteria and a scale against which parameters are measured are central elements for both processes.

Ranking and prioritization methods range from the more simple group perception and nominal group methods to more rigorous economic methods. In view of the diversity of climate change impacts and the resulting diversity of measures to avoid or mitigate these impacts, it is unlikely that one single method will be sufficient to arrive at an appropriate prioritization. Therefore, the application of a combination of methods would usually yield better results. Furthermore, the processes for ranking and prioritization may vary among countries, influenced by the availability of resources, key vulnerabilities and risks, social dynamics and political factors.

- **Group perceptions – questionnaire method**
This method uses questionnaires to obtain perceptions on priorities from different groups (e.g. local, regional and national stakeholders). The answers to the questionnaires are scored and ranked, and the strategies/activities with the highest scores are given the highest priority.
- **Nominal group method**
This method assigns the responsibility to prioritize adaptation options to a small group (usually experts). This group may further be broken down to sub-groups if necessary, for example to prioritize adaptation actions in specific sectors such as agriculture and food security, water or fisheries. Group members generate a list of ideas or concerns surrounding a specific topic. These become decision-making criteria, and the prioritization is the ultimate result of consensus and a vote to rank the identified criteria. The method is best suited to problem exploration, knowledge exploration, priority development programme development, and programme evaluation.
- **Criteria weighting**
This is a numerical method that assigns a priority ranking to the subjects under consideration based on how they score against a predefined set of criteria. This method is often used to prioritize adaptation activities rather than vulnerabilities or risks.
- **Weights and indicators**
Weights will be applied to a set of pre-selected criteria and can be percentages or fractions. Determining the weights to be applied to each criteria requires a good understanding of the relative importance of the different factors including across multiple scales, and should involve stakeholders.

Stakeholders that represent specific sectors in society would focus on their domain of interest and are unlikely to be able to provide an evaluation across sectors, so it is important to involve a wide range.

- **Cost–benefit analysis**

Cost–benefit analysis (CBA) involves balancing the cost of interventions against their benefits to provide a basis for prioritizing possible adaptation measures. It involves calculating and comparing all of the costs and benefits, which are expressed in monetary terms. It can be used for optimization and prioritization and even provides an absolute yardstick, allowing a decision on whether or not to implement the measure, independent of its ranking. Efficiency is the driving factor.

The advantage of CBA is that it compares diverse impacts using a single metric. The limitation is that both costs and benefits must be expressed in monetary values and that the main objective is economic efficiency.

Generic steps for conducting a CBA are:

- Identifying the adaptation objective and potential adaptation options;
- Establishing a baseline;
- Quantifying and aggregating the costs over specific time periods;
- Quantifying and aggregating the benefits over specific time periods;
- Comparing the aggregated costs and benefits to choose adaptation options.

- **Cost-effectiveness analysis**

Cost-effectiveness analysis (CEA) deploys costing of different options that achieve the same objective and therefore it only produces ranking in terms of cost, seeking to find the least costly option. CEA can also handle cases with multiple objectives or criteria, but only if it is possible to weigh these objectives against each other. Generic steps in CEA include:

- Identifying the adaptation objective and potential adaptation options;
- Establishing a baseline;
- Quantifying and aggregating the costs over specific time periods;
- Determining cost-effectiveness;
- Comparing the cost-effectiveness of different adaptation options.

CEA is a useful alternative to CBA in areas where benefits (like social benefits) cannot be quantified monetarily. However, CEA is not often used as a standalone tool for decision support, as the benefits are defined in only one dimension (i.e. cost-effectiveness).

- **Multi-criteria analysis**

Multi-criteria analysis (MCA) allows adaptation options to be ranked against a number of criteria. MCA can evaluate measures or interventions for which several criteria are deemed relevant and when quantification and valuation in monetary terms of costs and/or benefits is not possible. Using the weighting criteria, it is possible to determine an overall score

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for each adaptation option, and hence make a decision on which one requires the most urgent attention. The MCA prioritization exercise starts with a set of adaptation options, each of which is expected to meet desired adaptation objectives. The basic purpose of prioritization is to place these adaptation options in order, from most preferred to least preferred, in accordance with values expressed by decision-makers or represented through proxies. Generic steps for carrying out MCA would therefore include:

- Identifying the adaptation objective and potential adaptation options;
- Determining prioritization criteria;
- Assigning weights and scoring each adaptation option against each of the criteria;
- Ranking options.

MCA can be undertaken through various multi-criteria decision-making models: mathematical programming (or optimization), multi-attribute utility theory, and an analytical hierarchy process.

Selected references

Ranking and prioritizing adaptation action:

de Bruin K et al. 2009. Adapting to climate change in the Netherlands: an inventory of adaptation options and ranking of alternatives. *Climate Change*. 95: pp.23–45. Available at <<http://static.weadapt.org/placemarks/files/378/509be1db06ecf adapting-to-climate-change-in-the-netherlands.pdf>>.

de Bruin K, Dellink R and Agrawala S. 2009. *Economic Aspects of Adaptation to Climate Change: Integrated Assessment Modelling of Adaptation Costs and Benefits*. OECD Environment Working Papers, No. 6. Paris: OECD. Available at <<http://dx.doi.org/10.1787/225282538105>>.

UNFCCC. 2011. *Assessing the Costs and Benefits of Adaptation Options: An Overview of Approaches*. Bonn: UNFCCC secretariat. Available at <http://unfccc.int/files/adaptation/nairobi_work_programme/knowledge_resources_and_publications/application/pdf/2011_nwp_costs_benefits_adaptation.pdf>.

Economics of adaptation:

Agrawala S and Fankhauser S. 2008. *Economic Aspects of Adaptation to Climate Change: Costs, Benefits and Policy Instruments*. Paris: OECD. Available at <<http://www.oecd.org/environment/climatechange/economicaspectsofadaptationtoclimatechangecostsbenefitsandpolicyinstruments.htm>>.

Fankhauser S, Smith J and Tol R. 1999. *Weathering climate change: some simple rules to guide adaptation decisions*. *Ecological Economics*. 30(1): pp.67–78.

McKinsey. 2009. *Shaping Climate-resilient Development: A Framework for Decision-making*. Report of the Economics of Adaptation Working Group. Available at <<http://mckinseysociety.com/shaping-climate-resilient-development/>>.

World Bank. 2010. *Economic Evaluation of Climate Change Adaptation Projects: Approaches for the Agricultural Sector and Beyond*. Washington, D.C.: IBRD/World Bank. Available at <http://siteresources.worldbank.org/ENVIRONMENT/Resources/DevCC1_Adaptation.pdf>.



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5.4 STEP B.4. COMPILING AND COMMUNICATING NATIONAL ADAPTATION PLANS

Overview: In Step 4 of this element of the process, the results of the vulnerability and adaptation assessment carried out at sectoral and other levels are compiled into national plans. Preferably the NAP will contain adaptation priorities and planned activities (policies, projects and programmes) including an implementation strategy for a given period (e.g. 3–5 years).

Key questions

- How will priority sectoral and subnational adaptation options be aggregated into national adaptation plans?
- How will inputs of all relevant stakeholders be incorporated into producing the national plans?
- How can the national adaptation plans and related outputs best be communicated and disseminated at the national level?

Indicative activities

- Compile draft national adaptation plans and make them available for review
- Integrate review comments into the national adaptation plans and process endorsement at the national level as defined in the mandate for the NAP process
- Communicate and disseminate the national adaptation plans widely to all stakeholders in the country

B.4.A COMPILE DRAFT NATIONAL ADAPTATION PLANS AND MAKE THEM AVAILABLE FOR REVIEW

The vulnerability and adaptation assessment will produce a list of prioritized adaptation strategies and actions. An important step is the distillation of the knowledge from the assessments into national and other adaptation plans.

Subject to a country's approach, the national adaptation plans will focus on issues of national strategic importance and cross-cutting issues that contribute to broad national development, or include a collection of priorities for each sector. A significant number of activities at the national level is likely to be in the form of national policies, designed to guide actions by all stakeholders. Besides policies, programmes are likely to be designed to achieve major development dividends and to move towards the transformation of those operations that will be heavily affected by climate change. In many cases it would be beneficial to design programmes in a way that facilitates their integration into major existing national or sector-wide programmes, such as those on food security, water security and infrastructure development.

The national adaptation plans could include the following components:

- A summary of the NAP process;
- Discussion of key climate vulnerabilities in the context of main development priorities;
- A list of prioritized adaptation strategies (policies, programmes, projects and other activities);
- A plan for establishing indicators and monitoring for assessing the plan;

- A timeline for reassessing the plan and strategies as new information is gathered from ongoing assessments.

Once a draft national plan document is compiled, it would be made available for peer and public review. This might involve making the draft available on a public website and allowing sufficient time to receive inputs and feedback.

In addition to the national adaptation plan documents, many outputs would be produced along the way, and released as appropriate.

B.4.B INTEGRATE REVIEW COMMENTS INTO THE NATIONAL ADAPTATION PLANS AND PROCESS ENDORSEMENT AT THE NATIONAL LEVEL AS DEFINED IN THE MANDATE FOR THE NAP PROCESS

Once review comments are received, they would be addressed and a final version of the NAP document prepared for endorsement, following procedures set out in the national mandate for the NAP process. Endorsement is an essential step in affirming a plan to be nationally owned and to be in accordance with the national mandate for the NAP process.

The national adaptation plan would be a living document, and be revised on a regular basis to incorporate new knowledge and experience, and to take into account changing national development priorities.

B.4.C COMMUNICATE AND DISSEMINATE THE NATIONAL ADAPTATION PLANS WIDELY TO ALL STAKEHOLDERS IN THE COUNTRY

Once the national adaptation plan has been endorsed at the national level, it becomes a national policy document, and its objectives and activities would be communicated to all relevant stakeholders.

It is likely that each country will have a climate change website through which the NAPs and related outputs could be made available. Posters as well as radio and television messaging could be other methods to communicate the contents of the plans to different stakeholders.

The dissemination of the plans and related outputs to the UNFCCC secretariat is described in Element D under reporting.



Selected references

Examples of adaptation websites:

Caribbean Community Climate Change Centre <<http://caribbeanclimate.bz>>.

Climate Change Adaptation in Europe <<http://climate-adapt.eea.europa.eu/>>.

Climate Change Adaptation in New York State: increasing local resilience <<http://www.dec.ny.gov/energy/82168.html>>.

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5.5 STEP B.5. INTEGRATING CLIMATE CHANGE ADAPTATION INTO NATIONAL AND SUBNATIONAL DEVELOPMENT AND SECTORAL PLANNING

Overview: Integrating climate change adaptation into national and subnational development calls for an understanding of the relevant planning cycles and the adaptation options that are relevant for those cycles. As the NAP process is closely linked to national or subnational development planning, the integration process should be an integral part of the NAP process. Continuous stakeholder interaction will give planners an appreciation of the underlying analysis and help to find appropriate entry points for integration.

Key questions

- How can adaptation best be integrated into ongoing development planning processes?
- What kind of opportunities can be generated through the integration?
- How can the process of integration be facilitated?

Indicative activities

- Identify opportunities and constraints for integrating climate change into planning
- Build and enhance capacity for integrating climate change into planning
- Facilitate the integration of climate change adaptation into existing national and subnational planning processes

B.5.A IDENTIFY OPPORTUNITIES AND CONSTRAINTS FOR INTEGRATING CLIMATE CHANGE INTO PLANNING

Preliminary assessments necessary for integrating climate change into development and sectoral planning will have been initiated during Element A Step A.4 to get a better understanding of the national planning and decision-making processes.

During the preparatory element, the integration of adaptation and development is taken a step further. During phases that analyse climate risks, assess vulnerabilities and review adaptation options, conservation of achieved development gains and future development objectives should be the guiding principle. At the same time, the assessment of climate risks and vulnerabilities might lead to certain development goals being adjusted if it appears that they are not realizable or could lead to increased vulnerability in the light of climate change.

Integrating climate change into development planning either at the national or sectoral level is a multi-year, multi-stakeholder effort that entails working with government actors (head of state's office, environment, finance and planning bodies, sector and sub-national bodies, political parties and parliament, national statistics office and judicial system), non-governmental actors (civil society, academia, business and industry, general public and communities, and the media) and development actors.⁴⁰

⁴⁰ UNDP, UNEP. 2011. *Mainstreaming poverty-environment linkages into development planning: A handbook for practitioners*. Available at <<http://www.unpei.org/PDF/PEI-full-handbook.pdf>>.

Integrating climate change into the national development planning process will interface with overall political responsibilities including legislation and regulation. It will be essential to integrate adaptation into policy frameworks that guide policies at lower levels (sectoral and local government) or within international relations as these govern shared resources (e.g. shared river basins), cross-border pollution and successful implementation of multilateral environmental agreements. The national level also constitutes the main interface with international donors.⁴¹

Preparing for the integration of climate change into development planning at the national and/or sectoral level requires the identification of one or more appropriate entry point(s). These entry points could be identified through preliminary assessments of the national and sectoral planning processes and a stocktaking of the key government stakeholders. Once appropriate entry points have been identified, the integration could consist of an approach to influence future planning processes in particular with regard to the development or modification of policy measures and budget allocations.

An analysis of stakeholders will indicate opportunities and constraints for the integration of adaptation into planning (see Tables 8 and 9).

TABLE 8. GOVERNMENT STAKEHOLDERS AND THE OPPORTUNITIES AND CHALLENGES OF WORKING WITH THEM

Stakeholder	Opportunities	Challenges
Head of state's office	• Turn this stakeholder into a champion • Have it take a leading role in the mainstreaming effort	• Has many priorities to deal with • May face conflicting interests
Political parties	• Use the election process to raise awareness on climate change adaptation issues • Make these issues a theme of political campaigns	• Lack direct involvement in development planning • May have limited awareness of climate change-related issues • May face conflicting interests
Parliament	• Leverage its legislative role • Foster its advocacy role, especially for budgeting • Cooperate with (or help create) committees on climate change adaptation issues	• Often not involved in all stages of national development planning • May have limited awareness of climate change adaptation issues
Judicial system	• Develop synergies with laws related to good governance (e.g. corruption, illegal trade, tax evasion)	• May have limited awareness of climate change adaptation issues • Enforcement of laws may be lacking • May face conflicting interests

41 OECD. 2009. *Integrating Climate Change Adaptation into Development Co-operation: Policy Guidance*. Paris: OECD, pp 68–59. Available at <http://www.oecd.org/dac/43652123.pdf>.

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Stakeholder	Opportunities	Challenges
Finance and planning bodies	• Turn these bodies into champions (e.g through permanent secretaries) • Have them take a leading role in the effort (with environmental institutions) • Develop synergies with revenue collection measures (e.g. fight against corruption, tax evasion)	• Linkages with environmental institutions and in particular climate change issues may be weak • Environment may not be seen as a priority for economic development and poverty reduction
Environmental institutions	• Make use of their expertise, including in monitoring climate change • Develop their potential to take several roles (e.g. advocacy, coordination) • Develop synergies (e.g. with obligations related to multilateral environmental agreements)	• Financial, human and leadership capacities may be weak • May be focused on projects as opposed to development planning • May have an approach focused on protection rather than sustainable use of the environment
Sector ministries and subnational bodies	• Support them in fulfilling their roles in development planning • Make use of the fact that some of these bodies deal directly with environmental assets (e.g. fisheries, forestry) • Encourage them to integrate climate change adaptation linkages into plans and budgets	• May have weak capacities in regard to the environment • The lack of funding of subnational bodies can lead to over harvesting of natural resources • Environmental units are usually not well connected to development planning
National statistics office	• Develop climate change adaptation indicators and integrate them into the national monitoring system • Build capacity to collect, manage and analyse data on climate change adaptation linkages	• Data collection and management are often weak • Climate change data are not generally captured by regular surveys • Capacity to produce policy-relevant information may be weak

Source: Adapted from UNDP, UNEP. 2011. *Mainstreaming poverty-environment linkages into development planning: A handbook for practitioners*. p. 21.

TABLE 9. NON-GOVERNMENTAL STAKEHOLDERS AND THE OPPORTUNITIES AND CHALLENGES OF WORKING WITH THEM

Stakeholder	Opportunities	Challenges
Civil society organizations	• Make use of their expertise, including in addressing gender issues related to climate change adaptation • Help reflect local realities and bring voices from the community level • Foster their role in information collection, information-sharing and awareness-raising (from policymakers to local communities) • Encourage them in their watchdog role (i.e. in promoting transparency and accountability) • Turn them into champions for climate change adaptation integration	• Capacities may be weak especially with respect to engagement in national development planning • Often not involved in all stages of national development planning
Academic and research institutes	• Make use of their expertise, particularly with respect to data collection, analysis of climate change adaptation linkages with development and collection of country-specific evidence • Promote interdisciplinary teams • Promote South-South and North-South cooperation (twinning approaches)	• May be disconnected from national development planning processes • Capacity to produce policy-relevant information may be weak
Business and industry	• Mitigate the effect of their activities that have a large impact on poverty and the environment (e.g. mining, forestry, water services) • Make use of this major source of knowledge • Make use of this major source of investment • Focus on resource efficiency and sustainable consumption and production (e.g. sustainable energy, water efficiency, integrated waste management)	• May perceive environmental management and legislation (e.g. environmental impact assessments) as a barrier to their activities
General public, local communities and small-scale farmers and fishers	• Include the poorest groups of the population • Integrate the voices of the poorest when defining the outcomes of the climate change adaptation integration effort • Make use of their knowledge of climate change adaptation issues at the grassroots level	• Ability to make their voices heard may be weak or non-existent • Generally disconnected from national development planning processes

ELEMENT B

PREPARATORY ELEMENTS

STEP B.1.

Analysing current climate and future climate change scenarios

STEP B.2.

Assessing climate vulnerabilities and identifying adaptation options at the sector, subnational, national and other appropriate levels

STEP B.3.

Reviewing and appraising adaptation options

STEP B.4.

Compiling and communicating national adaptation plans

STEP B.5.

Integrating climate change adaptation into national and subnational development and sectoral planning

Stakeholder	Opportunities	Challenges
Media	• Make use of their role in shaping the opinions of both decision-makers and the general public • Work with them to encourage public involvement in national development planning • Collaborate with them to reach out to the community-level • Provide them with scientific and policy-related information	• May lack knowledge of and attention to climate change adaptation issues • May lack freedom of expression

Source: Adapted from UNDP, UNEP. 2011. *Mainstreaming poverty-environment linkages into development planning: A handbook for practitioners*. p. 22.

Selected references

Integrating adaptation into national development planning:

Ahmad IA 2009. *Climate Policy Integration: Towards Operationalization*. DESA Working Paper No.73.

Klein R, Eriksen S, Naess LO, Hammill A, Tanner T, Robledo C, L'O'Brien K. 2007. *Portfolio screening to support the mainstreaming of adaptation to climate change into development assistance*. Tyndall Centre for Climate Change Research – working paper 102. Available at <<http://www.tyndall.ac.uk/sites/default/files/wp102.pdf>>.

UNDP-UNEP. 2011. *Mainstreaming poverty-environment linkages into development planning: A handbook for Practitioners*: <Available at <http://www.unpei.org/PDF/PEI-full-handbook.pdf>>.

OECD. 2009. *Integrating Climate Change Adaptation into Development Co-operation: Policy Guidance*. Paris: OECD. Available at <http://www.oecd.org/dac/43652123.pdf>.

B.5.B BUILD AND ENHANCE CAPACITY FOR INTEGRATING CLIMATE CHANGE INTO PLANNING

Activities to build or develop capacity for the integration of climate change into planning would have been initiated in Element A Step 3.B. Those efforts would be further enhanced during this activity and take into account the results of the NAP process in terms of priority risks and adaptation strategies. Given the long-term nature of integration, the capacity-building should be progressive, moving from basics in Element A to more specific skills in later stages of the NAP process.

In undertaking capacity-building as a cross-cutting process at the national level, the NAP process should pay special attention to the following needs that are relevant for the integration of climate change into development planning:

- Definition of capacities that are needed at the national level to address adaptation, identification of gaps based on an analysis of existing capacities, and implementation of strategies and activities to address the gaps;
- Understanding of existing policies and how they address and enable climate change adaptation, with a view to revising or designing new legislation and policies, where needed, to facilitate successful adaptation;

- Integration of NAPs into national development plans and priorities, including by facilitating recognition of climate risks and the need for adaptation within relevant policies, integrating climate change vulnerability and risks into the formulation of policies, and prioritizing resource allocation to the areas, sectors or populations most at risk;
- Design of effective monitoring and evaluation systems, including for overall coordination of work at the national or sectoral levels, definition of objectives and targets, selection of indicators and means of verification, identification of data sources and collection methods, support to data and information management, undertaking of special assessments, and the facilitation of reporting and review;
- Capture and management of knowledge on impacts, vulnerabilities and adaptation, to build up a decision support system for future adaptation planning, including through the development of knowledge bases and expert or rules-based systems;
- Development and deployment of communications, public awareness-raising and outreach on adaptation and the facilitation of public access to information on climate change adaptation.



B.5.C FACILITATE THE INTEGRATION OF CLIMATE CHANGE ADAPTATION INTO EXISTING NATIONAL AND SUBNATIONAL PLANNING PROCESSES

Integrating climate change adaptation should lead to a real transformation of planning processes and the promotion of resilience in the long-term. The preparatory element ensures that integration takes place by identifying opportunities and constraints and by building and enhancing the capacity of relevant stakeholders. Integration should be further facilitated through continuous studies on potential synergies and effective integrative methods as well as through the exchange of lessons learned and demonstration of the effectiveness of integration.

The policy results chain, which spans from policy formulation to resource allocation and programming, guides the planning process and should therefore be the target of the integration efforts. One approach to integrating adaptation into policymaking is presented below, based on guidance from the Organisation for Economic Co-operation and Development:⁴²

Step 1. Understand the policy process. Develop a comprehensive understanding of the policy process including the steps in the process (policy formulation, planning stage and resource allocation), the timeline(s), the road map, the stakeholders involved and the beneficiaries.

Step 2. Become part of the process. Try to get a ‘seat at the table’ by becoming involved early on with the government and development actors in the policy preparation process. Seize opportunities to introduce the importance of climate change adaptation linkages to development and speak about the importance of recognizing these linkages within the policy document. Explore the possibility of a donor

42 OECD. 2009. *Integrating Climate Change Adaptation into Development Co-operation: Policy Guidance*. Paris: OECD. Available at <<http://www.oecd.org/dac/43652123.pdf>>.

ELEMENT B

PREPARATORY ELEMENTS

STEP B.1.

Analysing current climate and future climate change scenarios

STEP B.2.

Assessing climate vulnerabilities and identifying adaptation options at the sector, subnational, national and other appropriate levels

STEP B.3.

Reviewing and appraising adaptation options

STEP B.4.

Compiling and communicating national adaptation plans

STEP B.5.

Integrating climate change adaptation into national and subnational development and sectoral planning

providing funding specifically for integration of climate change adaptation within the policy process.

Step 3. Establish committees and contribute to the policy document outline. Identify the key actors in the preparation of the basic outline of the policy document (e.g. the lead government body, a core drafting committee and other advisory committees) and engage with them to influence the structure of the policy and the drafting process. Work with mainstreaming champions from key institutions.

Step 4. Make necessary working arrangements with the lead institutions so that adaptation linkages are well featured; environment can be categorized as a cross-cutting issue or a sector in its own right. Establish cooperation and coordination mechanisms with actors working on other cross-cutting issues (e.g. gender, HIV/AIDS).

Step 5. Influence the policy launch workshop. Use this opportunity to underline the importance of climate change adaptation integration into the policy document to obtain buy-in from government and other stakeholders; effective use of the media can enhance this effort. Identify non-governmental actors and their possible involvement in the process; ensure the inclusion of various stakeholder groups (of different ages, economic levels, genders) in the workshop.

Step 6. Work with sectors and other government institutions in preparing their contributions. Work with sectors and other government institutions to determine their priorities and contributions to the process. Engage continuously with relevant (or all) sectors to ensure that the importance of poverty–environment linkages is translated into specific targets and implementation strategies included in their written contributions.

Step 7. Shape public consultations at the district level. Raise public awareness of poverty–environment issues. Help communities identify linkages relevant to their well-being and livelihoods.

Step 8. Contribute to the drafting of the policy document. Engage directly with the drafting team to ensure that adaptation linkages are understood, correctly represented and properly integrated.



ELEMENT C

IMPLEMENTATION STRATEGIES

STEP C.1.

Prioritizing climate change
adaptation in national planning

STEP C.2.

Developing a (long-term) national
adaptation implementation
strategy

STEP C.3.

Enhancing capacity for planning
and implementing adaptation

STEP C.4.

Promoting coordination and
synergy at the regional level
and with other multilateral
environmental agreements

6. ELEMENT C. IMPLEMENTATION STRATEGIES

The third element of the NAP process is concerned with the design of implementation strategies of the national adaptation plans. Work during this part of the process would focus on prioritizing adaptation actions within national planning, identifying synergies and developing and enhancing the country's long-term capacity for planning and implementing adaptation. Work on capacity-building, institutional arrangements, data-gathering, assessment and communications initiated in earlier stages would continue. Implementation would build on existing activities to the extent possible.

The main outputs would be a strategy for implementing the NAPs, concrete activities to implement priorities identified in the NAPs, and plans for ensuring and promoting synergy with other multilateral environmental agreements (MEAs) and programmes at the regional and national level.



TABLE 3C. SUGGESTED STEPS AND INDICATIVE ACTIVITIES FOR ELEMENT C ON IMPLEMENTATION STRATEGIES FOR THE NAP PROCESS

Steps	Indicative activities
Element C. Implementation strategies	
1. Prioritizing climate change adaptation in national planning	a. Define national criteria for prioritizing implementation based on, inter alia, development needs, climate vulnerability and risk and existing plans b. Identify opportunities for building on and complementing existing adaptation activities
2. Developing a (long-term) national adaptation implementation strategy	a. Define a strategy for the implementation of adaptation actions including target areas or beneficiaries, responsible authorities, timing, sequencing of activities and mobilization of resources b. Implement concrete adaptation measures based on the national adaptation plans through policies, projects and programmes
3. Enhancing capacity for planning and implementing adaptation	a. Strengthen institutional and regulatory frameworks for addressing adaptation in the long-term at national and sectoral levels b. Design and implement training on the NAP process on an ongoing basis at sectoral and subnational levels to facilitate adaptation planning at subnational levels c. Implement outreach on NAP process outputs at the national level and promote international cooperation
4. Promoting coordination and synergy at the regional level and with other multilateral environmental agreements	a. Promote coordination of adaptation planning across sectors b. Identify and promote synergy in assessment, planning and implementation of adaptation at the regional level as appropriate c. Identify and promote opportunities for synergy with other multilateral environmental agreements in the formulation of respective plans, in capacity-building and during implementation

ELEMENT C

IMPLEMENTATION STRATEGIES

STEP C.1.

Prioritizing climate change adaptation in national planning

STEP C.2.

Developing a (long-term) national adaptation implementation strategy

STEP C.3.

Enhancing capacity for planning and implementing adaptation

STEP C.4.

Promoting coordination and synergy at the regional level and with other multilateral environmental agreements

6.1 STEP C.1. PRIORITIZING CLIMATE CHANGE ADAPTATION IN NATIONAL PLANNING

Overview: Prioritization of adaptation in the broader context of national development planning will help policymakers and relevant stakeholders to select the most important adaptation measures to be implemented for a country or region given competing development needs. It will enable the identification of high-priority and feasible adaptation measures that will build on and complement existing adaptation activities, and fit with the national vision on adaptation as well as national goals for environmental, social and economic development. This step could be carried out by the planning or finance ministry.

Key questions

- How can adaptation work best be prioritized for implementation at the national level considering development needs, climate vulnerabilities and risks and existing plans?
- What criteria can be used to define priority actions?

Indicative activities

- Define national criteria for prioritizing implementation based on, inter alia, development needs, climate vulnerability and risk and existing plans
- Identify opportunities for building on and complementing existing adaptation activities

C.1.A DEFINE NATIONAL CRITERIA FOR PRIORITIZING IMPLEMENTATION BASED ON, INTER ALIA, DEVELOPMENT NEEDS, CLIMATE VULNERABILITY AND RISK AND EXISTING PLANS

National criteria for defining implementation priorities would need to be applied. The criteria for ranking climate change risks and vulnerabilities (described in Element B above) would serve as a good basis for developing criteria to prioritize implementation. Such criteria will take into account national development goals and priorities. The exercise will factor in the following specific considerations and criteria:

- Potential to address key vulnerabilities and risks effectively;
- Enhancement of adaptive capacity and resilience at community and national levels;
- Fiscal responsibility (cost-effectiveness);
- The time frame for implementing adaptation activities;
- Institutional capacity to implement the adaptation activities;
- Potential to complement national goals, such as achieving and safeguarding food security in order to enhance adaptive capacity, or protecting and enhancing ecosystem structures and functions for the sustainable provision of ecosystem goods and services;
- Potential to deliver 'no regrets' solutions: that is, a positive impact even if climate change impacts do not occur. Those measures are especially useful when the type or degree of climate change impacts is still linked to a high degree of uncertainty;

- Co-benefits or side-effects: whether measures will create positive or negative side-effects for development goals, or where costs can be shared.

C.1.B IDENTIFY OPPORTUNITIES FOR BUILDING ON AND COMPLEMENTING EXISTING ADAPTATION ACTIVITIES

In order to ensure a sustainable approach to addressing adaptation, it is essential to develop implementation strategies that seek to build on and complement existing work on adaptation. If a stocktaking was carried out to initiate the NAP process, it should provide good information on which areas to look at. Such areas would include:

- Relevant national, local and sectoral development policies, plans and frameworks;
- Major development programmes and projects.

Having a clear picture of ongoing activities will enable the best possible distribution of resources and help to ensure concerted action on addressing adaptation at the national level.



ELEMENT C

IMPLEMENTATION STRATEGIES

STEP C.1.

Prioritizing climate change adaptation in national planning

STEP C.2.

Developing a (long-term) national adaptation implementation strategy

STEP C.3.

Enhancing capacity for planning and implementing adaptation

STEP C.4.

Promoting coordination and synergy at the regional level and with other multilateral environmental agreements

6.2 STEP C.2. DEVELOPING A (LONG-TERM) NATIONAL ADAPTATION IMPLEMENTATION STRATEGY

Overview: Successful implementation requires an understanding of the “big picture”, as well as all the sequential steps that lead to it. A clear long-term implementation strategy will serve as valuable guidance for addressing adaptation at the local and national levels. The strategy will need to be focused, have a clear sense of direction and be linked to the national vision for adaptation and development priorities, plans and programmes.

Key questions

- What is the most appropriate strategy for the implementation of adaptation activities including timing, target areas or beneficiaries, responsible authorities and sequencing of activities?
- How can the implementation build on and complement existing adaptation activities?
- What are the potential costs of the NAP and how can these costs be met?

Indicative activities

- Define a strategy for the implementation of adaptation actions including target areas or beneficiaries, responsible authorities, timing, sequencing of activities and mobilization of resources
- Implement concrete adaptation measures based on the national adaptation plans through policies, projects and programmes

C.2.A DEFINE A STRATEGY FOR THE IMPLEMENTATION OF ADAPTATION ACTIONS INCLUDING TARGET AREAS OR BENEFICIARIES, RESPONSIBLE AUTHORITIES, TIMING, SEQUENCING OF ACTIVITIES AND MOBILIZATION OF RESOURCES

An implementation strategy for national adaptation plans could include:

- Adaptation activities to address key vulnerabilities and risks;
- Prioritization of the adaptation activities at the national level;
- A proposed approach for the implementation of activities, such as on a project-by-project basis, a sector-wide or programmatic approach, a resilience approach, through climate-proofing development, an ecosystem-based approach, etc.;
- An overarching strategy for prioritizing the most vulnerable communities and/or systems of the society;
- Possible sources of funding and other forms of support for the implementation of adaptation activities;
- Overall coordination of the implementation of the plan;
- Options for mobilizing financial, technical and capacity-building support under the multilateral processes and other channels, including at the local, national and regional levels;
- Ways and means to instigate and maximize synergies with other plans;
- A sequence for implementation, taking into account currently available resources versus those required, ongoing and planned adaptation, and relevant development initiatives.

For each activity, the strategy will also indicate:

- Objective(s), outputs and expected outcomes;
- Target areas or beneficiaries;
- Resources required for implementation, such as data and information, human, institutional and systemic capacity, and financial resources;
- The organization(s) and/or agency(ies) responsible for the implementation and/or coordination of implementation.

Selected references

Development of an implementation strategy:

'Elements for implementation strategies for national adaptation programmes of action'. Technical paper prepared by the LEG. FCCC/TP/2005/5.

UNDP. 2011. *Preparing Low-Emission Climate-Resilient Development Strategies*. A UNDP Guidebook – Version 1. Executive Summary. New York: UNDP. Available at <<http://www.undp.org/content/dam/undp/library/Environment%20and%20Energy/Climate%20Strategies/UNDP-LECRDS-Guidebook-v17-web.pdf>>.

C.2.B IMPLEMENT CONCRETE ADAPTATION MEASURES BASED ON THE NATIONAL ADAPTATION PLANS THROUGH POLICIES, PROJECTS AND PROGRAMMES

Implementation of adaptation activities will vary in form and character across scales, depending on the circumstances. However, at all levels, the implementation may be designed with the following goals in mind:

- Attainment and safeguarding of food security in the face of climate change through, for example, change of planting dates, diversification of crop production through breeding of resilient crops, enhanced fodder production and state of rangelands, promotion of water-saving irrigation techniques, land-use planning, soil conservation, improvement of methods for food processing and preservation, and fish concentration mechanisms;
- Attainment and safeguarding of water security and sanitation through, for example, improved rainwater harvesting, rehabilitation of wetlands, integrated watershed management with land-use and coastal area protection benefits, rehabilitation of boreholes and wells, resilient designs of reservoirs, irrigation canals, ponds and dykes, water-use efficiency, and eco-sanitation;
- Protection of life and property against climate extremes and disasters, including along low-lying and coastal areas, through, for example, construction of dykes, current breakers and shifting dune bars, protection at sea for fishermen, publication of up-to-date hazard risk maps, planning of settlements in low-risk areas, and rehabilitation of existing and/or installation of new early warning systems;
- Protection and enhancement of ecosystem structure and function for the sustainable provision of ecosystem goods and services through, for example, afforestation, coastal rehabilitation and management, soil and vegetation management, and integrated watershed management;

ELEMENT C

IMPLEMENTATION STRATEGIES

STEP C.1.

Prioritizing climate change adaptation in national planning

STEP C.2.

Developing a (long-term) national adaptation implementation strategy

STEP C.3.

Enhancing capacity for planning and implementing adaptation

STEP C.4.

Promoting coordination and synergy at the regional level and with other multilateral environmental agreements

- Support and enhancement of human health and safety through, for example, promotion of good environmental health practices;
- Climate-proofing of major components of national economies and sustainable development through, for example, community training programmes on climate change and inclusion of climate change in national curricula;
- Protection and preservation of cultural values and systems through protection and conservation of indigenous species and the preservation of cultural heritage sites and promotion of botanical gardens.

The adaptation activities prioritized through the NAP process could be implemented in accordance with the modalities established under the United Nations Framework Convention on Climate Change, as well as through other channels. Box 7 indicates funding mechanisms available under the Convention to support the implementation of adaptation activities.

BOX 7. SOURCES OF FINANCING FOR ADAPTATION UNDER THE CONVENTION

Least Developed Countries Fund: The LDCF was established in 2001 as a voluntary fund to be managed by the GEF, to support the LDCs in the preparation and implementation of NAPAs. It has also been operationalized to support the LDCs in the implementation of elements of the least developed countries work programme other than the NAPAs, and to support activities to enable preparation of the NAP process. More information on the LDCF is available at <<http://www.thegef.org/gef/LDCF>> or <<http://unfccc.int/4723>>.

Special Climate Change Fund: The SCCF was established under the Convention in 2001 to finance projects relating to: adaptation; technology transfer and capacity-building; energy, transport, industry, agriculture, forestry and waste management; and economic diversification. More information on the SCCF is available at <<http://www.thegef.org/gef/SCCF>> or <<http://unfccc.int/3657>>.

Adaptation Fund: The Adaptation Fund was also established in 2001 under the Convention, to finance concrete adaptation projects and programmes in developing countries that are Parties to the Kyoto Protocol and are particularly vulnerable to the adverse effects of climate change. It was operationalized in 2007. More information on the AF is available at <<https://www.adaptation-fund.org/>> or <<http://unfccc.int/3659>>.

Green Climate Fund: Established in 2010 as an operating entity of the financial mechanism of the Convention, the GCF will support projects, programmes, policies and other activities in developing country Parties using thematic funding windows. Further information on the GCF is available at <<http://gcfund.net>> or <<http://unfccc.int/5869>>.



ELEMENT C

IMPLEMENTATION STRATEGIES

STEP C.1.

Prioritizing climate change adaptation in national planning

STEP C.2.

Developing a (long-term) national adaptation implementation strategy

STEP C.3.

Enhancing capacity for planning and implementing adaptation

STEP C.4.

Promoting coordination and synergy at the regional level and with other multilateral environmental agreements

6.3 STEP C.3. ENHANCING CAPACITY FOR PLANNING AND IMPLEMENTING ADAPTATION

Overview: The ultimate purpose of addressing adaptation through the NAP process is to enable planning, prioritization and implementation of strategies, policies, projects and programmes aimed at reducing vulnerability to climate change, building adaptive capacity and facilitating integration of adaptation into development. This will involve investments to enhance capacity in strategic priority areas for the country as a whole, or for a given sector or locality. Such investments could be aligned towards strengthening institutional, human, societal and systemic planning capacities.

Key questions

- How can technical and institutional capacities and regulations for long-term planning and implementation of adaptation be maintained and enhanced at different levels?
- What can be learned from other international experience and international cooperation on adaptation planning?

Indicative activities

- Strengthen institutional and regulatory frameworks for addressing adaptation in the long-term at national and sectoral levels
- Design and implement training on the NAP process on an ongoing basis at sectoral and subnational levels to facilitate adaptation planning at subnational levels
- Implement outreach on NAP process outputs at the national level and promote international cooperation

C.3.A STRENGTHEN INSTITUTIONAL AND REGULATORY FRAMEWORKS FOR ADDRESSING ADAPTATION IN THE LONG-TERM AT NATIONAL AND SECTORAL LEVELS

This activity would build on Element A, Step 3, Activity A, on developing capacity for the NAP process. After the production of a round of national adaptation plans, this activity would incorporate results of monitoring and evaluation of the NAP process to further strengthen institutions and frameworks for long-term adaptation planning.

National and local institutions across governments, NGOs, community organizations and research and academic institutions would play a critical role in increasing long-term adaptation capacity. It is therefore important that strategies for addressing adaptation factor in activities to continuously strengthen the capacity of all relevant institutions and the provision of sufficient resources to support their national actions on adaptation.

To complement the role of national and local institutions, and to support actions, communication and collaboration among them, appropriate regulatory frameworks should also be adequately strengthened. This could include frameworks to provide the enabling environment for adaptation, including acts, regulatory, legislative and policy frameworks, and accountability frameworks within which institutions and individuals operate.

Selected references

Strengthening institutional frameworks:

Dixit A, McGray H, Gonzales J and Desmond M. 2012. *Ready or Not: Assessing Institutional Aspects of National Capacity for Climate Change Adaptation*. Washington, D.C.: World Resources Institute. Available at <<http://www.wri.org/publication/ready-or-not>>.

C.3.B DESIGN AND IMPLEMENT TRAINING ON THE NAP PROCESS ON AN ONGOING BASIS AT SECTORAL AND SUBNATIONAL LEVELS TO FACILITATE ADAPTATION PLANNING AT SUBNATIONAL LEVELS

This activity would build on Element A, Step 3, Activity A regarding training. The NAP process, as an ongoing process, will continuously evolve in response to new developments and needs. It therefore requires a continuous programme for building the capacity of national experts, institutions and systems to address adaptation as a key component of everyday life. The training programme would aim to:

- Strengthen national education and training or skills development institutions to deliver climate change learning, focused on the NAP process;
- Strengthen the capacity of groups with a key role in the NAP process, such as government agencies, scientific, technical and managerial personnel, journalists, teachers and community leaders at the local and national levels, as appropriate;
- Cooperate in, promote, facilitate, develop and implement formal and non-formal education and training programmes focused on climate change at all levels, targeting women and youth in particular, and including the exchange or secondment of personnel to train experts.

C.3.C IMPLEMENT OUTREACH ON NAP PROCESS OUTPUTS AT THE NATIONAL LEVEL AND PROMOTE INTERNATIONAL COOPERATION

The NAP process shall facilitate outreach at the national level on adaptation and promote international cooperation. For this to happen, and as part of the implementation strategy for NAPs, national teams would need to integrate activities focused on promoting outreach. Such activities would:

- Facilitate public access to data and information on the NAP process that is needed by the public in general and specific stakeholders in particular to understand, address and respond to climate change;
- Promote public participation in the NAP process, by facilitating feedback, debate and partnership in climate change activities and in governance, noting the important role that social media platforms and strategies can play in this context;
- Promote sharing of experiences and good practices in adaptation planning at the regional and international level.

ELEMENT C

IMPLEMENTATION STRATEGIES

STEP C.1.

Prioritizing climate change adaptation in national planning

STEP C.2.

Developing a (long-term) national adaptation implementation strategy

STEP C.3.

Enhancing capacity for planning and implementing adaptation

STEP C.4.

Promoting coordination and synergy at the regional level and with other multilateral environmental agreements

6.4 STEP C.4. PROMOTING COORDINATION AND SYNERGY AT THE REGIONAL LEVEL AND WITH OTHER MULTILATERAL ENVIRONMENTAL AGREEMENTS

Overview: Step 4 would work towards regional coordination in the design and implementation of adaptation projects and programmes, where appropriate, as well as explore synergy with other multilateral environmental agreements. This would build on efforts to seek coordination in the design of action plans under the United Nations Convention to Combat Desertification, the Convention on Biological Diversity and the UNFCCC.

Key questions

- How can the cross-sectoral and regional coordination of adaptation planning be promoted and enhanced?
- How can synergy with other multilateral environmental agreements in the planning and implementation process be identified and promoted?

Indicative activities

- Promote coordination of adaptation planning across sectors
- Identify and promote synergy in assessment, planning and implementation of adaptation at the regional level, as appropriate
- Identify and promote opportunities for synergy with other multilateral environmental agreements in the formulation of respective plans, in capacity-building and during implementation

C.4.A PROMOTE COORDINATION OF ADAPTATION PLANNING ACROSS SECTORS

Many of the steps in assessing vulnerability and designing adaptation strategies are the same regardless of the sector, and it is both efficient and cost-effective to coordinate these activities across sectors. In addition, most development priorities require the cooperation of multiple sectors. For example, in addressing food security, inputs would be required from those stakeholders dealing with sectors such as agriculture, water, irrigation, transport, gender, health, disasters and land use planning.

The impetus for the coordination should be defined through the NAP and strategy, guided by the national mandate for the NAP process.

Selected references

Coordination:

Pacific Islands Forum Secretariat. 2007. *The Pacific Plan for Strengthening Regional Cooperation and Integration*. Available at <<http://www.forumsec.org/pages.cfm/about-us/the-pacific-plan/>>.

Smith JB. 2011. *Development and climate change adaptation funding: coordination and integration*. Climate Policy. 11(3): pp. 987–1000.

World Resources Institute in collaboration with UNDP, UNEP and World Bank. 2011. *World Resources 2010–2011: Decision Making in a Changing Climate — Adaptation Challenges and Choices*. Washington, D.C.: WRI. Available at <http://pdf.wri.org/world_resources_report_2010-2011.pdf>.

C.4.B IDENTIFY AND PROMOTE SYNERGY IN ASSESSMENT, PLANNING AND IMPLEMENTATION OF ADAPTATION AT THE REGIONAL LEVEL, AS APPROPRIATE

As demonstrated during the NAPA process, regional cooperation has the potential to enhance the effectiveness and longer-term impact of adaptation planning. Therefore, such synergies across regions could entail the following benefits for the development and implementation of NAPs:

- Address the need to strengthen capacity in the NAP process;
- Help to broaden the knowledge base on adaptation by engaging a regional pool of experts and tapping on experience, best practices and lessons learned from the region;
- Provide the opportunity to share costs and pool resources in processes that can be carried out jointly (e.g. generating climate change scenarios);
- Avoid negative transboundary impacts, especially on shared river basins or other ecosystems.

The following principles would be useful in identifying and promoting synergy at the regional level:

- Defining a clear strategy for cooperation at the regional level;
- Striving to ensure full ownership of all projects by all the countries and regional entities concerned;
- Considering broad inclusiveness and involvement of all relevant stakeholders.

Selected references

Identifying regional synergies:

‘Elements for implementation strategies for national adaptation programmes of action’. Technical paper prepared by the LEG. FCCC/TP/2005/5. Chapter IX, ‘Regional synergy’. Available at <<http://unfccc.int/resource/docs/2005/tp/eng/05.pdf>>.

USAID Asia. 2010. *Asia-Pacific Regional Climate Change Adaptation Assessment. Final report: Findings and Recommendations*. Available at <http://pdf.usaid.gov/pdf_docs/PNADS197.pdf>.

C.4.C IDENTIFY AND PROMOTE OPPORTUNITIES FOR SYNERGY WITH OTHER MULTILATERAL ENVIRONMENTAL AGREEMENTS IN THE FORMULATION OF RESPECTIVE PLANS, IN CAPACITY-BUILDING AND DURING IMPLEMENTATION

At the national level, two main approaches are applied by countries to enhance cooperation and coordination among activities under the three Rio Conventions and other multilateral environmental agreements. One prevalent approach is to set up an inter-institutional body or formal coordination mechanism to bring together various governmental agencies and stakeholders. A second approach is to formally incorporate the responsibilities of the conventions in one department or unit of the same ministry or agency. In that case, the staff work directly with colleagues responsible for other conventions and have many opportunities for cooperation and sharing of lessons learned.

ELEMENT C

IMPLEMENTATION STRATEGIES

STEP C.1.

Prioritizing climate change adaptation in national planning

STEP C.2.

Developing a (long-term) national adaptation implementation strategy

STEP C.3.

Enhancing capacity for planning and implementing adaptation

STEP C.4.

Promoting coordination and synergy at the regional level and with other multilateral environmental agreements

Coordinating work under the conventions implies cooperation among governmental agencies, international organizations and various stakeholders that are responsible for the implementation of the conventions. Additional ideas for creating synergies at the national level are:

- Identifying and prioritizing activities under the three conventions;
- Taking the obligations under the conventions into account in a harmonized manner when revising or passing new legislation;
- Making use of mechanisms under one of the conventions to coordinate work among the three.

As part of these efforts, the use of information management systems can be a powerful tool for collecting and sharing data and information and harmonizing actions on climate change, the atmosphere, biodiversity and land degradation and desertification.

Selected references

Identifying synergies with MEAs:

UNDESA. 2011. *Synergies Success Stories: Enhancing Cooperation and Coordination among the Basel, Rotterdam and Stockholm Conventions*. New York: United Nations. Available at <<http://www.basel.int/DNNAdmin/AllNews/tabid/2290/ctl/ArticleView/mid/7518/articleId/353/Synergies-Success-Stories--Enhancing-cooperation-and-coordination-among-the-Basel-Rotterdam-and-Stockholm-conventions.aspx>>.



ELEMENT D

REPORTING, MONITORING AND REVIEW

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STEP D.2.

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gaps

STEP D.3.

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7. ELEMENT D. REPORTING, MONITORING AND REVIEW

The fourth element on reporting, monitoring and review would collect information on the NAP process, assess it through a national M&E system and provide outputs for the reporting on progress to the COP. The activities of this element would be implemented throughout the NAP process, starting with the design and launch of the M&E system during the launch of the NAP process. The outcomes of the review would inform regular updates of the NAPs, and lessons learned would be integrated into subsequent actions of the NAP process.

The main output of this element would include a plan for monitoring and evaluation, with a plan for data collection and ongoing compilation and synthesis of new information on impacts and vulnerabilities to be used in updating the NAPs. The NAPs would be disseminated internationally and through the UNFCCC secretariat. Regular progress reports would also be submitted to the UNFCCC through existing and new reporting channels, including countries' national communications and submissions.



**TABLE 3D. SUGGESTED STEPS AND INDICATIVE ACTIVITIES FOR
ELEMENT D ON REPORTING, MONITORING AND REVIEW OF
THE NAP PROCESS**

Steps	Indicative activities
Element D. Reporting, monitoring and review	
1. Monitoring the NAP process	a. Identify (few) areas of the NAP process that will be evaluated through qualitative and quantitative performance measures as part of an assessment of effectiveness of, and progress and gaps in, the NAP process b. For the areas identified for evaluation, define metrics for documenting progress, measuring and communicating levels of effectiveness and assessing gaps c. Collect information on the metrics, throughout the NAP process
2. Reviewing the NAP process to assess progress, effectiveness and gaps	a. Compile and synthesize information from new assessments and emerging science, as well as the results and outcomes from adaptation activities being implemented, to support the review and update of the NAPs and related outputs b. Review, on a regular basis, activities undertaken as part of the NAP process by evaluating the information and metrics collected as part of the monitoring of the process
3. Iteratively updating the national adaptation plans	a. Update the national adaptation plans, and related documentation, at a frequency specified in the national mandate, framework or strategy for the NAP process, by repeating selected steps as appropriate b. Work towards aligning the production of updates to the NAPs with relevant national development plans
4. Outreach on the NAP process and reporting on progress and effectiveness	a. Disseminate the NAP documents and related outputs to the UNFCCC secretariat and to other relevant stakeholders, as these become available b. Provide information in national communications on progress in and effectiveness of the NAP process

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STEP D.3. Iteratively updating the national adaptation plans

STEP D.4. Outreach on the NAP process and reporting on progress and effectiveness

7.1 STEP D.1. MONITORING THE NAP PROCESS

Overview: Step D.1 defines a monitoring and evaluation framework for the NAP process, and leads to the definition of specific metrics to be used in collecting data. The data would be collected throughout the NAP process, and analysed as necessary to guide a flexible and effective evolution of the NAP process.

Key questions

- Which areas of the NAP process are key for its effectiveness and should thus be the focus of the monitoring process?
- What information and metrics are needed to monitor progress, effectiveness, gaps and lessons of the NAP process?

Indicative activities

- Identify (few) areas that would be evaluated through qualitative and quantitative performance measures as part of monitoring and assessment of progress, effectiveness and gap analysis of the NAP process
- For the areas identified above, define specific metrics for documenting progress, measuring and communicating levels of effectiveness and assessing gaps under the NAP process, and a data collection plan
- Collect information on the metrics, throughout the NAP process

D.1.A IDENTIFY (FEW) AREAS THAT WOULD BE EVALUATED THROUGH QUALITATIVE AND QUANTITATIVE PERFORMANCE MEASURES AS PART OF A MONITORING AND ASSESSMENT OF PROGRESS, EFFECTIVENESS AND GAP ANALYSIS OF THE NAP PROCESS

In designing the monitoring and evaluation of the NAP process, it is important to recall the objectives of the NAP process, which are to reduce vulnerability to the impacts of climate change and to facilitate the integration of climate change into development planning (see section 1.1.1 for a complete representation). Also, the initial guidelines of the NAP process recommend that Parties should undertake a regular review, at intervals that they determine (a) to address inefficiencies, incorporating the results of new assessments and emerging science and reflect lessons learned from adaptation efforts; and (b) to monitor and review the efforts undertaken, and provide information in their national communications on the progress made and the effectiveness of the national adaptation plan process.

Earlier in these guidelines, the issue of capacity for undertaking the NAP process was considered an important component, suggesting that monitoring could also focus on identifying and addressing gaps in capacity.

The monitoring could be undertaken at different levels, such as at the national level to review and assess the overall NAP process, at a level of implementation to assess whether goals and objectives are being met, at a programme or project level to assess results and impact of activities. Given the many possibilities for monitoring the process, it is proposed that a country choose those areas to focus on which it determines as most relevant for measuring success of the overall process. Costs of the M&E system and synergy with other M&E efforts may also be considered. Specific methods and metrics for monitoring the selected areas will be defined in the following activity.

The results of the monitoring and evaluation would be used to improve effectiveness and efficiency of the process, and facilitate incorporation of new assessments and emerging science as well as lessons learned. The results would also be used to develop reports on the progress and effectiveness of the NAP process which could inform the COP through national communications and other reporting channels.

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D.1.B FOR THE AREAS IDENTIFIED ABOVE, DEFINE SPECIFIC METRICS FOR DOCUMENTING PROGRESS, MEASURING AND COMMUNICATING LEVELS OF EFFECTIVENESS AND ASSESSING GAPS UNDER THE NAP PROCESS, AND A DATA COLLECTION PLAN

The previous step would have defined the goals and objectives of the monitoring and evaluation for the NAP process, and have selected areas of focus. A practical method for defining metrics for an M&E protocol to evaluate programmes is described by the United States National Research Council (2005)⁴³ and involves a system of metrics in all steps of programme development and implementation in the following five areas:

- *Process metrics*: to assess leadership and to measure courses of action to achieve a goal. Metrics include the presence of leadership for each activity, a functioning peer-review process involving all stakeholders, participatory input into planning, the use of benchmarks where appropriate, and appropriate events and activities;
- *Input metrics*: to measure tangible quantities put into a process to achieve a goal. Metrics include sufficient expertise and knowledge to support the work, a sufficient level of commitment of resources, and the degree to which activities build on existing resources and products;
- *Output metrics*: to measure the products and services delivered, new skills and knowledge developed;
- *Outcome metrics or results-based metrics*: to measure results that stem directly from the actions of the programme and the influence that participants or activities have outside the programme (unintended outcomes). Metrics include improved adaptive capacity and economic or development impacts, the capacity to make better adaptation decisions, and the integration of climate change concerns into planning and development processes;
- *Impact metrics*: to measure the long-term consequences of outcomes, such as contributions towards future decisions, tangible societal benefits, a resilient society, and transformed social and economic systems that are well-adjusted to a changing climate. Some impacts would be unexpected. These may only be measurable long after a project is over.

The selection of appropriate metrics will benefit from broad stakeholder input, and a period of testing their utility. Additional costs for data collection and analysis will be an important consideration, and should be factored into the design of the NAP process. Data should be collected throughout the process.

The M&E protocol should ideally be designed at an early stage, such as when the mandate for the NAP process is being developed, so data can be collected and analysed throughout the process and used to improve operations.

43 National Research Council. 2005. *Thinking Strategically: The Appropriate Use of Metrics for the Climate Change Science Program*. Committee on Metrics for Global Change Research, Climate Research Committee. Available at <https://download.nap.edu/catalog.php?record_id=11292>.

D.1.C COLLECT INFORMATION ON THE METRICS THROUGHOUT THE NAP PROCESS

Given the long-term nature of the NAP process, a data plan for the M&E should be developed and supported with adequate resources. Data should be collected and stored in a systematic manner.

It is important that clear responsibility for this activity be designated to those that will collect the data and store it. In many cases data will be collected by multiple agencies/departments and aggregated under one office. For example, the NAP coordinating agency could be responsible for this, or the compilation could be assigned to the national statistical office.



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7.2 STEP D.2. REVIEWING THE NAP PROCESS TO ASSESS PROGRESS, EFFECTIVENESS AND GAPS

Overview: Step D.2 applies the M&E framework developed in the previous step to assess progress and effectiveness and to identify gaps on a regular basis. Information on climate change impacts and vulnerabilities would be collected on an ongoing basis, and main steps of the NAP process would continue, with enhancements introduced based on lessons learned and results of regular assessment.

Key questions

- What will be the time interval for reviewing the NAP process?
- How would progress, effectiveness and gaps best be quantified and assessed and which information from outside the NAP process is required?

Indicative activities

- Compile and synthesize information of new assessments and emerging science, as well as the results and outcomes of adaptation activities, to support the review and update of the NAPs and related outputs
- Review, on a regular basis, activities undertaken as part of the NAP process by evaluating the information collected through the monitoring process

D.2.A COMPILE AND SYNTHESIZE INFORMATION FROM NEW ASSESSMENTS AND EMERGING SCIENCE, AS WELL AS THE RESULTS AND OUTCOMES FROM ADAPTATION ACTIVITIES BEING IMPLEMENTED, TO SUPPORT THE REVIEW AND UPDATE OF THE NAPs AND RELATED OUTPUTS

Effectiveness of the NAP process would be measured based on how well vulnerabilities and risks to climate change are being addressed. An important input to this analysis will be new knowledge from assessments and emerging science, as well as the results and lessons learned of implemented adaptation measures. This information and new knowledge would help answer questions about the effectiveness of the applied adaptation strategies.

International and national scientists are constantly generating new findings, and ways should be cultivated to use this science effectively in national planning and policymaking. As part of the NAP process, countries could identify national research institutions that could be tasked with regular synthesis of the scientific literature, including from IPCC assessment reports, and with conducting new and additional assessments of impacts and vulnerability. This would require dedicated resources as part of the NAP process.

Another important source of input into improving adaptation planning are the reports of adaptation projects that have already been implemented. These can be used to identify benefits of particular actions as well as lessons learned. The NAPA process has resulted in many projects taking place in LDCs, and experiences and best practices are captured through activities of the LEG. Other adaptation initiatives under the Convention (such as the Nairobi work programme and the Adaptation Committee) are also capturing best practices and lessons, and these will in-

creasingly become useful as more and more adaptation projects are implemented and assessed.

The outputs of this activity should inform review and updates of the NAPs, and guide efforts to address inefficiencies and identified gaps.

Selected references

Capturing best practices and lessons learned in LDCs:

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D.2.B REVIEW, ON A REGULAR BASIS, ACTIVITIES UNDERTAKEN AS PART OF THE NAP PROCESS BY EVALUATING THE INFORMATION AND METRICS COLLECTED AS PART OF THE MONITORING OF THE PROCESS

The strategy for the NAP process that was developed at the beginning would define the frequency of reviews of the process and its outputs. Countries may find it useful to appoint an independent non-governmental entity to undertake the review of the NAP process. This could also be accomplished through a peer-review process with other countries, and at the government department or ministry level, through representatives of other departments. The review should be guided by the metrics and indicators of success defined above, and should ensure adequate stakeholder participation.

The review would conclude on whether the goals of the NAP process are being met, and whether the outputs are adequate and relevant. In cases where new plans and outputs are necessary, the review process would recommend that the NAPs be updated.

The results of the review would be communicated to all stakeholders in the country, and could be included in progress reports to the COP through national communications or through submissions.

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7.3 STEP D.3. ITERATIVELY UPDATING THE NATIONAL ADAPTATION PLANS

Overview: Step D.3 includes activities that support the updating of the NAPs on a periodic basis, thus guaranteeing the continuity of the NAP process. An important outcome of these activities would be the gradual alignment of the updates of the NAPs with relevant development plans at the sectoral and national levels.

Key questions

- What are the frequency and/or triggers for an update of the NAPs and related outputs?
- Which of the previous steps of the NAP process would be repeated in order to produce an update of the NAPs?
- How can the updating of the NAPs be aligned with other development planning processes to ensure harmonization and the identification of co-benefits?

Indicative activities

- Update the national adaptation plans, and related documentation, based on a frequency specified in the national mandate, framework or strategy for the NAP process, by repeating selected steps as appropriate
- Work towards aligning the production of updates with relevant national development plans

D.3.A UPDATE THE NAP, AND RELATED DOCUMENTATION, BASED ON A FREQUENCY SPECIFIED IN THE NATIONAL MANDATE, FRAMEWORK OR STRATEGY FOR THE NAP PROCESS, BY REPEATING SELECTED STEPS AS APPROPRIATE

An important characteristic of the NAP process is the long-term nature of its efforts to address adaptation. As with other national development plans, the NAPs would have a limited window of applicability before they would need to be updated to take into account progress made and emerging changes in climate and vulnerabilities, and to incorporate lessons learned and new science. Many of the activities of the NAP process would be ongoing, with new information being generated on a continuous basis, such as through the monitoring and evaluation of process. The national mandate or NAP strategy may have specified a frequency for updating the NAPs, or may have defined criteria on which's basis to decide when to update the NAPs.

The update could include the revision of the NAP strategy, specifying what steps and activities would be repeated, replaced or added.

D.3.B WORK TOWARDS ALIGNING THE PRODUCTION OF UPDATES TO THE NAPs WITH RELEVANT NATIONAL DEVELOPMENT PLANS

One of the challenges that countries face in developing plans is the timing and sequencing of different national planning processes. Various plans have different periods of validity. An important part of this activity would work towards aligning and sequencing the NAPs with other relevant development plans, so that information can be shared and processes streamlined. For example, countries usually produce a main development plan such as a poverty reduction strategy paper (PRSP), building

on national plans to meet Millennium Development Goals. Development agencies, such as the World Bank, United Nations agencies and bilateral donor agencies, base their specific assistance strategies on these national PRSPs. Such a process could be imitated by the NAP process.

One observation from the NAPA process was the limited alignment with other national-level planning processes, or even the integration of the NAPA priorities into subsequent strategies by development agencies. The NAP process provides the opportunity to take this lesson into account and design implementation strategies that are well coordinated with other development programmes, policies and strategies.



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7.4 STEP D.4. OUTREACH ON THE NAP PROCESS AND REPORTING ON PROGRESS AND EFFECTIVENESS

Overview: Step D.4 defines how outputs from the NAP process would be disseminated to the broader international community as a way to exchange experience and lessons learned, as well as to communicate information on progress in and effectiveness of the NAP process through the existing reporting channel of the national communication and through other means.

Key questions

- How can NAP documents best be disseminated to the UNFCCC secretariat and other stakeholders?
- What kind of information needs to be included in reporting on progress and effectiveness of the NAP process in national communications?
- What other channels can be used to report on progress to the COP and other stakeholders?

Indicative activities

- Disseminate the NAP documents and related outputs to the UNFCCC secretariat and to other relevant stakeholders, as these become available
- Provide information in national communications on progress in and effectiveness of the NAP process

D.4.A DISSEMINATE THE NAP AND RELATED OUTPUTS TO THE UNFCCC SECRETARIAT AND TO OTHER RELEVANT STAKEHOLDERS, AS THESE BECOME AVAILABLE

The NAP process will produce many outputs, and these will be disseminated to national stakeholders as they are produced. An important additional audience is the international community, including the Conference of the Parties to the UNFCCC. The information contained in the NAP process outputs will be useful for syntheses of key vulnerabilities in LDCs and actions being undertaken to address them. The experience and lessons learned will be invaluable for the assessment of progress in adaptation.

The NAP process outputs would be disseminated widely and copies should be submitted to the UNFCCC secretariat, where they will be made available to the LEG, the Adaptation Committee and other processes under the Convention. NAP outputs submitted to the secretariat will be made available via a NAP web portal.⁴⁴

As part of its revolving workplan, the LEG will synthesize information contained in the NAP outputs and will design its support to LDCs based on an assessment of the progress made and obstacles that LDCs face in fully implementing the NAP process. The LEG will continue to interact with LDC Parties through surveys and questionnaires to overcome challenges within the NAPA and NAP processes.

44 <unfccc.int/NAP>.

D.4.B PROVIDE INFORMATION IN NATIONAL COMMUNICATIONS ON PROGRESS IN AND EFFECTIVENESS OF THE NAP PROCESS

The COP has invited Parties to provide information, through their national communications, on what measures they have undertaken and on support provided or received relevant to the NAP process.⁴⁵ In particular, the COP encouraged LDC Parties, to the extent possible, to provide information on the NAP process through their national communications, as well as other channels.⁴⁶ Parties can use existing guidelines for national communications to communicate information on the NAP process to the COP under appropriate categories (see box 8).

Note that given the low frequency of national communication submissions from LDCs, the COP made it possible for LDCs to also use other channels for reporting. These could include, for example, submissions made directly to the COP and its bodies through the UNFCCC secretariat to facilitate the secretariat's work in collecting, compiling and synthesizing information needed by the Subsidiary Body for Implementation to monitor and evaluate the progress made on the NAP process, in accordance with paragraphs 36–37 of decision 5/CP.17.

BOX 8. POSSIBLE COMPONENTS OF A PROGRESS REPORT ON THE NAP PROCESS TO THE COP

The context

1. A summary of relevant information about the national circumstances, as appropriate;
2. A description of national development priorities, objectives and circumstances, which provided the basis for the development of the NAP;
3. Information on vulnerability to the adverse effects of climate change, including an identification of vulnerable areas that are most critical;
4. Information on features of geography, climate and economy which may affect the country's ability to make progress in the NAP process, as well as information regarding specific needs and concerns arising from the adverse effects of climate change;
5. A description of existing institutional arrangements relevant to the NAP process.

Steps in the NAP process

1. A general description of steps taken or envisaged under the NAP;
2. A description of approaches, methodologies and tools used, as well as any uncertainties or challenges faced in using them;

⁴⁵ Decision 5/CP.17, paragraph 32.

⁴⁶ Decision 5/CP.17, paragraph 33.

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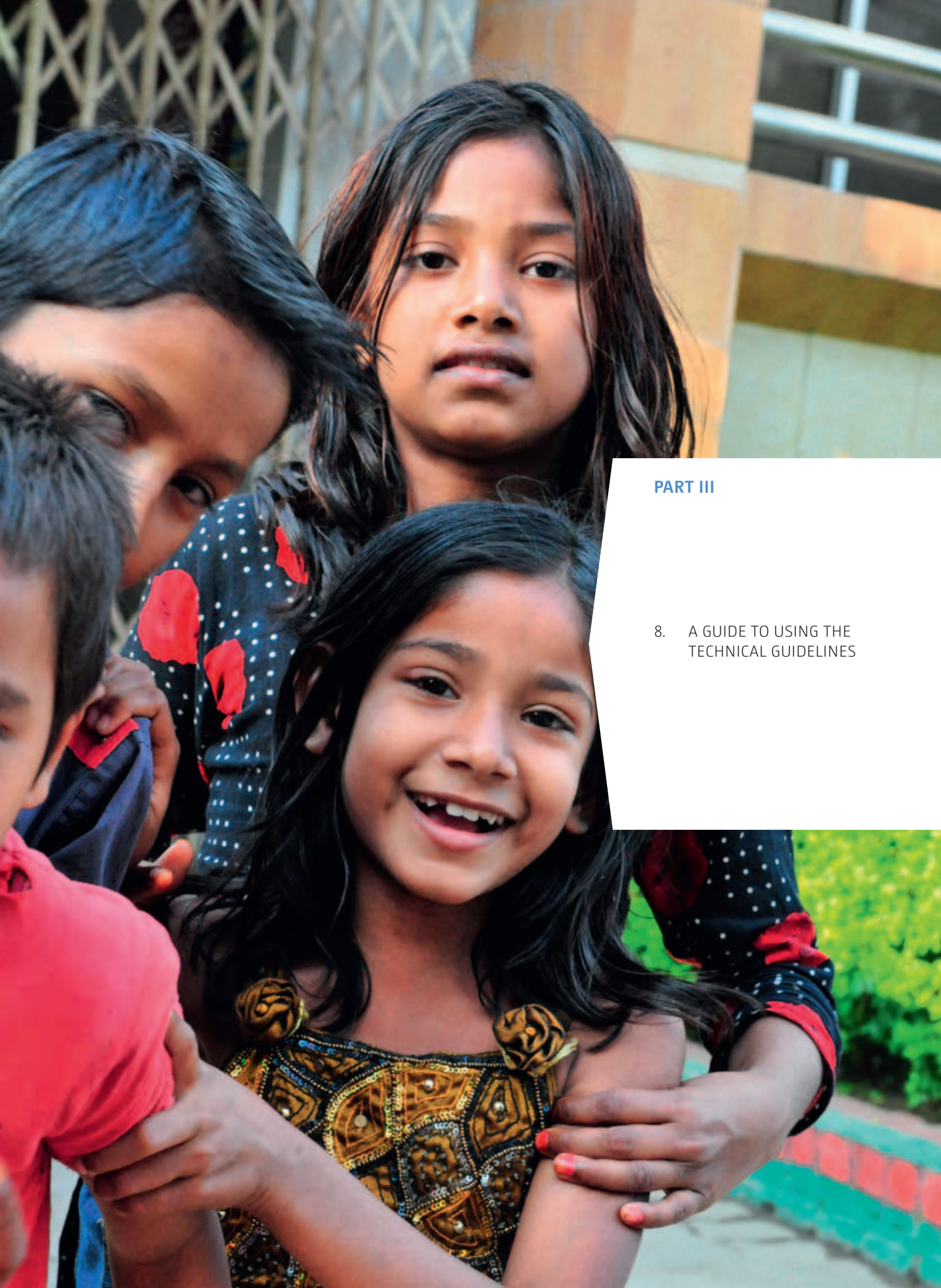
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3. Information on and, to the extent possible, an evaluation of, the strategies and measures undertaken under the NAP process. Those strategies and measures with the highest priority should be highlighted in this regard;
4. A report on the use of other policy frameworks, projects and/or programmes for developing and implementing adaptation strategies and measures in the country, and how these have interacted with the NAP process;
5. Any other information considered relevant to the process and suitable for inclusion in the report.

Outcomes of the NAP process

1. Information on how the NAP process has progressed towards meeting specific needs and concerns arising from the adverse effects of climate change;
2. Information on how the NAP process has progressed towards integrating climate change adaptation concerns into national developing planning.



PART III

8. A GUIDE TO USING THE TECHNICAL GUIDELINES

8. A GUIDE TO USING THE TECHNICAL GUIDELINES

8.1 APPROACH OF THE GUIDELINES

As described in the introduction, these technical guidelines have been developed based on the initial guidelines for the formulation of NAPs as adopted by the COP. These technical guidelines build on the four main elements of the initial guidelines by adding steps for each one, leading to 17 steps in total. Indicative activities or tasks which a country may undertake under each of the 17 steps are also provided, based on a broad literature review and input from experts and stakeholders during a meeting organized by the LEG to review a draft of the guidelines.

The indicative activities could be undertaken by a specific partner or stakeholder of the NAP process, and may have a specific output. Some of the activities may take a specific time to complete, while others would be ongoing.

Throughout this document, it has been emphasized that the technical guidelines are indicative rather than prescriptive, and that countries are invited to apply the suggested steps based on their individual circumstances. They may choose those steps that add value to their planning processes and sequence NAP activities based on their needs. In the spirit of decision 5/CP.17, the individual activities are neither intended to be followed consecutively nor as a complete set.

In establishing a NAP process, countries may answer the following guiding questions:

- How should the country start to embark on the NAP process, bearing in mind ongoing efforts? How would the process evolve over time?
- What would be useful milestones for each step? What is a useful checklist?
- How can the country best arrange the NAP process into workstreams, each with clear leadership and ownership by partner institutions of the process?
- What support can countries expect to receive from the LEG?

The following provides a sample flow of activities that is meant to illustrate how the NAP process could be rolled out within a country. It is meant to serve as an example of the process and is by no means prescriptive.

8.2 A SAMPLE FLOW OF ACTIVITIES

8.2.1 SCOPING THE NAP PROCESS AND PRODUCING A MANDATE AND ROAD MAP

The National Climate Change Focal Point, supported by the focal point's institution, will most likely initiate activities that will kick off the NAP process. As a start, a scoping exercise of the NAP process could be undertaken, by going through the 17 steps, and identifying what activities need to be carried out for the country. In addition, stakeholders and their specific roles could be identified. This exercise would lead to a series of actions to define and endorse a mandate, and develop a road map for the NAP process.

The following are some of the stakeholders that may be involved in the NAP process:

- National Climate Change Focal Point and supporting institution;
- Cabinet/Senate/Parliament;
- National climate change committee/Interagency task force/Interministerial (technical) working group;
- Climate change technical committee(s)/Sectoral working groups;
- Finance and planning bodies;
- Sector ministries and subnational bodies;
- National statistical office;
- Academic and research institutes;
- Universities and other educational institutions;
- Media;
- General public, local communities;
- Business and industry;
- Civil society organizations;
- Bilateral aid agencies;
- Regional commissions/organizations (multi-country);
- GEF and its implementing agencies;
- UN organizations;
- The UNFCCC;
- Other Conventions (CBD, CCD);
- The LEG.

8.2.2 CYCLES OF THE NAP PROCESS

The first round of completing the NAP process would lead to a first set of outputs and national reports. In addition,

analytical and policy processes will be put in place that will define future updates of the plans and reports.

Considering the long-term nature of the NAP process, the first round of the process would ideally lead to the establishment of long-term or permanent mandates to different ministries and agencies to oversee different components of the NAP process. These permanent mandates may require long-term commitments of funding and other types of support.

8.2.3 STEP-BY-STEP GUIDES FOR SELECTED WORK FLOWS

The activities and steps of the NAP process can be clustered into workstreams that would be managed by different stakeholders. Together, the workstreams would build a

national programme that would be “the NAP process.” The coordinating mechanism of the NAP process would manage the relationships and flow of information between the workstreams, and sufficient authority would be delegated to leaders of each workstream to ensure the effective and efficient delivery of intended outputs and outcomes of the NAP process.

Sample workstreams are shown in the following tables 10 to 16, suggesting applicable steps and selected activities from table 3 in the annex. The numbering of activities from table 3 is retained in these tables to facilitate reading.

TABLE 10. SAMPLE WORKSTREAM ON ADAPTATION CAPACITY AND ENABLING ENVIRONMENTS: GAP AND NEEDS ANALYSIS

Steps	Indicative activities
Element A. Lay the groundwork and address gaps	
1. Initiating and launching of the NAP process	e. Define a framework and strategy as well as a road map, including sequencing of various NAPs and a monitoring and evaluation plan
2. Stocktaking: identifying available information on climate change impacts, vulnerability and adaptation and assessing gaps and needs of the enabling environment for the NAP process	c. Conduct a gap analysis to assess strengths and weaknesses regarding the capacity, data and information, and resources required to effectively engage in the NAP process d. Assess potential barriers to the planning, design and implementation of adaptation activities
3. Addressing capacity gaps and weaknesses in undertaking the NAP process	a. Develop and enhance enabling institutional and technical capacity for undertaking the NAP process b. Identify and enhance awareness of potential opportunities for integrating climate change adaptation into development planning at different levels c. Design and implement climate change communication programmes, public awareness-raising and education
Element B. Preparatory elements	
5. Integrating climate change adaptation into national and subnational development and sectoral planning	a. Identify opportunities and constraints for integrating climate change into planning b. Build and enhance capacity for integrating climate change into planning
Element C. Implementation strategies	
3. Enhancing capacity for planning and implementing adaptation	a. Strengthen institutional and regulatory frameworks for addressing adaptation in the long-term at national and sectoral levels b. Design and implement training on the NAP process on an ongoing basis at sectoral and subnational levels to facilitate adaptation planning at subnational levels

TABLE 11. SAMPLE WORKSTREAM ON MONITORING AND EVALUATION

Steps	Indicative activities
Element A. Lay the groundwork and address gaps	
1. Initiating and launching the NAP process	c. Create or enhance a national vision and mandate for the NAP process e. Define a framework and strategy as well as a road map, including sequencing of various NAPs and a monitoring and evaluation plan, for the NAP process
Element D. Reporting, monitoring and review	
1. Monitoring the NAP process	a. Identify (few) areas of the NAP process that will be evaluated through qualitative and quantitative performance measures as part of an assessment of effectiveness of, and progress and gaps in, the NAP process b. For the areas identified for evaluation, define metrics for documenting progress, measuring and communicating levels of effectiveness and assessing gaps c. Collect information on the metrics, throughout the NAP process
2. Reviewing the NAP process to assess progress, effectiveness and gaps	a. Compile and synthesize information from new assessments and emerging science, as well as the results and outcomes from adaptation activities being implemented, to support the review and update of the NAPs and related outputs b. Review, on a regular basis, activities undertaken as part of the NAP process by evaluating the information and metrics collected as part of the monitoring of the process

TABLE 12. SAMPLE WORKSTREAM ON INTERFACING WITH POLICY AND DECISION MAKERS UNDER THE NAP PROCESS

Steps	Indicative activities
Element A. Lay the groundwork and address gaps	
1. Initiating and launching the NAP process	a. Conduct briefings to policymakers about climate change adaptation challenges and opportunities, and the NAP process in particular b. Designate the spearheading or coordinating mechanism c. Create or enhance a national vision and mandate for the NAP process
2. Stocktaking: identifying available information on CC IVA and assessing gaps and needs of the enabling environment for the NAP process	d. Assess potential barriers to the planning, design and implementation of adaptation activities
3. Addressing capacity gaps and weaknesses in undertaking the NAP process	a. Develop and enhance enabling institutional and technical capacity for undertaking the NAP process
4. Comprehensively and iteratively assessing development needs and climate vulnerabilities	a. Compile information on main development objectives, policies, plans and programmes b. Identify synergies between development and adaptation objectives, policies, plans and programmes
Element B. Preparatory elements	
4. Compiling and communicating national adaptation plans	b. Integrate review comments into the national adaptation plans and process endorsement at the national level as defined in the mandate for the NAP process
5. Integrating climate change adaptation into national and subnational development and sectoral planning	c. Facilitate the integration of climate change adaptation into existing national and subnational planning processes
Element C. Implementation strategies	
1. Prioritizing climate change adaptation in national planning	a. Define national criteria for prioritizing implementation based on, inter alia, development needs, climate vulnerability and risk and existing plans
3. Enhancing capacity for planning and implementing adaptation	a. Strengthen institutional and regulatory frameworks for addressing adaptation in the long-term at national and sectoral levels
4. Promoting coordination and synergy at the regional level and with other multilateral environmental agreements	a. Promote coordination of adaptation planning across sectors b. Identify and promote synergy in assessment, planning and implementation of adaptation at the regional level as appropriate c. Identify and promote opportunities for synergy with other multilateral environmental agreements in the formulation of respective plans, in capacity-building and during implementation
Element D. Reporting, monitoring and review	
1. Monitoring the NAP process	a. Identify (few) areas of the NAP process that will be evaluated through qualitative and quantitative performance measures as part of an assessment of effectiveness of, and progress and gaps in, the NAP process
2. Reviewing the NAP process to assess progress, effectiveness and gaps	b. Review, on a regular basis, activities undertaken as part of the NAP process by evaluating the information collected through the monitoring process
3. Iteratively updating the national adaptation plans	b. Work towards aligning the production of updates with relevant national development plans
4. Outreach on the NAP process and reporting on progress and effectiveness	a. Disseminate the NAP documents and related outputs to the UNFCCC secretariat and to other relevant stakeholders, as these become available b. Provide information in national communications on progress in and effectiveness of the NAP process

TABLE 13. SAMPLE WORKSTREAM ON INTEGRATING CLIMATE CHANGE ADAPTATION IN NATIONAL PLANNING

Steps	Indicative activities
Element A. Lay the groundwork and address gaps	
1. Initiating and launching of the NAP process	c. Create or enhance a national vision and mandate for the NAP process e. Define a framework and strategy, as well as a road map, including sequencing of various NAPs and a monitoring and evaluation plan
2. Stocktaking: identifying available information on CC IVA and assessing gaps and needs of the enabling environment for the NAP process	d. Assess potential barriers to the planning, design and implementation of adaptation activities
3. Addressing capacity gaps and weaknesses in undertaking the NAP process	a. Develop and enhance enabling institutional and technical capacity for undertaking the NAP process b. Identify and enhance awareness of potential opportunities for integrating climate change adaptation into development planning at different levels
4. Comprehensively and iteratively assessing development needs and climate vulnerabilities	a. Compile information on main development objectives, policies, plans and programmes b. Identify synergies between development and adaptation objectives, policies, plans and programmes
Element B. Preparatory elements	
2. Assessing climate vulnerabilities and identifying adaptation options at sector, subnational, national and other appropriate levels	b. Rank climate change risks and vulnerabilities c. Identify and categorize adaptation options at multiple scales to address priority vulnerabilities
5. Integrating climate change adaptation into national and subnational development and sectoral planning	a. Identify opportunities and constraints for integrating climate change into planning b. Build and enhance capacity for integrating climate change into planning c. Facilitate the integration of climate change adaptation into existing national and subnational planning processes
Element C. Implementation strategies	
1. Prioritizing climate change adaptation in national planning	a. Define national criteria for prioritizing implementation based on, inter alia, development needs, climate vulnerability and risk and existing plans
3. Enhancing capacity for planning and implementing adaptation	a. Strengthen institutional and regulatory frameworks for addressing adaptation in the long-term at national and sectoral levels
Element D. Reporting, monitoring and review	
3. Iteratively updating the national adaptation plans	b. Work towards aligning the production of updates with relevant national development plans

TABLE 14. SAMPLE WORKSTREAM ON A VULNERABILITY AND ADAPTATION ASSESSMENT

Steps	Indicative activities
Element A. Lay the groundwork and address gaps	
1. Initiating and launching the NAP process	e. Define a framework and strategy, as well as a road map, including sequencing of various NAPs and a monitoring and evaluation plan
2. Stocktaking: identifying available information on climate change impacts, vulnerability and adaptation and assessing gaps and needs of the enabling environment for the NAP process	a. Conduct a stocktaking of ongoing and past adaptation activities and their effectiveness b. Synthesize available analyses of the current and future climate at the broad national and/or regional level
4. Comprehensively and iteratively assessing development needs and climate vulnerabilities	a. Compile information on main development objectives, policies, plans and programmes
Element B. Preparatory elements	
1. Analysing current climate and future climate change scenarios	a. Analyse the current climate to identify trends in variables and indices that could be used to support planning and decision-making b. Characterize broad future climate risks and levels of uncertainty using scenario analysis at the national level or as part of a regional analysis including through climate and socioeconomic scenarios
2. Assessing climate vulnerabilities and identifying adaptation options at sector, subnational, national and other appropriate levels	a. Assess vulnerability to climate change at sector, subnational, national or appropriate levels (by applying applicable frameworks) b. Rank climate change risks and vulnerabilities c. Identify and categorize adaptation options at multiple scales to address priority vulnerabilities
3. Reviewing and appraising adaptation options	a. Appraise individual adaptation options, including economic, ecosystem and social costs and benefits, and possibilities for unintended (positive and negative) impacts of adaptation measures
4. Compiling and communicating national adaptation plans	a. Aggregate sectoral and subnational adaptation priorities into national adaptation plans through stakeholder ranking processes and make the drafts available for review b. Integrate review comments into the national adaptation plans and process endorsement at the national level as defined in the mandate for the NAP process c. Communicate and disseminate the national adaptation plans widely to all stakeholders in the country
Element D. Reporting, monitoring and review	
2. Reviewing the NAP process to assess progress, effectiveness and gaps	a. Compile and synthesize information from new assessments and emerging science, as well as the results and outcomes from adaptation activities being implemented, to support the review and update of the NAPs and related outputs b. Review, on a regular basis, activities undertaken as part of the NAP process by evaluating the information and metrics collected as part of the monitoring of the process
3. Iteratively updating the national adaptation plans	a. Update the national adaptation plans, and related documentation, at a frequency specified in the national mandate, framework or strategy for the NAP process, by repeating selected steps as appropriate

TABLE 15. SAMPLE WORKSTREAM ON EDUCATION, TRAINING, COMMUNICATION, AND AWARENESS-RAISING

Steps	Indicative activities
Element A. Lay the groundwork and address gaps	
1. Initiating and launching NAP process	a. Conduct briefings to policymakers about climate change adaptation challenges and opportunities, and the NAP process in particular e. Define a framework and strategy, as well as a road map, including sequencing of various NAPs and a monitoring and evaluation plan, for the NAP process
3. Addressing capacity gaps and weaknesses in undertaking the NAP process	b. Identify and enhance awareness of potential opportunities for integrating climate change adaptation into development planning at different levels c. Design and implement programmes on climate change communication, public awareness-raising and education
Element B. Preparatory elements	
1. Analysing current climate and future climate change scenarios	c. Communicate projected climate change information to all stakeholders and the public
4. Compiling and communicating national adaptation plans	c. Communicate and disseminate the national adaptation plans widely to all stakeholders in the country
Element C. Implementation strategies	
3. Enhancing capacity for planning and implementing adaptation	a. Strengthen institutional and regulatory frameworks for addressing adaptation in the long-term at national and sectoral levels b. Design and implement training on the NAP process on an ongoing basis at sectoral and subnational levels to facilitate adaptation planning at subnational levels c. Implement outreach on NAP process outputs at the national level and promote international cooperation

TABLE 16. SAMPLE WORKSTREAM ON REPORTING

Steps	Indicative activities
Element A. Lay the groundwork and address gaps	
1. Initiating and launching of the NAP process	c. Create or enhance a national vision and mandate for the NAP process d. Operationalize the NAP process through access to support e. Define a framework and strategy, as well as a road map, including sequencing of various NAPs and a monitoring and evaluation plan
Element B. Preparatory elements	
4. Compiling and communicating national adaptation plans	c. Communicate and disseminate the national adaptation plans widely to all stakeholders in the country
Element D. Reporting, monitoring and review	
4. Outreach on the NAP process and reporting on progress and effectiveness	a. Disseminate the NAP documents and related outputs to the UNFCCC secretariat and to other relevant stakeholders, as these become available b. Provide information in national communications on progress in and effectiveness of the NAP process

8.3 NEXT STEPS BY THE LEG

During the course of 2013, the LEG will discuss how to best support the NAP process for LDCs, and will produce “supplements to the guidelines” to respond to the needs of the LDCs. Further information about the latest activities of the LEG can be found at <http://unfccc.int/ldc>. More information on the NAP process can be found at <http://www.unfccc/NAP>.

The LEG can be reached via email at LEGHelp@unfccc.int.



PART IV

ANNEXES

1. INITIAL GUIDELINES FOR THE FORMULATION OF NATIONAL ADAPTATION PLANS BY LEAST DEVELOPED COUNTRY PARTIES

I. INTRODUCTION

1. The elements described in paragraphs 2–6 below are indicative of the activities that can be undertaken in the development of national adaptation plans (NAPs). The planning of such activities will depend on national circumstances and should be determined by least developed country Parties.

II. ELEMENTS OF NATIONAL ADAPTATION PLANS

A. LAYING THE GROUNDWORK AND ADDRESSING GAPS

2. Activities undertaken under this element would be planned with a view to identifying weaknesses and gaps in enabling environments, and addressing them as necessary, to support the formulation of comprehensive adaptation plans, programmes and policies, through, inter alia:

- (a) Identification and assessment of institutional arrangements, programmes, policies and capacities for overall coordination and leadership on adaptation;
- (b) Assessment of available information on climate change impacts, vulnerability and adaptation, measures taken to address climate change, and gaps and needs, at the national and regional levels;
- (c) Comprehensive, iterative assessments of development needs and climate vulnerabilities.

B. PREPARATORY ELEMENTS

3. In developing NAPs, consideration would be given to identifying specific needs, options and priorities on a country-driven basis, utilizing the services of national and, where appropriate, regional institutions, and to the effective and continued promotion of participatory and gender-sensitive approaches coordinated with sustainable de-

velopment objectives, policies, plans and programmes. Activities may include the following:

- (a) Design and development of plans, policies and programmes by considering decision 1/CP.16, paragraph 14(a), to address the gaps and needs referred to in paragraph 2 above;
- (b) Assessments of medium- and long-term adaptation needs, and, as appropriate, development needs and climate vulnerabilities;
- (c) Activities aimed at integrating climate change adaptation into national and subnational development and sectoral planning;
- (d) Participatory stakeholder consultations;
- (e) Communication, awareness-raising and education.

C. IMPLEMENTATION STRATEGIES

4. Activities carried out as part of the implementation strategies would take into consideration the following:

- (a) Prioritizing work according to development needs and climate change vulnerability and risk;
- (b) Strengthening institutional and regulatory frameworks to support adaptation;
- (c) Training and coordination at the sectoral and subnational levels;
- (d) Public dissemination of information on the national adaptation plan process, to be made available to the public and to the UNFCCC secretariat;
- (e) Considering other relevant multilateral frameworks and international programmes and initiatives, with a view to building on and complementing existing adaptation planning.

D. REPORTING, MONITORING AND REVIEW

5. These activities, including national adaptation plan documents, could be included in national strategies and plans, as appropriate.
6. Under this element, Parties should undertake a regular review, at intervals that they determine:
 - (a) To address inefficiencies, incorporating the results of new assessments and emerging sci-

ence and reflect lessons learned from adaptation efforts;

- (b) To monitor and review the efforts undertaken, and provide information in their national communications on the progress made and the effectiveness of the national adaptation plan process.

Source: Decision 5/CP.17, annex.



2. SUPPORT NEEDS FOR THE NAP PROCESS AS IDENTIFIED BY THE LEG IN 2012

At the request of the COP, the LEG identified support needs for the process of the formulation and implementation of NAPs. The LEG based its analysis on past work in analysing adaptation projects in the LDCs, in particular the experience of the LDCs in implementing national adaptation programme of action (NAPA) projects, as well as other programmes such as the Pilot Program for Climate Resilience and the Africa Adaptation Programme. The LEG also used the results of the country interviews it conducts during sessions of the subsidiary bodies. The interviews provide an opportunity for the LEG to collect information from the LDCs on NAPAs, the least developed countries work programme and the NAP process. The LEG recognized that the LDCs are at varying stages in terms of their capacity and needs in addressing adaptation, and that each country will probably need to select specific tasks under the NAP process based on its national circumstances.

The LEG identified the following initial list of areas for which support would be needed by the LDCs in undertaking the NAP process, and which could be delivered through the various modalities listed in decision 5/CP.17, paragraph 12:

- (a) Defining capacities for essential functions at the national level necessary to address adaptation, the identification of gaps based on an analysis of existing capacities and the implementation of strategies and activities to address the gaps;
- (b) Understanding of existing policies and how they address and enable climate change adaptation with a view to revising or designing new legislation and policies, where needed, to facilitate successful adaptation;
- (c) Design of research and systematic observations to support vulnerability and risk analysis and adaptation planning;
- (d) Data collection, management and archiving, and subsequent analysis covering all relevant sectors and disciplines, including analysis of observed and simulated climate data, and subsequent presentation of such data and analyses to various stakeholders to support decision-making;
- (e) Use of appropriate geospatial data management and analysis tools in managing data and information over space and time, to underpin assessments as part of adaptation planning and the iterative and ongoing nature of such assessments as part of the NAP process;
- (f) Analysis of climate data and the development and application of climate change scenarios in assessing climate change risks at the national, sectoral and local levels;
- (g) Design and conduct of vulnerability and adaptation assessments, including the development and application of assessment models, application of applicable decision support tools, such as cost-benefit analysis, and the ranking of adaptation options;
- (h) Development of strategies, projects and programmes to support the implementation of specific adaptation activities under the NAP process, taking into account existing adaptation efforts and how financing is being provided;
- (i) Synthesizing the best available science on climate change, as well as other forms of knowledge, and translating it into support for decision-making, including how to make such decisions considering the uncertainty of future climate change;
- (j) Integration of NAPs into national development plans and priorities, including by facilitating recognition of climate risks and the need for adaptation within relevant policies, integrating climate change vulnerability and risks in the formulation of policies, and prioritizing resource allocation to the areas, sectors or populations most at risk;
- (k) Access to information and experience of others in applying different technologies in adaptation to facilitate the selection, installation and operation of appropriate technologies for local problems;
- (l) Financial and technical support for the NAP process, including for the formulation and implementation of adaptation measures as well as identified gaps in capacity for successful adaptation planning;
- (m) Design and operation of innovative financing for climate change, including issues of direct access,

- absorption of funds and setting up trust funds and other national climate change funds;
- (n) Design of effective monitoring and evaluation systems, including for overall coordination of work at the national or sectoral levels, in defining objectives and targets, selecting indicators and means of verification, identifying data sources and collection methods, supporting data and information management, undertaking special assessments, and facilitating reporting and review;
- (o) Capture and management of knowledge on impacts, vulnerabilities and adaptations, to build up a decision-support system for future adaptation planning, including through the development of knowledge bases and expert or rule-based systems;
- (p) Development and deployment of communications, public awareness and outreach on adaptation and the facilitation of public access to information on climate change adaptation, including an easy to read short summary of the NAP process that could be used by the LDCs and translated into local languages;
- (q) Communication of up-to-date information on organizations, regional centres and networks that can provide support to the LDCs on the NAP process, including on financial support, technical guides and papers, and capacity-building;
- (r) Exchange of case studies, experiences, best practices and lessons learned in addressing adaptation at the national, regional and international levels;
- (s) Communicating the above needs through an international event that could bring together the LEG, LDC Parties, adaptation practitioners, organizations, development agencies, regional centres and networks, as a way to: set a stage for sharing information on the NAP process and how it will build on the NAPAs and fit in with other existing adaptation initiatives at the national level in LDCs; and to provide an opportunity for the LDCs to communicate their support needs for the NAP process, and to jointly discuss support activities for the LDCs for the NAP process with the entities mentioned here.

3. EXAMPLES OF MANDATE INSTRUMENTS FOR CLIMATE CHANGE ADAPTATION PLANNING

The following two examples are from developed countries and are given as a guide only, to show the types of information that may be useful to specify in the NAP process. While the situation of the least developed countries will probably warrant a more streamlined approach, these examples show some of the specifications that may be necessary to include in a mandate, and how to coordinate reporting and action by different departments and those outside direct government oversight.

3.1 UK CLIMATE CHANGE ACT 2008

The United Kingdom introduced a long-term legally binding framework to tackle the dangers of climate change through a Climate Change Act in November 2008.¹ This provides a legal framework for ensuring that the government meets its commitments to tackle climate change.

The act sets the legal framework for adaptation policy in the United Kingdom as follows:²

- A UK Climate Change Risk Assessment (CCRA) is to be conducted every 5 years. The first CCRA report was due in January 2012.
- A National Adaptation Programme must be put in place and reviewed every five years to address the most pressing climate change risks to England. The first Programme was to be published in 2012.
- The Government has the power to require public authorities and statutory undertakers (including the utilities) to report on how they have assessed the risks of climate change to their work, and what they are doing to address these risks. The first tranche of reports from public bodies and infrastructure providers were prepared up until 2011 – 2012.

An Adaptation Sub-Committee (ASC), of the Committee on Climate Change (CCC), was established under the Climate Change Act of 2008. The ASC provides expert

advice and scrutiny through the CCC to ensure that the Government's programme for adaptation enables the UK to prepare effectively for the impacts of climate change (see <http://www.theccc.org.uk/about-the-ccc/adaptation-sub-committee>).

The Climate Change Act of 2008 sets out the role of the ASC, which will be to provide advice, analysis, information and other assistance through the CCC on:

- The preparation of the UK CCRA;
- The implementation of Her Majesty's Government's Adaptation Programme for England;
- Requests from the national authorities of Wales, Scotland and Northern Ireland for advice on adaptation.

The objectives of the ASC are:

- To scrutinize the development of the first CCRA, which was produced during 2009-2011. The Climate Change Act requires that the Committee provide its advice by 26 July 2011 – six months before the final date for laying the CCRA before parliament. The Committee decided that rather than giving its advice at the end of the process when the CCRA is complete, it would provide advice on an ongoing basis. This will allow the contractors and DEFRA to modify their approach to reflect the Committee's advice. In addition, the Committee will advise upon the Adaptation Economic Assessment which, although not formally required by the Act, will be produced alongside the CCRA, as the two will be analytically intertwined.
- To assess the preparedness of the UK to meet climate change risks and opportunities. Under the Act, the CCC is required to provide an assessment of the progress made towards implementing the objectives, proposals and policies set out in the UK Government's adaptation programmes laid before parliament. The first progress report is likely to be due in 2014, with subsequent reports every two years thereafter (i.e. 2016, 2018). In addition, other national authorities may request the Committee's advice on their programmes. The

¹ <<http://www.legislation.gov.uk/ukpga/2008/27/contents>>.

² The following text is sourced from <<http://www.theccc.org.uk/about-the-ccc/climate-change-act>>.

Committee's work relating to the Reporting Powers Framework will also fall under this objective.

- To promote effective adaptation actions by society as a whole. This objective covers Committee engagement with stakeholders and their assessment of how the evidence base could be improved to increase preparedness for climate change.

MAIN TASKS OF THE COMMITTEE

To assess the risks and opportunities of climate change, and preparedness for meeting these, the Committee has identified several tasks. As the Committee engages in its work the specific details will need to be informed by, and inform, the work of the CCRA. The issues include:

- The possible climate futures;
- The main impacts on the UK, and overseas, associated with these climate futures;
- The preparedness of the UK to adapt to impacts and exploit opportunities, the decisions that could be made to improve these, when these decisions need to be made, and by whom.
- The costs and benefits associated with different adaptation responses;
- To promote effective adaptation actions by society as a whole, a communications and stakeholder engagement strategy will be developed.

3.2 EXECUTIVE ORDER FOR IMPLEMENTING CLIMATE CHANGE ADAPTATION PLANNING IN THE UNITED STATES OF AMERICA

The following is an example of instructions for implementing a national mandate for adaptation planning based on an executive order issued from the United States of America President's office.³ It is an example of how clarity on responsibility for the adaptation process and requirements on government departments can be established and communicated in a very direct and transparent manner.

FEDERAL AGENCY CLIMATE CHANGE ADAPTATION

PLANNING

Implementing Instructions, March 4, 2011⁴

BACKGROUND:

Executive Order (E.O.) 13514, Federal Leadership in Environmental, Energy, and Economic Performance, seeks to establish an integrated strategy towards sustainability in the Federal Government. The purpose of this document is to provide implementing instructions to be used by Federal agencies in climate change adaptation planning. Section 8(i) of the E.O. requires that as part of the formal Strategic Sustainability Performance Planning process, each Federal agency must evaluate relevant climate change risks and vulnerabilities to manage both the short- and long-term effects of climate change on the agency's mission and operations. Section 5(b) of the E.O. specifies that the Chair of the Council on Environmental Quality (CEQ) shall issue instructions to implement the order.

Section 16 of the E.O. charged the Interagency Climate Change Adaptation Task Force (Task Force) with developing recommendations for Federal agency actions in support of a national climate change adaptation strategy. The Task Force found that the Federal Government has a critical obligation to carry out adaptation planning because climate change directly affects a wide range of Federal services, operations, programs, and assets (e.g. infrastructure, land, water resources), and clearly has broad national security implications. In an October 2010 *Progress Report* to the President, the Task Force recommended that Federal agencies develop and implement coordinated climate adaptation plans (Progress Report of the Interagency Climate Change Adaptation Task Force: Recommended Actions in Support of a National

Climate Change Adaptation Strategy, October 5, 2010). Through adaptation planning, each agency will identify aspects of climate change that are likely to impact the agency's ability to achieve its mission and sustain its operations and respond strategically. Adaptation planning will help an agency to reduce the negative effects and take advantage of new opportunities that climate change may bring. Integration of climate change adaptation planning into the operations, policies, and programs of the Federal Government will ensure that resources are

³ United States of America Federal Leadership in Environmental, Energy and Economic Performance. Executive order 13514. Available at <http://www.whitehouse.gov/assets/documents/2009fedleader_eo_rel.pdf>.

⁴ The following text is sourced from <http://www.whitehouse.gov/sites/default/files/microsites/ceq/adaptation_final_implementing_instructions_3_3.pdf>.

invested wisely and that Federal services and operations remain effective in current and future climate conditions.

Based on Task Force recommendations, the Interagency Climate Change Adaptation Agency Working Group (Working Group) developed *Implementing Instructions* for adaptation planning requirements and provided those interagency recommendations to CEQ. The Working Group also provided a recommended *Support Document* that includes templates and information agencies will need to satisfy the requirements of the implementing instructions. CEQ has reviewed the Working Group recommendations and is providing these *Implementing Instructions* to ensure consistent and effective implementation of E.O. 13514.

I. IMPLEMENTING INSTRUCTIONS FOR FEDERAL AGENCY CLIMATE CHANGE ADAPTATION PLANNING:

The head of each agency shall:

A) ESTABLISH AN AGENCY CLIMATE CHANGE ADAPTATION POLICY

- (1) By April 15, 2011, identify to the Chair of the Council on Environmental Quality a senior agency official responsible for carrying out the climate change adaptation planning actions required by these *Implementing Instructions*.
- (2) By June 3, 2011, concurrent with submission of the agency Strategic Sustainability Performance Plan, issue and make publicly available an agency-wide climate change adaptation policy statement, signed by the head of the agency, that commits the agency to adaptation planning to address challenges posed by climate change to the agency's mission, programs, and operations. The policy statement shall: a) state the purpose of the policy, including both the agency's vision for successful adaptation planning and initial adaptation goals as well as recognition that climate change adaptation is a critical complement to climate change mitigation and that both are required to address the causes and consequences of climate change; b) adopt the Interagency Climate Change Adaptation Task Force's guiding principles and framework for adaptation planning; c) describe the agency process to ensure effective adaptation planning implementation, including how

the agency will coordinate adaptation planning across programs and operations within the agency as well as with other agencies on climate change adaptation matters of common interest; and, d) identify programs and resources within the agency to support the climate change adaptation planning process. Agencies shall review and update their adaptation policy as necessary.

B) INCREASE AGENCY UNDERSTANDING OF HOW THE CLIMATE IS CHANGING

During calendar year 2011, participate in interagency climate change workshops sponsored by the Council on Environmental Quality. Each agency shall collect and share within the agency and across major program elements, information relevant to impacts of climate change on agency mission, programs, and operations and pursue opportunities for sharing and coordination across the Federal community.

C) APPLY UNDERSTANDING OF CLIMATE CHANGE TO AGENCY MISSION AND OPERATIONS

- (1) By June 3, 2011, concurrent with submission of the agency Strategic Sustainability Performance Plan, submit to the Chair of the Council on Environmental Quality agency responses to the guiding questions provided in Appendix E of the *Support Document*. The guiding questions are specifically designed to allow agencies to begin the process of assessing how climate change will affect agency mission, programs, and operations and to prepare the agency to undertake a high-level analysis of agency vulnerability to climate change.
- (2) By September 30, 2011, submit to the Chair of the Council on Environmental Quality a preliminary high-level analysis of agency vulnerability to climate change.
- (3) By March 2012, for the purpose of informing the climate adaptation planning document required under section D(2) of these instructions, complete a final high-level analysis of agency vulnerability to climate change. Additional information and instructions to complete the high-level analysis will be provided during Council on Environmental Quality sponsored interagency workshops, or in future guidance or support documents.

D) DEVELOP, PRIORITIZE, AND IMPLEMENT ACTIONS

- (1) By September 30, 2011, concurrent with the submission of agency preliminary high-level analysis required under section C(2) of these instructions, and using the template in Appendix G of the *Support Document*, identify and submit to the Chair of the Council on Environmental Quality three to five priority climate change adaptation actions that the agency will implement in fiscal year 2012, including actions to improve agency capacity to assess and build resilience to climate change risks.
- (2) By June 4, 2012, as part of the agency Strategic Sustainability Performance Plan, submit to the Chair of the Council on Environmental Quality and the Director of the Office of Management and Budget the agency climate adaptation plan for implementation in fiscal year 2013. The plans should reflect and advance, where appropriate, inter-agency crosscutting National adaptation planning efforts. Guidance and instructions to complete the agency climate adaptation plan will be provided to agencies during relevant Council on Environmental Quality sponsored interagency workshops or in future guidance documents.
- (3) When the agency Strategic Sustainability Performance Plan is approved for public release by the

Office of Management and Budget, agencies shall ensure that the climate adaptation portion of the plan is made publically available for review and comment. Agencies shall update the plan as appropriate in accordance with Council on Environmental Quality guidance for submission of agency Strategic Sustainability Performance Plans.

E) EVALUATE AND LEARN

During calendar year 2011, participate in inter-agency workshops sponsored by the Council on Environmental Quality and share lessons learned with other agencies.

¹ *Progress Report of the Interagency Climate Change Adaptation Task Force: Recommended Actions in Support of a National Climate Change Adaptation Strategy*, October 5, 2010.



4. THE DEFINITIONS FOR A CORE SET OF 27 DESCRIPTIVE INDICES OF EXTREMES DEFINED BY THE JOINT CCL/CLIVAR/JCOMM EXPERT TEAM ON CLIMATE CHANGE DETECTION AND INDICES

(User-friendly R-based software (RClimDex for their calculation is available, see <unfccc.int/NAP> for more details).

Temperature indices:

1. FD, frost days: count of days where TN (daily minimum temperature) $< 0^{\circ}\text{C}$

Let TN_{ij} be the daily minimum temperature on day i in period j . Count the number of days where $TN_{ij} < 0^{\circ}\text{C}$.

2. SU, summer days: count of days where TX (daily maximum temperature) $> 25^{\circ}\text{C}$

Let TX_{ij} be the daily maximum temperature on day i in period j . Count the number of days where $TX_{ij} > 25^{\circ}\text{C}$.

3. ID, icing days: count of days where TX $< 0^{\circ}\text{C}$

Let TX_{ij} be the daily maximum temperature on day i in period j . Count the number of days where $TX_{ij} < 0^{\circ}\text{C}$.

4. TR, tropical nights: count of days where TN $> 20^{\circ}\text{C}$

Let TN_{ij} be the daily minimum temperature on day i in period j . Count the number of days where $TN_{ij} > 20^{\circ}\text{C}$.

5. GSL, growing season length: annual count of days between first span of at least six days where TG (daily mean temperature) $> 5^{\circ}\text{C}$ and first span in second half of the year of at least six days where TG $< 5^{\circ}\text{C}$.

Let TG_{ij} be the daily mean temperature on day i in period j . Count the annual (1 Jan to 31 Dec in Northern Hemisphere, 1 July to 30 June in Southern Hemisphere) number of days between the first occurrence of at least six consecutive days where $TG_{ij} > 5^{\circ}\text{C}$ and the first occurrence after 1 July (1 Jan in Southern Hemisphere) of at least six consecutive days where $TG_{ij} < 5^{\circ}\text{C}$.

6. TXx: monthly maximum value of daily maximum temperature:

Let TX_{ik} be the daily maximum temperature on day i in month k . The maximum daily maximum temperature is then $TXx = \max(TX_{ik})$.

7. TNx: monthly maximum value of daily minimum temperature:

Let TN_{ik} be the daily minimum temperature on day i in month k . The maximum daily minimum temperature is then $TNx = \max(TN_{ik})$.

8. TXn: monthly minimum value of daily maximum temperature:

Let TX_{ik} be the daily maximum temperature on day i in month k . The minimum daily maximum temperature is then $TXn = \min(TX_{ik})$.

9. TNn: monthly minimum value of daily minimum temperature:

Let TN_{ik} be the daily minimum temperature on day i in month k . The minimum daily minimum temperature is then $TNn = \min(TN_{ik})$.

10. TN10p, cold nights: count of days where TN $< 10^{\text{th}}$ percentile

Let TN_{ij} be the daily minimum temperature on day i in period j and let $TN_{in}10$ be the calendar day 10th percentile of daily minimum temperature calculated for a five-day window centred on each calendar day in the base period n (1961-1990). Count the number of days where $TN_{ij} < TN_{in}10$.

11. TX10p, cold day-times: count of days where TX $< 10^{\text{th}}$ percentile

Let TX_{ij} be the daily maximum temperature on day i in period j and let $TX_{in}10$ be the calendar day 10th percentile of daily maximum temperature calculated for a five-day window centred on each calendar day in the base period n (1961-1990). Count the number of days where $TX_{ij} < TX_{in}10$.

12. TN90p, warm nights: count of days where TN $> 90^{\text{th}}$ percentile

Let TN_{ij} be the daily minimum temperature on day i in period j and let $TN_{in}90$ be the calendar day 90th percentile of daily minimum temperature calculated for a five-day window centred on each calendar day in the base period n (1961-1990). Count the number of days where $TN_{ij} > TN_{in}90$.

13. TX90p, warm day-times: count of days where TX > 90th percentile

Let TX_{ij} be the daily maximum temperature on day i in period j and let $TX_{in,90}$ be the calendar day 90th percentile of daily maximum temperature calculated for a five-day window centred on each calendar day in the base period n (1961-1990). Count the number of days where $TX_{ij} > TX_{in,90}$.

14. WSDI, warm spell duration index: count of days in a span of at least six days where TX > 90th percentile
Let TX_{ij} be the daily maximum temperature on day i in period j and let $TX_{in,90}$ be the calendar day 90th percentile of daily maximum temperature calculated for a five-day window centred on each calendar day in the base period n (1961-1990). Count the number of days where, in intervals of at least six consecutive days $TX_{ij} > TX_{in,90}$.

15. CSDI, cold spell duration index: count of days in a span of at least six days where TN > 10th percentile
Let TN_{ij} be the daily minimum temperature on day i in period j and let $TN_{in,10}$ be the calendar day 10th percentile of daily minimum temperature calculated for a five-day window centred on each calendar day in the base period n (1961-1990). Count the number of days where, in intervals of at least six consecutive days $TN_{ij} < TN_{in,10}$.

16. DTR, diurnal temperature range: mean difference between TX and TN (°C)
Let TX_{ij} and TN_{ij} be the daily maximum and minimum temperature on day i in period j . If I represents the total number of days in j then the mean diurnal temperature range in period j $DTR_j = \text{sum}(TX_{ij} - TN_{ij})$

Precipitation indices:

17. RX1day, maximum one-day precipitation: highest precipitation amount in one-day period

Let RR_{ij} be the daily precipitation amount on day i in period j . The maximum one-day value for period j is $RX1day_j = \max(RR_{ij})$.

18. RX5day, maximum five-day precipitation: highest precipitation amount in five-day period

Let RR_{kj} be the precipitation amount for the five-day interval k in period j , where k is defined by the last day. The maximum five-day values for period j are $RX5day_j = \max(RR_{kj})$.

19. SDII, simple daily intensity index: mean precipitation amount on a wet day

Let RR_{ij} be the daily precipitation amount on wet day w ($RR \geq 1$ mm) in period j . If W represents the number of wet

days in j then the simple precipitation intensity index $SDII_j = \text{sum}(RR_{wj}) / W$.

20. R10mm, heavy precipitation days: count of days where RR (daily precipitation amount) ≥ 10 mm

Let RR_{ij} be the daily precipitation amount on day i in period j . Count the number of days where $RR_{ij} \geq 10$ mm.

21. R20mm, very heavy precipitation days: count of days where $RR \geq 20$ mm

Let RR_{ij} be the daily precipitation amount on day i in period j . Count the number of days where $RR_{ij} \geq 20$ mm.

22. Rnnmm: count of days where $RR \geq$ user-defined threshold in mm

Let RR_{ij} be the daily precipitation amount on day i in period j . Count the number of days where $RR_{ij} \geq nn$ mm.

23. CDD, consecutive dry days: maximum length of dry spell ($RR < 1$ mm)

Let RR_{ij} be the daily precipitation amount on day i in period j . Count the largest number of consecutive days where $RR_{ij} < 1$ mm.

24. CWD, consecutive wet days: maximum length of wet spell ($RR \geq 1$ mm)

Let RR_{ij} be the daily precipitation amount on day i in period j . Count the largest number of consecutive days where $RR_{ij} \geq 1$ mm.

25. R95pTOT: precipitation due to very wet days (> 95th percentile)

Let RR_{wj} be the daily precipitation amount on a wet day w ($RR \geq 1$ mm) in period j and let $RR_{wn,95}$ be the 95th percentile of precipitation on wet days in the base period n (1961-1990). Then $R95pTOT_j = \text{sum}(RR_{wj})$, where $RR_{wj} > RR_{wn,95}$.

26. R99pTOT: precipitation due to extremely wet days (> 99th percentile)

Let RR_{wj} be the daily precipitation amount on a wet day w ($RR \geq 1$ mm) in period j and let $RR_{wn,99}$ be the 99th percentile of precipitation on wet days in the base period n (1961-1990). Then $R99pTOT_j = \text{sum}(RR_{wj})$, where $RR_{wj} > RR_{wn,99}$.

27. PRCPTOT: total precipitation in wet days (> 1 mm)

Let RR_{wj} be the daily precipitation amount on a wet day w ($RR \geq 1$ mm) in period j . Then $PRCPTOT_j = \text{sum}(RR_{wj})$.

Source: Klein Tank, A.M.G., F.W. Zwiers and X. Zhang. 2009. Guidelines on Analysis of extremes in a changing climate in support of informed decisions for adaptation. Climate Data and Monitoring WCDMP-No. 72, TD 1500. World Meteorological Organization, Geneva, Switzerland. Available at <http://www.wmo.int/datastat/documents/WCDMP_72_TD_1500_en_1_1.pdf>.

5. SELECTED EXAMPLES OF EXISTING ADAPTATION STRATEGIES AND PLANS AT DIFFERENT LEVELS

Strategy/plan	Responsible entity	Overview
Regional		
Adapting to climate change: Towards a European framework for action	Commission of the European Communities	This White Paper sets out a framework to reduce the vulnerability of the European Union (EU) to the impacts of climate change. The framework is designed to evolve as further evidence becomes available. The framework will respect the principle of subsidiarity, thus complementing action by member states. It will support overarching EU objectives on sustainable development. It adopts a phased approach. Phase 1 (2009–2012) will lay the groundwork for preparing a comprehensive EU adaptation strategy to be implemented during phase 2, commencing in 2013. Developing the framework has been a cross-cutting exercise and the White Paper is accompanied by three sectoral papers on agriculture, health and water, and coasts and marine issues. Further sectoral papers may be presented in the future. <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2009:0147:FIN:EN:PDF>
Delivering Transformational Change 2011–21: An Implementation Plan to Guide the Delivery of the ‘Regional Framework for Achieving Development Resilient to Climate Change’	Caribbean Community (CARICOM)	The Implementation Plan takes forward and delivers the strategic elements and goals identified in the Regional Framework for Achieving Development Resilient to Climate Change, which is a strategy to address climate change in the region. The Regional Framework defines CARICOM’s strategic approach for coping with climate change and is guided by five strategic elements and 20 goals designed to significantly increase the resilience of the CARICOM member states’ social, economic and environmental systems. It provides a road map for action by member states and regional organizations over the period 2009–2015. The Implementation Plan is to be implemented between 2011 and 2021. <http://caribbeanclimate.bz/ongoing-projects/2009-2021-regional-planing-for-climate-compatible-development-in-the-region.html>
National		
Australia’s National Climate Change Adaptation Framework (2007)	Ministry of Environment of Australia	Key focus of the Framework is to support decision-makers to understand and incorporate climate change into policy and operational decisions at all scales and across all vulnerable sectors. The central government applies a partnership approach to adaptation emphasizing the key role of businesses and communities in addressing climate risks. <http://www.climatechange.gov.au/government/initiatives/~media/government/initiatives/nccaf/national_climate_change_adaption_framework.pdf>
German Strategy for Adaptation to Climate Change (2008) and its Adaptation Action Plan (2011)	Federal Ministry for the Environment, Nature Conservation and Nuclear Safety	The long-term objective of Germany’s Adaptation Strategy is to reduce the vulnerability and maintain and improve the adaptability of natural, social and economic systems. The strategy is based on the principles of openness and cooperation; knowledge, flexibility and precaution; subsidiarity and proportionality; integrated approach; international responsibility; and sustainability. <http://www.bmu.de/files/english/pdf/application/pdf/das_zusammenfassung_en.pdf> <http://www.bmu.de/files/pdfs/allgemein/application/pdf/aktionsplan_anpassung_klimawandel_en_bf.pdf>

Strategy/plan	Responsible entity	Overview
Bangladesh Climate Change Strategy and Action Plan (2008, revised in 2009, to be in place for 10 years)	Ministry of Environment and Forests	Bangladesh is currently assessing the costs of implementing its 10-year climate action plan in consultation with line ministries. The Strategy and Action Plan, which is considered to be a “living document”, outlines concrete programmes to be carried out in different sectors and guides the kind of activities to be undertaken and the responsible ministries and agencies. These programmes will be refined and elaborated in detail, in consultation with stakeholders, at the time of their implementation. <http://www.sdnbd.org/moef.pdf>
Tonga Joint National Action Plan on Climate Change Adaptation and Disaster Risk Management (2010–2015)	Ministry of Environment and Climate Change and National Emergency Management Office	The Joint National Action Plan highlights national and community priority goals and activities to be implemented to enable the people and environment of Tonga to adapt to the impacts of climate change and to mitigate disaster risks. The plan comprises six priority goals with respective objectives and expected outcomes. It also contains an implementation strategy that describes the implementation approach, guiding principles, institutional arrangements, finance strategy, communication strategy and a monitoring and evaluation strategy. <http://www.sprep.org/att/irc/ecopies/countries/tonga/66.pdf>
Sub-national		
Response to Climate Change in New York State (2011)	New York State Energy Research and Development Authority	This guidance, in the form of a report, provides information to decision-makers on adaptation. It is based on the Integrated Assessment for Effective Climate Change Adaptation Strategies in New York State (ClimAID). The goals of ClimAID are to provide New York State decision-makers with cutting-edge information on the state’s vulnerability to, as well as its ability to derive benefits from, climate change and to facilitate the development of adaptation strategies informed by both local experience and scientific knowledge. Further aims of ClimAID are to highlight areas related to climate change and New York State that warrant additional research and to identify data gaps and monitoring needs in order to help guide future efforts. <http://www.nyserda.ny.gov/Publications/Research-and-Development/Environmental/EMEP-Publications/Response-to-Climate-Change-in-New-York.aspx>
Selection of adaptation strategies of German federal states	State ministries of environment	Consideration of climate change adaptation has been taken up by Germany’s federal states, which have developed their own subnational adaptation strategies. Ten federal states have completed their adaptation strategies and six are in the final stages of the process. <http://climate-adapt.eea.europa.eu/countries/germany>
Cities		
London, The Mayor’s Climate Change Adaptation Strategy (2010)	Greater London Authority	This strategy takes a risk-based approach to understanding the climate impacts (flood, drought and heat waves) today, and how these are expected to change through the century. The strategy provides a framework to identify and prioritize the key climate risks and then to identify who is best placed to work individually or collaboratively to deliver actions to reduce or manage these risks. <http://www.london.gov.uk/climatechange/strategy>

Strategy/plan	Responsible entity	Overview
PlaNYC: A Comprehensive Sustainability Plan for New York City (2011)	New York City's Office of Long-Term Planning and Sustainability	Released in 2007, PlaNYC was an effort undertaken by Mayor Bloomberg to prepare the city for one million more residents, strengthen the economy, combat climate change and enhance the quality of life for all New York residents. The plan brought together over 25 city agencies to work toward the vision of a greener, greater New York. One of the key goals of the revised version of the plan (2011) is to develop a greener city over the next 25 years. It reviews the potential climate change impacts and outlines strategies to reduce the city's greenhouse gas emissions, while also presenting adaptation measures to reduce the city's vulnerability to climate change. < http://www.nyc.gov/html/planyc2030/html/theplan/the-plan.shtml >
Local/ community		
Nepal Local Adaptation Plan for Action (LAPA) (initiated mid-2010)	Ministry of Environment, Government of Nepal	In line with Nepal's Climate Change Policy 2011 and as a means of implementing the NAPA and integrating adaptation options into development policy and planning processes, Nepal approved the National Framework for the Local Adaptation Plan for Action (LAPA). The LAPA has two objectives, one is to implement adaptation actions, and the other is to integrate climate change into local development planning and implementation. The LAPA Framework ensures that the process of integrating climate change resilience from local to national planning is bottom-up, inclusive, responsive and flexible. It identifies local adaptation needs to reduce local climate risks and vulnerabilities, and increases resilience using seven steps. < http://www.moenv.gov.np/cdkn/knowledge%20products/NAPA%20TO%20LAPA.pdf >
Climate Change — Adapting to The Impacts, by Communities in Northern Peripheral Regions	Community councils	Under the programme "Climate Change — Adapting to The Impacts, by Communities in Northern Peripheral Regions" several climate adaptation strategies have been developed by local communities in Sweden, Finland, Norway, Greenland and Scotland. < http://www.clim-atic.org/adaptation%20strategies.html >
By hazard		
Drought: Overcoming Drought: Adaptation Strategies for Andhra Pradesh, India (2006)	World Bank	A long-term assessment of drought risks in Andhra Pradesh, and suggestions of strategies to reduce their impact, under several economic, drought management and climate change scenarios. The analysis deepens understanding of climate risk adaptation strategies, including implications for agricultural and catastrophic risk insurance. < http://water.worldbank.org/publications/overcoming-drought-adaptation-strategies-andhra-pradesh-india >

Strategy/plan	Responsible entity	Overview
Water-related hazards: Thames Estuary 2100 Flood Risk Management Plan (2008)	United Kingdom Environment Agency	Led by the Environment Agency, the Thames Estuary 2100 project (TE2100) was established in 2002 with the aim of developing a long-term tidal flood risk management plan for London and the Thames estuary. The findings of a six-year study, working with a wide range of organizations from across the estuary, resulted in the TE2100 Flood Risk Management Plan. The plan sets out recommendations for managing flood risk across the estuary through to the end of the century. The TE2100 plan is the result of a detailed assessment of the options available to manage flood risk and their economic costs, benefits and environmental impacts. It sets out the strategic direction for managing flood risk across the estuary, and contains recommendations on what actions need to be taken in the short-term (next 25 years), medium-term (the following 15 years) and long-term (to the end of the century). The plan is based on current guidance on climate change, but is adaptable to changes in predictions for sea-level rise and climate change over the century. <http://www.environment-agency.gov.uk/homeandleisure/floods/125045.aspx>
Sea level rise: Sea Level Rise Adaptation Strategy for San Diego Bay (2012)	ICLEI – Local Governments for Sustainability	The Adaptation Strategy was prepared by ICLEI – Local Governments for Sustainability, through a collaborative, regional stakeholder process that included most of the public agencies and private sector representatives with a major interest in the future of San Diego Bay. Over the course of multiple workshops, stakeholders and technical advisers developed common assumptions and consensus-based recommendations that should form the basis of the region's climate adaptation planning. The Adaptation Strategy is a living document that can be implemented by local agencies and re-evaluated as new information becomes available in the coming years. The Adaptation Strategy consists of two primary components: a vulnerability assessment that evaluates how community assets could be affected by sea level rise, and recommendations for building the resilience of those community assets. <http://www.icleiusa.org/static/San_Diego_Bay_SLR_Adaptation_Strategy_Complete.pdf>
Sectoral		
Scotland Adaptation Sector Action Plans	Scottish Government	Twelve Sector Action Plans look to existing sources of information and research to identify the key impacts of climate change on each sector and appropriate actions which can build resilience to these impacts. The plans will be updated on an ongoing basis to reflect the evolving understanding of risks and impacts and the improving understanding of the needs of each sector. <http://www.scotland.gov.uk/Topics/Environment/climatechange/scotlands-action/adaptation/AdaptationFramework/SAP>
Framework for Public Health Adaptation to Climate Change in Africa and Plan of Action 2012–2016	World Health Organization's Regional Committee for Africa	The objectives of the Plan of Action are to: identify country-specific health risks associated with climate change in all African countries; strengthen core national capacities that enable health systems to prepare for, and effectively respond to, climate change threats to human health; facilitate the implementation of essential public health and environment interventions for the management of both acute and long-term health risks resulting from climate change; facilitate operational and applied research on local health adaptation needs and solutions; and disseminate lessons learned and country experiences in order to facilitate implementation of adaptation strategies in other sectors. <http://www.afro.who.int>

6. INDICATIVE ACTIVITIES OF THE NAP PROCESS

TABLE 3. INDICATIVE ACTIVITIES UNDER EACH ELEMENT AND STEP OF THE NAP PROCESS SHOWN IN ONE TABLE

Steps	Indicative activities
Element A. Lay the groundwork and address gaps	
1. Initiating and launching the NAP process	a. Conduct briefings to policymakers about climate change adaptation challenges and opportunities, and the NAP process in particular b. Designate the spearheading or coordinating mechanism c. Create or enhance a national vision and mandate for the NAP process d. Operationalize the NAP process through access to support e. Define a framework and strategy, as well as a road map, including sequencing of various NAPs and a monitoring and evaluation plan
2. Stocktaking: identifying available information on climate change impacts, vulnerability and adaptation and assessing gaps and needs of the enabling environment for the NAP process	a. Conduct a stocktaking of ongoing and past adaptation activities b. Synthesize available analyses of the current and future climate at the broad national and/or regional level c. Conduct a gap analysis to assess strengths and weaknesses regarding the capacity, data and information, and resources required to effectively engage in the NAP process d. Assess potential barriers to the planning, design and implementation of adaptation activities
3. Addressing capacity gaps and weaknesses in undertaking the NAP process	a. Develop and enhance enabling institutional and technical capacity for undertaking the NAP process b. Identify and enhance awareness of potential opportunities for integrating climate change adaptation into development planning at different levels c. Design and implement climate change communication programmes, public awareness-raising and education
4. Comprehensively and iteratively assessing development needs and climate vulnerabilities	a. Compile information on main development objectives, policies, plans and programmes b. Identify synergies between development and adaptation objectives, policies, plans and programmes
Element B. Preparatory elements	
1. Analysing current climate and future climate change scenarios	a. Analyse the current climate to identify trends in variables and indices that could be used to support planning and decision-making b. Characterize broad future climate risks and levels of uncertainty using scenario analysis at the national level or as part of a regional analysis including through climate and socioeconomic scenarios c. Communicate projected climate change information to all stakeholders and the public
2. Assessing climate vulnerabilities and identifying adaptation options at sector, subnational, national and other appropriate levels	a. Assess vulnerability to climate change at sector, subnational, national or appropriate levels (by applying applicable frameworks) b. Rank climate change risks and vulnerabilities c. Identify and categorize adaptation options at multiple scales to address priority vulnerabilities
3. Reviewing and appraising adaptation options	a. Appraise individual adaptation options, including economic, ecosystem and social costs and benefits, and possibilities for unintended (positive and negative) impacts of adaptation measures
4. Compiling and communicating national adaptation plans	a. Aggregate sectoral and subnational adaptation priorities into national adaptation plans through stakeholder ranking processes and make the drafts available for review b. Integrate review comments into the national adaptation plans and process endorsement at the national level as defined in the mandate for the NAP process c. Communicate and disseminate the national adaptation plans widely to all stakeholders in the country

Steps	Indicative activities
5. Integrating climate change adaptation into national and subnational development and sectoral planning	a. Identify opportunities and constraints for integrating climate change into planning b. Build and enhance capacity for integrating climate change into planning c. Facilitate the integration of climate change adaptation into existing nation and subnational planning processes
Element C. Implementation strategies	
1. Prioritizing climate change adaptation in national planning	a. Define national criteria for prioritizing implementation based on, inter alia, development needs, climate vulnerability and risk and existing plans b. Identify opportunities for building on and complementing existing adaptation activities
2. Developing a (long-term) national adaptation implementation strategy	a. Define a strategy for the implementation of adaptation actions including target areas or beneficiaries, responsible authorities, timing, sequencing of activities and mobilization of resources b. Implement concrete adaptation measures based on the national adaptation plans through policies, projects and programmes
3. Enhancing capacity for planning and implementing adaptation	a. Strengthen institutional and regulatory frameworks for addressing adaptation in the long-term at national and sectoral levels b. Design and implement training on the NAP process on an ongoing basis at sectoral and subnational levels to facilitate adaptation planning at subnational levels c. Implement outreach on NAP process outputs at the national level and promote international cooperation
4. Promoting coordination and synergy at the regional level and with other multilateral environmental agreements	a. Promote coordination of adaptation planning across sectors b. Identify and promote synergy in assessment, planning and implementation of adaptation at the regional level as appropriate c. Identify and promote opportunities for synergy with other multilateral environmental agreements in the formulation of respective plans, in capacity-building and during implementation
Element D. Reporting, monitoring and review	
1. Monitoring the NAP process	a. Identify (few) areas of the NAP process that will be evaluated through qualitative and quantitative performance measures as part of an assessment of effectiveness of, and progress and gaps in, the NAP process b. For the areas identified for evaluation, define metrics for documenting progress, measuring and communicating levels of effectiveness and assessing gaps c. Collect information on the metrics, throughout the NAP process
2. Reviewing the NAP process to assess progress, effectiveness and gaps	a. Compile and synthesize information from new assessments and emerging science, as well as the results and outcomes from adaptation activities being implemented, to support the review and update of the NAPs and related outputs b. Review, on a regular basis, activities undertaken as part of the NAP process by evaluating the information and metrics collected as part of the monitoring of the process
3. Iteratively updating the national adaptation plans	a. Update the national adaptation plans, and related documentation, at a frequency specified in the national mandate, framework or strategy for the NAP process, by repeating selected steps as appropriate b. Work towards aligning the production of updates to the NAPs with relevant national development plans
4. Outreach on the NAP process and reporting on progress and effectiveness	a. Disseminate the NAP documents and related outputs to the UNFCCC secretariat and to other relevant stakeholders, as these become available b. Provide information in national communications on progress in and effectiveness of the NAP process

7. THE LEG

Mandate of the LEG

The mandate of the LEG was extended at COP 16 for a period of five years (2011-2015). The LEG is mandated as follows (Decisions 29/CP.7, 4/CP.11, 8/CP.13, 6/CP.16):

- (a) To provide technical guidance and advice on [preparation] including the identification of possible sources of data and its subsequent application and interpretation, upon request by LDC Parties;
- (b) To provide technical guidance and advice on the preparation and on the implementation strategy of NAPAs, including the identification of possible sources of data and its subsequent application and interpretation, upon request by LDC Parties;
- (c) To develop a work programme that includes implementation of NAPAs;
- (d) To serve in an advisory capacity to the LDCs, for the preparation and strategy for implementation of NAPAs through, inter alia, workshops, upon request by LDC Parties;
- (e) To advise on capacity-building needs for the preparation and implementation of NAPAs and to provide recommendations, as appropriate, taking into account the Capacity Development Initiative of the Global Environment Facility and other relevant capacity-building initiatives;
- (f) To facilitate the exchange of information and to promote regional synergies, and synergies with other multilateral environment conventions, in the preparation and in the implementation strategy of NAPAs;
- (g) To advise on the mainstreaming of NAPAs into regular development planning in the context of national strategies for sustainable development;
- (h) To develop a work programme that takes into account the Nairobi work programme;
- (i) To provide technical guidance and advice on the revision and update of NAPAs to further improve their quality, to facilitate integration of adapta-

tion actions of LDCs into development planning and to reflect increased adaptation knowledge and changed priorities in the countries, upon request by LDCs;

- (j) To provide technical guidance and advice on the identification of medium-and long-term adaptation needs, their integration into development planning and the implementation of identified adaptation activities;
- (k) To provide technical guidance and advice on strengthening gender-related considerations and considerations regarding vulnerable communities within LDC Parties;
- (l) To provide technical guidance and advice on the implementation of the elements of the LDC work programme other than the preparation and implementation of NAPA that are relevant to the expertise of the LEG.

In addition, by its decision 5/CP.17, paragraphs 13 – 17, the COP requested the LEG:

- (m) To provide technical guidance and support to the national adaptation plan process, as appropriate;
- (n) To prioritize support for the formulation and implementation of national adaptation plans in carrying out its mandate to support the identification and implementation of medium- and long-term adaptation in least developed countries;
- (o) To prepare technical guidelines for the national adaptation plan process, based on the initial guidelines, included in the annex to this decision;
- (p) To arrange a review of the above-mentioned technical guidelines and to identify support needs for the process of formulation and implementation of the national adaptation plans;
- (q) To invite the Adaptation Committee and other relevant bodies under the Convention to contribute to its work in support of the national adaptation plan process; and to report, as appropriate.

Selected LEG publications

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