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Identification and implementation of medium- and long-term adaptation activities in least developed countries

Technical paper

Summary

This technical paper discusses the identification and implementation of medium- and long-term adaptation activities in the least developed countries. It builds on the experiences gained from implementing the least developed countries work programme, in particular on the preparation and implementation of national adaptation programmes of action (NAPAs). It provides an account of how elements of the preparation of NAPAs can help inform medium- and long-term adaptation. It contains case studies of the Lao People's Democratic Republic and Malawi, which were performed in order to generate a deeper understanding of considerations regarding medium- and long-term adaptation at the country level. It also contains information on experiences of other developing and developed countries, as well as from other multilateral programmes, in implementing adaptation activities.

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I. Introduction

A. Mandate

1. The Conference of the Parties (COP), by its decision 6/CP.16, extended the mandate of the Least Developed Countries Expert Group (LEG) for five years and requested the group to develop a two-year rolling programme of work for consideration by the Subsidiary Body for Implementation (SBI) at its first sessional meeting of each subsequent year. The LEG developed its work programme for 2011–2012, as contained in annex I to its report to the SBI at its thirty-fourth session,¹ at the first meeting of the group in its fifth term, held in Blantyre, Malawi, from 14 to 17 March 2011. The work programme contains an element to provide technical advice and guidance on the identification of adaptation needs, the implementation of medium- and long-term adaptation activities and their integration into development planning in the least developed countries (LDCs).

2. Further, the SBI, at its thirty-fourth session, noted that the process to enable LDC Parties to formulate and implement national adaptation plans should benefit from engagement with the LEG, including through consideration of the output of its work on medium- and long-term adaptation in LDC Parties.²

B. Objective and scope

3. This paper was prepared to provide technical advice and guidance on the identification of medium- and long-term adaptation needs, their integration into development planning, and the implementation of identified adaptation activities in the LDCs.³

4. It provides issues to be taken into consideration when identifying medium- and long-term adaptation needs and integrating them into development planning, and options for implementing identified adaptation activities. It contains case studies of the Lao People's Democratic Republic and Malawi on considerations regarding the identification and implementation of medium- and long-term adaptation activities. It presents the background to the least developed countries work programme (hereinafter referred to as the LDC work programme) and experiences, best practices and lessons learned from the national adaptation programme of action (NAPA) process, with a view to identifying similarities, complementarities, things that did not work, those that worked well and those that need to be built upon, including general areas for improvement. It also includes experiences gained from other relevant processes.

C. Approach to the paper

5. This paper draws on the experiences gained from the work of the LEG and on its publications entitled: *National adaptation programmes of action: Overview of preparation, design of implementation strategies and submission of revised project lists and profiles*;⁴ *Step-by-step guide for implementing national adaptation programmes of action*;⁵ and *Best*

¹ FCCC/SBI/2011/4.

² FCCC/SBI/2011/7, paragraph 95.

³ FCCC/SBI/2011/4, annex I.

⁴ <http://unfccc.int/resource/docs/publications/ldc_tp2009.pdf>.

⁵ <http://unfccc.int/resource/docs/publications/ldc_napa2009.pdf>.

*practices and lessons learned in addressing adaptation in the least developed countries through the national adaptation programme of action process, volume 1.*⁶

6. It takes into account that NAPAs are designed to focus on the urgent and immediate adaptation needs and concerns of the LDCs, relating to adaptation to the adverse effects of climate change, for which further delay could increase vulnerability or lead to increased costs at a later stage, and recognizes that much of the guidance that was provided to inform the NAPA process also applies to medium- and long-term adaptation. It also recognizes the continuing need in the LDCs to address their urgent and immediate adaptation needs, given their extreme vulnerability to the adverse effects of climate change and their low adaptive capacity, and assumes that a process for addressing medium- and long-term adaptation is complimentary and not intended as a replacement for NAPAs.

7. Medium- and long-term adaptation activities are viewed as those that will follow a structured process aimed at reducing vulnerability to climate change in the LDCs by building adaptive capacity and resilience and ‘climate proofing’ development against current and future climate change.

8. This paper does not present a comprehensive assessment of all considerations regarding medium- and long-term adaptation, or recommend one specific assessment technique above another, but identifies issues to be considered when identifying and implementing medium- and long-term adaptation activities in the LDCs and other countries that may find the information helpful or relevant.

II. Medium- and long-term adaptation in the least developed countries

A. Considerations for effective medium- and long-term adaptation

1. Objective of adaptation action

9. Whether considering urgent and immediate adaptation needs or medium- and long-term planning for adaptation, the overall objective of adaptation action remains the same and is well understood. It is about reducing vulnerability to the impacts of climate change by minimizing, reducing or avoiding risks and enhancing the capacity to adapt to climate change. Medium- and long-term planning for adaptation provides a greater opportunity to address those elements related to adaptive capacity, including those related to capacity-building and development planning. Because of its longer-term nature, medium- and long-term adaptation planning needs to be fully integrated into relevant policy and planning processes.

2. Guiding elements

10. The table below lists the guiding elements that are found in the “Annotated guidelines for the preparation of national adaptation programmes of action” (hereinafter referred to as the NAPA guidelines)⁷ and gives a preliminary indication of their applicability to medium- and long-term adaptation. In general, all guiding elements apply, regardless of the planning horizon being used. Differences may exist in areas such as selecting stakeholders and conducting consultations, which may vary depending on the strategic nature of the planning process. In addition, medium- and long-term adaptation

⁶ <http://unfccc.int/essential_background/library/items/3599.php?such=j&symbol=FCCC/GEN/263%20E#beg>.

⁷ <http://unfccc.int/resource/docs/publications/annguid_e.pdf>.

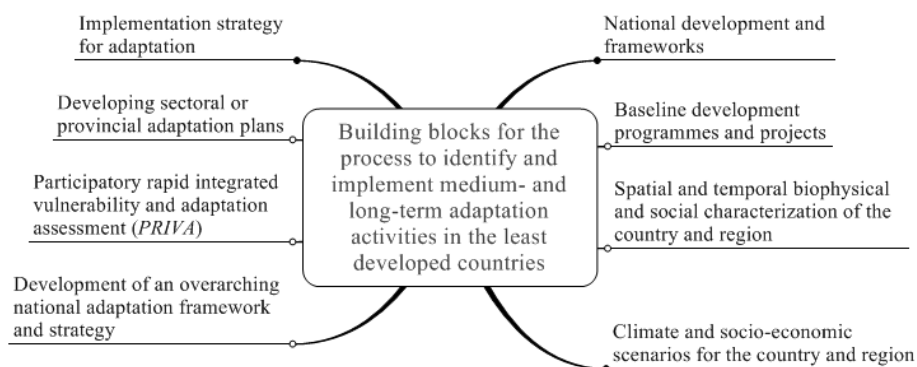
would need to be a continuous and iterative process to progressively assist LDCs in reducing their vulnerability to climate change. Given that countries are at different levels and stages of addressing adaptation, the process could also be flexible and allow for multiple entry points depending on national circumstances and needs.

Applicability of the guiding elements from the “Annotated guidelines for the preparation of national adaptation programmes of action” to medium- and long term adaptation

<i>Guiding element</i>	<i>Applicability to medium- and long-term adaptation</i>
A participatory process involving stakeholders, particularly local communities	Identification of stakeholders may be different for long-term adaptation planning
A multidisciplinary approach	Still applies
A complementary approach, building upon relevant existing plans and programmes	Still applies
Sustainable development	Still applies
Particular consideration of marginalized groups (gender)	Still applies
A country-driven approach	Still applies
Sound environmental management	Still applies
Cost-effectiveness	Still applies
Simplicity	Medium- and long-term adaptation planning will be more complex, but the principle of keeping approaches simple still applies
Flexibility of procedures, based on individual country circumstances	Still applies

11. Figure 1 indicates the elements seen as fundamental to effective medium- and long-term adaption planning. In practice, the elements are not necessarily stand-alone activities or activities that are required to be done in sequence.

Figure 1
Possible building blocks for the process to identify and implement medium- and long-term adaptation activities in the least developed countries



3. Conceptualizing vulnerability

12. A system's vulnerability to climate change can be viewed as a function of the exposure of the system to external change, including environmental or sociopolitical stress; the sensitivity of the system or the degree to which it is affected due to exposure; and the adaptive capacity of the system or the system's ability to make the changes necessary to avoid adverse consequences. The Intergovernmental Panel on Climate Change (IPCC) defines vulnerability as the degree to which a system is susceptible to, and unable to cope with, adverse effects of climate change, including climate variability and extremes.⁸

13. Adaptation options are then designed to address the main components of the vulnerability of the system at all levels and on all scales (subnational, national, regional and international levels, and short-, medium- and long-term scales). Such options could include:

- (a) Investing in climate change risk and disaster preparedness and management;
- (b) 'Climate proofing' of development, such as increasing reservoir storage capacity, planting crops that can withstand more climate variability and extremes, or ensuring that new buildings in flood plains are constructed with a floodable ground floor;
- (c) Increasing knowledge management and decision-making and creating opportunities for self-organization.

14. These approaches need to be implemented at all levels for the identification and implementation of medium- and long-term adaptation activities.

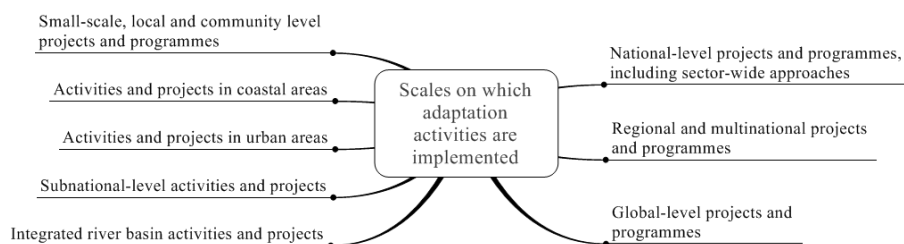
4. Consideration of scale in planning and implementing medium- and long-term adaptation activities

15. Both the temporal and geographical scales influence the type of or approach to national adaptation planning, as well as the actions that will be designed to address climate change. For instance, in the assessment of medium- and long-term adaptation issues, the prioritization of adaptation action will be influenced both by when certain impacts are expected as well as by the time it may take to develop and implement appropriate responses (i.e. future climate scenarios may indicate that new flood control measures will not be required for 15–20 years, but the planning horizon for these measures may require 10 years). Figure 2 shows the scales at which adaptation activities are normally implemented.

16. Considerations of scale will also influence the choice of entry level, which requires a good understanding of planning horizons and levels in the different systems (social, economic, ecosystem, societal or administrative horizons and levels).

Figure 2

Scales on which adaptation activities are implemented



⁸ Parry ML, Canziani OF, Palutikof JP, van der Linden PJ and Hanson CE (eds.). 2007. *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: Cambridge University Press.

5. Stakeholder engagement

17. The assessment of adaptation options requires strong stakeholder engagement in order to bring knowledge, skills, values, experiences and ideas. The stakeholders should cover relevant areas of interest and may be drawn from government ministries, political and traditional leaders, academic and research institutions, non-governmental organizations, the private sector, indigenous groups, and all groups of the population, including men, women, youth and the elderly. In the case of NAPAs, several approaches were deployed for engaging stakeholders, including interviews, questionnaire-based surveys, participatory rural appraisals, rapid rural appraisals, appreciative inquiries, focus groups, informal meetings, workshops, structured events such as constituency meetings, policy dialogues and public hearings.⁹ The best method, or a combination of these methods, may be chosen to align with the local context. In the case of Africa, for example, national workshops were the most common method of engaging stakeholders, followed by individual interviews, subnational workshops, group interviews and surveys.¹⁰

B. Identifying medium- and long-term adaptation needs

1. Assessing the risk of being affected by medium- and long-term climate change

18. The IPCC expresses risk as a concept that combines the magnitude of the impact with the probability of its occurrence, and that captures uncertainty in the underlying processes of climate change, exposure, impacts and adaptation.¹¹ It is an element that determines the vulnerability of a system.

19. Assessing the risk of being affected by medium- and long-term climate change seeks to help decision-making processes in identifying which systems (environmental, social and economic) are most exposed to the threats of climate change and/or are associated with the most serious potential consequences of those climate change threats.

20. Systems that are already at high risk as a result of current climate are more likely to continue to be adversely affected in the near future by projected changes in climate and increases in the magnitude and/or frequency of extreme events. The objective of risk assessment should therefore be to develop an inventory of systems (e.g. regions, populations, economic activities, key productive sectors, etc.) that are at risk and known information on current and future climate trends, in order to assess the potential impact. It should seek to understand the sensitivity of systems to medium- and long-term climate change, how underlying vulnerabilities contribute to the overall risk and how climate change may alter the risk.

21. A process for assessing the risk of being affected by medium- and long-term climate change may include the following:

- (a) Assessment of existing risks due to current climate;
- (b) Assessment of how the key risks identified are likely to change in the future in the context of climate change;
- (c) Identification of suitable adaptation options associated with the key risks.

⁹ See <http://unfccc.int/resource/docs/publications/ldc_tp2009.pdf>.

¹⁰ See Osman-Elasha B and Downing TE. 2007. *Lessons Learned in Preparing National Adaptation Programmes of Action in Eastern and Southern Africa*. European Capacity Building Initiative policy analysis report. Available at <<http://www.eurocapacity.org>>.

¹¹ As footnote 8 above.

2. Assessing capacity for adaptation to medium- and long-term climate change

22. Adaptive capacity is defined as the ability or potential of a system to respond successfully to climate variability and change, and includes adjustments both in behaviour and in resources and technologies.¹² It describes the ability of a system to mobilize scarce resources to anticipate or respond to perceived or current stresses.¹³ Adaptive capacity is a critical element or attribute that can reduce vulnerability to medium- and long-term climate change. It is unique in being shaped by human actions and being able to influence biophysical and social elements of a system.¹⁴

23. There exist various approaches for assessing adaptive capacity. With regard to NAPAs, for example, the participatory assessment of vulnerability to current climate variability and extreme weather events also looked at elements of the adaptive capacity of specific communities. In areas where such elements of adaptive capacity were lacking, this lack of adaptive capacity was identified among the barriers to the implementation of the NAPA concerned and incorporated in a prioritized list of projects.

24. Assessing adaptive capacity could also look at the trends in adaptive capacity within a particular system, with a view to assessing the adequacy of such capacity, including identifying opportunities for improvement. An approach proposed by Engle (2011) looks at (a) analysing the impacts (e.g. loss of lives and property, damage to ecosystem goods and services, etc.) of recent stress events that a system has experienced to a relatively uniform extent, and (b) looking at multiple periods of time leading up to, during and after a climatic event to evaluate whether systems actually prepared for and/or adapted to the stress.¹⁵

25. In addition, appropriate recognition needs to be placed on the reality that adaptive capacity varies between different contexts and systems, and that it is not equally distributed.¹⁶ Therefore, it is important to identify what builds adaptive capacity as well as what functions as barriers or limits to adaptation.

26. Processes aimed at identifying, designing and implementing medium- and long-term adaptation activities need to place emphasis on all elements of adaptive capacity that are relevant to a system. Elements to consider with respect to adaptive capacity include:

(a) National development and investment frameworks and their level of treatment or integration of climate change risks and vulnerabilities, including measures to avoid or minimize impacts. Such frameworks may also be important for mobilizing and accessing financial resources and technology, and defining vision, goals and targets at the national level;

(b) Legislative and policy frameworks and governance structures to guide or provide an enabling environment for planning, implementing and monitoring adaptation

¹² As footnote 8 above. Chapter 17.

¹³ Engle NL. 2011. *Adaptive capacity and its assessment*. Global Environmental Change. 21: pp.647–656.

¹⁴ Eakin H and Luers AL. 2006. *Assessing the vulnerability of social-environmental systems*. Annual Review of Environment and Resources. 31: pp.365–394.

¹⁵ As footnote 13 above.

¹⁶ Adger, W.N., S. Agrawala, M.M.Q. Mirza, C. Conde, K. O'Brien, J. Pulhin, R. Pulwarty, B. Smit and K. Takahashi. 2007. *Assessment of adaptation practices, options, constraints and capacity*. *Climate Change 2007: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change*, M.L. Parry, O.F. Canziani, J.P. Palutikof, P.J. van der Linden and C.E. Hanson, Eds., Cambridge University Press, Cambridge, UK, 717–743.

actions. Policies that are sensitive to changing conditions will provide a critical enabling environment for adaptation processes on all scales;¹⁷

(c) Institutional frameworks at the subnational and national levels for the effective identification, implementation and monitoring of medium- and long-term adaptation activities, including for such functions as: the oversight and monitoring of national processes; managing the collaboration between different stakeholders; providing sound scientific information on the causes, nature and consequences of climate change in the national context; supporting governments, businesses and communities to develop effective strategies to adapt to climate change; proposing strategies and actions for building community resilience and establishing the right conditions for people to adapt; and promoting regional learning and the sharing of adaptation strategies and lessons;

(d) Economic structures and their effectiveness in supporting medium- and long-term adaptation;

(e) Technological awareness and the application of technology in medium- and long-term adaptation. Adaptation to climate change involves technology, which includes material and equipment, knowledge, and institutional organizations, decision-making tools and processes;

(f) Data and information, such as climate data, climate change projections, social and economic data, information on environmental change, and outputs and responses to deferent interventions. This should also include an assessment of the ability to access regional and global databases and tools, as these would provide a useful starting point or complementary basis for national tools;

(g) Awareness in relation to climate change, vulnerabilities, impacts and climate change activities undertaken at the national, regional and international levels;

(h) Social setting;

(i) Education;

(j) Key health threats and their potential impact on adaptive capacity;

(k) Gender inequalities in socio-economic, political and cultural norms;

(l) Special vulnerabilities of specific systems.

3. Assessing vulnerability to medium- and long-term climate change

27. Assessing vulnerability to medium- and long-term climate change and associated impacts is an essential step in guiding and prioritizing policy action for identifying, designing and implementing adaptation actions. Methods for the assessment of impacts of and vulnerability to climate change vary and depend on:

(a) The entity or system being assessed (e.g. a natural system such as agriculture or forestry, an economic activity such as investment in infrastructure development, or a social system such as a country's population distribution);

(b) The threat and its relationship to climate change (e.g. increasing floods/droughts, sea level rise or new diseases);

(c) The time frame including the urgency for the need to take action;

¹⁷ International Institute for Sustainable Development and The Energy and Resources Institute. 2006. *Designing Policies in a World of Uncertainty, Change and Surprise: Adaptive Policy-Making for Agriculture and Water Resources in the Face of Climate Change – Phase I Research Report*. Available at <http://www.iisd.org/pdf/2006/climate_designing_policies.pdf>.

- (d) The geographical coverage (e.g. subnational, national or transboundary);
- (e) The purpose of the assessment (e.g. to raise awareness in relation to climate change, to inform the technical design of infrastructure or to inform the design of social systems);¹⁸
- (f) Availability of data and information;
- (g) Other numerous criteria that may be added or taken away to fit the local context.

28. A wide range of methods and tools has been developed and applied to facilitate the assessment of vulnerability, with the support of appropriate data and information. For example, the NAPA guidelines contain a methodology for the participatory assessment of vulnerability to current climate variability and extreme weather events and associated risks, and the training package on national communications for Parties not included in Annex I to the Convention contains methods and tools for vulnerability and adaptation assessments.¹⁹ Annex I to this document provides some examples of frameworks for assessing vulnerability and strengthening adaptive capacity.

29. It is important that the methods and criteria for assessing vulnerability to medium- and long-term climate change are clear about the assumptions and adaptation decisions to be made, and that there is a strong rationale to support the decisions. They should mix and create an effective balance between bottom-up and top-down approaches. Bottom-up approaches (based on the analysis of existing socio-economic conditions and livelihoods) are generally more suitable for addressing current vulnerabilities and adaptive capacity than for assessing future climate change impacts and large-scale vulnerabilities, while top-down approaches (scenario- and model-driven) are more suited to estimating longer-term or future vulnerability, particularly on a large scale. The applicability of top-down approaches may not be appropriate on a smaller geographical scale and may fail to provide information on, for example, extreme events.²⁰

30. Vulnerable groups must be adequately involved in the processes of developing assessment criteria to: reduce risks due to climate change; 'climate proof' development; build resilience; and strengthen adaptive capacity. They should be involved in making decisions on what should be assessed, in determining appropriate adaptation actions and in evaluating the impact of such actions. Their involvement should also take gender-related considerations into account, noting that the impacts of climate change on men, women, boys and girls differ. Annex II to this document provides a prognosis of integrating considerations regarding gender and vulnerable communities into medium- and long-term adaptation.

31. The following are examples of steps in the process of assessing vulnerability to climate change:

- (a) Making an inventory and analysis of spatial and temporal biophysical and social characterization;

¹⁸ See UNFCCC. 2011. *Assessing climate change impacts and vulnerability, making informed adaptation decisions: Highlights of the contribution of the Nairobi work programme*. Available at <<http://unfccc.int/4628.php>>; Füssel HM et al. 2007. *Adaptation planning for climate change: concepts, assessment approaches, and key lessons*. Sustainability Science. 2(2): p.265; Füssel HM et al. 2006. *Climate change vulnerability assessments: An evolution of conceptual thinking*. Climatic Change. 75(3): p.301; and Ionescu C et al. 2009. *Towards a formal framework of vulnerability to climate change*. Environmental Modelling Assessment. 14(1): p.1.

¹⁹ Available at <http://unfccc.int/resource/cd_roms/na1/v_and_a/index.htm>.

²⁰ See <http://unfccc.int/files/adaptation/application/pdf/unfccc-nwpsummary_interim.pdf>.

(b) Assessing climate and socio-economic scenarios;

(c) Understanding national policy frameworks: the structure of government ministries and functions; the national planning and budget process; institutional set-up and arrangements for dealing with climate change adaptation; and institutional arrangements for identifying, implementing and monitoring adaptation activities;

(d) Understanding national development frameworks and models for economic growth: national economic growth models; national physical development plans; national key sectoral or thematic plans; national and regional food security models; poverty reduction strategies, etc.;

(e) Compiling and analysing baseline development policies, programmes and plans: existing relevant policies; applicable active development plans and strategies; and relevant programmes and projects. It should be noted here that not all development policies, programmes and plans would be affected by climate change, or at least not significantly enough to warrant action;

(f) Performing participatory rapid integrated vulnerability and adaptation assessment: options for approaches; assessments by sector; assessments by region; integrated assessment across all sectors and regions; vulnerability assessment framework, model and data; analysis; risk assessment; impact assessment; assessing adaptive capacity; approaches to making the assessment dynamic; and identifying adaptation activities.

C. Identifying adaptation activities

1. Identifying activities for reducing risks due to climate change and for 'climate proofing' development

32. Activities for reducing risks due to climate change and for 'climate proofing' development aim to reduce the effects of climate change and to make use of opportunities brought by the changes in climate.²¹ Such activities may be targeted at living with and bearing losses or risks, preventing effects or reducing exposure to risks, sharing responsibility for any losses or risks, or exploiting opportunities afforded by changes in climate and increasing the capacity to manage opportunities resulting from the changing climate.²²

33. The activities can be identified from stakeholder consultations, scientific and technical and expert inputs, and from experiences gained from other existing processes, such as the NAPA process. The LEG summarized some of the commonly proposed adaptation activities in NAPAs on the basis of project documents submitted to the Global Environment Facility (GEF) for funding under the Least Developed Countries Fund (LDCF) (see annex III to this document). As at 1 October 2011, 46 LDC countries had completed preparation of their NAPAs, and all of them had initiated implementation of the projects identified in their NAPAs through the submission of Project Identification Forms to the GEF for financing under the LDCF.

²¹ Deutsche Gesellschaft für Technische Zusammenarbeit. 2010. *Climate Proofing for Development: Adapting to Climate Change, Reducing Risk*. Available at <<http://www.undp.org/crmi/docs/gtz-climateproofing-td-2010-en.pdf>>.

²² UK Climate Impacts Programme. 2007. *Identifying adaptation options*. Available at <<http://www.sfrpc.com/Climate%20Change/6.pdf>>.

2. Identifying activities for building adaptive capacity and resilience

34. Activities that contribute towards building adaptive capacity include those that are aimed at: creating, using and sharing information through data and information collection, analysis and research; monitoring vulnerability, risks, impacts and adaptation measures; and raising awareness in relation to medium- and long-term climate change from the grass-roots level up to the policy and decision-making levels. Such activities include social structures, such as community organizational structures and partnerships, and governance frameworks, such as laws and regulations necessary to enable the delivery of adaptation actions. They include robust social and economic programmes and services that are able to tolerate the impacts of climate change.

3. Assessing economic costs and benefits of adaptation activities

35. Where possible, a clear assessment of the costs and the benefits of adaptation is useful, and perhaps sometime necessary, in order to make the proposed options viable and acceptable within national constraints. This is a critical step that could also be applied in ranking adaptation options depending on their associated costs (affordable or too expensive) and the benefits that they could bring (demonstration of great benefits, such as saving lives, despite the cost).

36. The UNFCCC publication entitled *Assessing costs and benefits of adaptation options: An overview of approaches*²³ presents the role and purpose of assessing the costs and benefits of adaptation options in the adaptation process, a range of key methodological issues, commonly used assessment approaches and lessons learned and good practices. It gives an account of the cost–benefit analysis, cost-effectiveness analysis and multi-criteria analysis as the commonly used techniques for assessing the costs and benefits of adaptation.

4. Prioritizing activities through criteria analysis

37. The selection of the most appropriate or relevant activities would usually be based on a set of criteria that is in line with national models for social and economic development. NAPAs use a set of locally driven criteria to select priority adaptation options on the basis of:

- (a) Level or degree of adverse effects of climate change;
- (b) Urgent and immediate needs;
- (c) Benefit to the most vulnerable communities or sectors;
- (d) Contribution towards poverty reduction to enhance adaptive capacity;
- (e) Synergy with other multilateral environmental agreements;
- (f) Cost-effectiveness;
- (g) Uncertainty on the risks and vulnerability due to climate change, and on the adaptation actions to be taken;
- (h) Social and political acceptance.

38. In many cases countries include other criteria, such as contribution towards the achievement of development goals. Options for medium- and long-term adaptation would

²³ UNFCCC. 2011. *Assessing costs and benefits of adaptation options: An overview of approaches*. Available at <http://unfccc.int/files/adaptation/nairobi_work_programme/knowledge_resources_and_publications/application/pdf/2011_nwp_costs_benefits_adaptation.pdf>.

need to be more flexible and allow for modification and further development, have a strengthened strategic relevance to national development plans and priorities and take into account economic, social, technological and environmental feasibility.

D. Integrating adaptation into development planning

39. Integrating or mainstreaming climate change concerns in development policy and planning processes helps to improve the resilience and sustainability of development investments and efforts. By including climate change from the start, effective and timely actions can be formulated and taken. Through integration, the chances of short- and long-term success are increased and the risk of loss of investment due to climate change is reduced. The integration of climate change into development planning, policies and programmes can be considered in the following four steps:

- (a) Understanding how the current climate is relevant to the sector, region or agency, or how the sector, region or agency is sensitive to current climate;
- (b) Using readily available resources to assess social, economic and environmental impacts of climate change;
- (c) Identifying and assessing the likelihood and consequences of specific climate-related risks;
- (d) Identifying opportunities to address climate-related risk within existing management practices, or by adjusting affected policies and programmes.

40. The national and regional planning cycles are the anchor points for the possible integration of adaptation into medium- and long-term planning. While the NAPA process was not necessarily linked to these planning cycles, in some countries size and government structure allowed for a full integration of the NAPA process into national planning.

E. Implementing medium- and long-term adaptation activities

1. Considerations during implementation

41. Implementation of activities and actions for medium- and long-term adaptation needs to occur at all stages of the national adaptation process. It needs to take into account the implementation of activities to support, inter alia:

- (a) The identification of medium- and long-term adaptation needs and activities (such as data and information collection and analysis; climate and socio-economic modelling; stakeholder consultations; sectoral vulnerability and adaptation assessments, etc.);
- (b) The integration of medium- and long-term adaptation needs and activities into development planning;
- (c) The actual implementation of identified adaptation activities (such as the rehabilitation, improvement or construction of reservoirs and dams; the establishment of communication systems for early warning systems; and the rehabilitation, improvement or construction of health-care centres).

42. In particular, the implementation of medium- and long-term adaptation activities may need to take include the following considerations:

- (a) The need to develop clear implementation strategies that take into account, to the extent possible, data and information that will be required in accessing means of

support such as finance. For example, in the case of NAPAs, provisions for funding implementation of the identified activities through the LDCF were provided by the GEF after many LDCs had completed preparation of their NAPAs. For many of the LDCs, the provisions required much more data and information than was presented in the NAPAs. This resulted in many of those LDCs having to take at least six months to one year to gather such information in order to prepare their projects for funding under the LDCF;

(b) The need to promote synergies with other national programmes and with other multilateral environment agreements;

(c) The need to undertake systematic monitoring and evaluation of the process to ensure the alignment of the activities undertaken with the identified needs, vulnerabilities and risks;

(d) Co-financing, in the case that implementation will be pursued using procedures similar to those that exist under the LDCF;

(e) Opportunities for scaling up adaptation activities, and initiatives to pilot the identified adaptation activities;

(f) The integration of considerations regarding vulnerable communities, including gender considerations, into the process.

2. Approaches to ranking adaptation activities

43. The preparation of NAPAs followed country-driven criteria for the selection and prioritization of urgent and immediate adaptation activities. These criteria included: the level or degree of adverse effects of climate change; contribution to poverty reduction to enhance adaptive capacity; synergy with other multilateral environmental agreements; and cost-effectiveness. The NAPA preparation process involved the development or selection of additional appropriate criteria that helped to minimize biases and subjectivity in the ranking of the preliminary list of activities.

44. For medium- and long-term adaptation, a country team may add criteria that are commonly used for ranking and/or assessing projects or activities in other national development planning and monitoring activities. Some criteria or indicators can target the measurement of actual benefits for targeted vulnerable groups, such as a measure of the change in resources or material wealth of the poor, the economic growth rate of the poor and economic losses avoided by the poor. Such criteria help to determine urgent and immediate needs by providing some measure of the level of vulnerability of social groups or geographical areas. This process should ideally be participatory and involve discussions and negotiations among various stakeholders. It should reconcile different methods for selecting interventions based on the diverse perceptions of vulnerability and adaptation and broader country-level development goals and strategies.

3. Defining expected results and outcomes

45. A critical step in every implementation process is the elaboration of expected results and outcomes. The GEF identifies results as changes in a state or condition which derive from a cause-and-effect relationship, and identifies outcomes as relating to intended or achieved short-term and medium-term effects of an intervention's outputs, usually requiring the collective effort of partners.²⁴ The results and outcomes to be selected may follow basic principles, such as being specific, measurable, achievable, relevant, time-bound and evaluable.

²⁴ GEF document GEF/C.31/11. Available at <<http://www.thegef.org/gef/sites/thegef.org/files/documents/C.31.11%20Results%20Based%20Management%20Framework.pdf>>.

4. Designing implementation using a project approach

46. Countries may choose to select appropriate implementation approaches depending on a suite of factors that may include: the size of the activities; the time frame for the implementation of the activities; the need for coordination with various sectors; the generation of co-benefits; the scale of support available; and the urgency of the activities. One approach to implementing the activities would be to assimilate the activities into one single project.

47. This approach, however, has its own benefits and drawbacks. A single-project approach can appear to be more tangible in terms of funding and assessing projects which have clear boundaries, time horizons and funding modalities. It can also appear to be an easier option when information on costs and benefits of adaptation measures is lacking.²⁵ However, when several projects are implemented using a single-project approach to address a common issue, an increasing dependence on one another can occur. In this context, the adoption of a programmatic approach can provide an opportunity to capitalize on the project's dependencies to obtain benefits like economies of scale, capacity-building and knowledge-sharing.

5. Designing sector-wide programmatic approaches

48. Sector-wide programmatic approaches can facilitate the implementation of strategies through an efficient structuring of activities. It offers multiple co-benefits, including: an opportunity to enhance country ownership and strengthen institutional frameworks; scaling up adaptation efforts; supporting the development of a coherent approach to mainstreaming climate change at the policy and regulatory levels; increasing cost-effectiveness by enhancing the alignment of resources and harmonization among financial and technical partners; and allowing for the continuous engagement of multiple stakeholders during the programme's life and beyond.

49. A sector-wide programme would usually contain the following features: an underlying strategic vision and approach to address adaptation objectives in a coordinated manner and to utilize resources more effectively; dedicated institutional arrangements composed with capable steering, management and technical support; relevant overarching objectives, results and indicators, and linkages between programme components that offer opportunities for synergy; and a scope larger than a project in terms of issues addressed and/or areas included. A well-designed programme can accommodate uncertainties, changing circumstances and shifts in agenda.

6. Designing a national adaptation programme

50. Effective realization of adaptation at the national level requires a structured, coordinated and coherent approach. It requires a system or process to be put in place that ensures that the identification of adaptation needs, the implementation of adaptation activities and their integration into development planning are reviewed at set periodic intervals or as needed, that they have adequate resources and that monitoring and evaluation of the whole process is undertaken. Such a system would also mobilize and facilitate the generation of relevant knowledge sources and cross-collaboration between different actors to ensure essential data and information flows. It will instigate the integration of medium- and long-term adaptation into development planning. Figure 3 provides an illustration of how a national medium- and long-term adaptation process may be driven.

²⁵ Organisation for Economic Co-operation and Development. 2009. *Implementing Adaptation Towards a Programmatic Approach*. Presentation by S Agrawala. Available at <http://www.oecd.org/dataoecd/32/28/42356119.pdf>.

51. The role of national governments in the various adaptation actions on various scales depends greatly on each country's governance structures and jurisdictional arrangements with other levels of government within the country (and perhaps with neighbouring countries). Defining the appropriate role for national governments will dictate the type and scope of and mechanisms for the actions to be undertaken. For example, while national governments may or may not have a role in formulating local decisions, they typically have a unique role in facilitating the generation and sharing of relevant data and knowledge, integrating the consideration of climate change in national-level departments and agencies, and building the necessary capacity for effective and prolonged adaptation action.

F. Data, information and capacity needs

52. Identification and implementation of medium- and long-term adaptation activities require different data and information than that required for identifying urgent and immediate needs, including analysis and research. In an assessment of the NAPA process under the COP,²⁶ LDC Parties in their submissions indicated that difficulties in accessing relevant data and information as well as their lack of availability in other languages, such as in French, present great challenges and barriers to progress. These barriers remain in the planning and implementation of medium- and long-term adaptation actions.

53. In addition to access to data and information, one aspect of planning for the medium and longterm that differentiates it from addressing urgent and immediate needs is the need for explicit consideration of risks and uncertainties in adaptation to climate change. The further in the future projections of both climate and socio-economic conditions are made, the more inherently uncertain the projections are. However, this should not mean that action should not be taken, but decision-makers need to be aware of these inherent uncertainties, and manage and communicate them accordingly. Several approaches and decision-support tools exist for this purpose, most of which use a risk assessment framework.

54. Further, the LEG²⁷ established that the full implementation of the urgent and immediate priorities identified by the LDCs would require:

(a) Human and institutional capacity to implement adaptation at the national level and among implementing agencies;

(b) Capacity to access and/or make use of relevant data and information, vulnerability assessment tools, as well as decision-making tools that will help address uncertainties in adaptation to climate change;

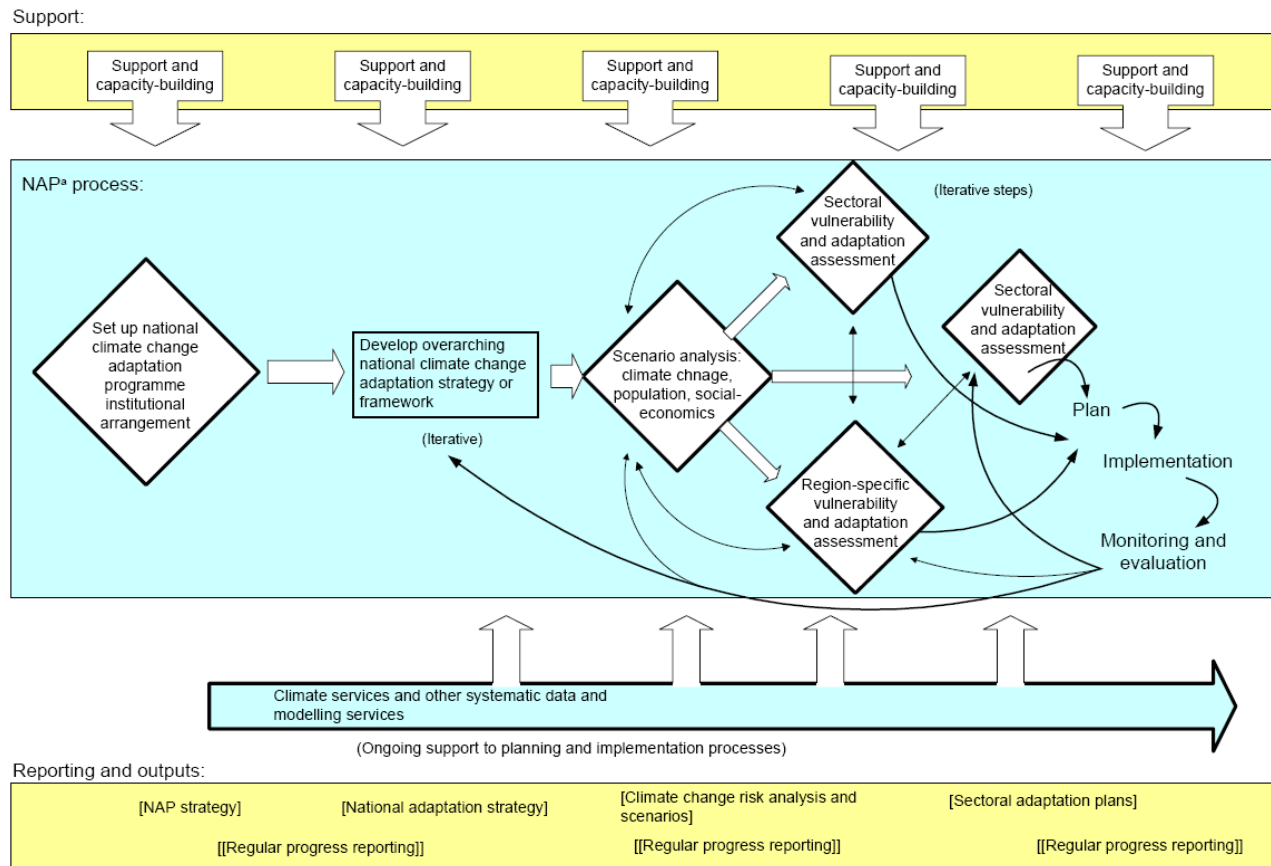
(c) Capacity and support for the design of adaptation projects.

55. It can be assumed that similar requirements will exist for medium- and long-term adaptation.

²⁶ FCCC/SBI/2010/17.

²⁷ See <http://unfccc.int/resource/docs/publications/09_ldc_sn_napa.pdf>.

Figure 3
An example of a national system for medium- and long-term adaptation



^a National adaptation plan.

III. Case studies on medium- and long-term adaptation

56. The use of case studies to inform the work of the LEG has been identified as a strong tool for gaining a better understanding of the need for, and hence design and provision of, effective technical guidance and advice. The case studies contribute towards generating a deeper understanding of considerations regarding medium- and long-term adaptation. The LEG conducted two case studies using the Lao People's Democratic Republic and Malawi. The following general considerations were used to guide the case studies:

- (a) An assessment of the countries' progress in addressing climate change through the NAPA and other processes, looking at available information, policies and programmes that could then inform medium- and long-term adaptation;
- (b) Possible steps that could be followed in the design and implementation of medium- and long-term adaptation activities, taking into consideration existing processes and mechanisms for addressing climate change;
- (c) A possible framework to stimulate discussions on the design and implementation of a national process for medium- and long-term adaptation;
- (d) The need to increase awareness in relation to the design and implementation of a medium- and long-term adaptation process, building on experiences gained from the NAPA process.

A. Case study of Malawi

57. The study first identified that the key economic sectors in Malawi are: agriculture, forestry and fisheries; energy; mineral production; agroprocessing industries; and services, such as tourism. It noted that the major food crops are maize and rice, while the major cash crops are tobacco, tea and sugar.

58. The study noted that Malawi's development challenges are centred on its narrow economic base, limited agroprocessing industries and overdependency on rain-fed agriculture for food and biomass resources for household energy needs, making the country extremely vulnerable to the adverse impacts of climate change and extreme weather events. These challenges are exacerbated by increasing poverty among rural communities, increasing population pressure on a limited land-resource base, land degradation arising from agricultural expansion and the cultivation of marginal lands, and increasing deforestation in order to meet the increasing demands for energy and food and for construction purposes. Loss of human, natural, financial, social and physical capital caused by the adverse impacts of climate change, such as floods, drought and landslides, has therefore become of great concern to the Malawian Government as it strives to ensure sustainable livelihoods for all its citizens.

59. With respect to the national planning process, Malawi has developed policies and strategies to stimulate economic growth and development. These policies aim to reduce poverty, ensure food and water security, empower vulnerable rural communities, ensure the sustainable utilization of natural resources and protect the environment. The key policies, relevant to medium- and long-term adaptation, are:

- (a) The National Environmental Action Plan (1994);
- (b) Vision 2020 (2000);

- (c) The Malawi Poverty Reduction Strategy (2002);
- (d) The Malawi Economic Growth Strategy (2003);
- (e) The Malawi Growth and Development Strategy for 2003 and 2011;
- (f) The Malawi NAPA;
- (g) The Agriculture Sector Wide Approach 2010–2014;
- (h) The Green Belt Irrigation Initiative 2010;
- (i) The Water Resources Management Policy and Strategies 1994 and 2009;
- (j) The Community-Based Rural Land Development Project;
- (k) The Disaster Risk Management Strategy and Policy;
- (l) The Energy Policy.

60. The study noted that Malawi has institutional arrangements in place for coordinating its response to climate change. However, it also noted that the Government is yet to develop a comprehensive climate change strategy and policy that will guide the development and implementation of mitigation actions and medium- and long-term adaptation.

61. The study also noted the following opportunities for Malawi in designing and implementing medium- and long-term adaptation activities:

(a) The presence of political will. The Government of Malawi, in 2008, resolved to include climate change management as one of its development priorities, so as to safeguard the socio-economic gains that have been achieved in the country;

(b) The development of the Malawi NAPA to identify and implement urgent and immediate adaptation needs in the areas of agriculture, water resources, disaster management and early warning systems, land-use change and forestry and gender, among other sectors. The Malawi NAPA provides a good starting point for the development and implementation of a medium- and long-term adaptation plan;

(c) Existing collaboration between the country's key ministries, namely the Ministry of Natural Resources, Energy and Environment, the Ministry of Development Planning and Cooperation, the Ministry of Agriculture and the Ministry of Irrigation and Water Development;

(d) An active climate change technical committee that oversees the development and implementation of the climate change programme in Malawi;

(e) A donor-government technical working committee that provides policy guidance on climate change to the Government;

(f) The strength in formulating and implementing adaptation programmes in Malawi lies in the fact that local communities are always willing to participate and are socially responsive, the country is already demarcated into agro-ecological zones, extension workers are available who are based in rural communities and active community-based organizations and civil societies are present.

62. The study further noted the following challenges:

(a) There is no climate change policy in Malawi, and hence no instrument for mobilizing synergies among different stakeholders in the planning, development and implementation of climate change interventions;

(b) There is a lack of mechanisms for pulling together the necessary skills and expertise from various ministries and departments to discuss climate change issues;

(c) There is a low capacity for climate change resilience, especially technical capacity and modelling capabilities, and a lack of availability of reliable data and information for adaptation planning, implementation, monitoring and evaluation;

(d) High poverty and illiteracy levels among the local population and their limited access to information slow down the absorption and retention of new climate change information and technologies;

(e) Targeting the beneficiaries of the adaptation programmes is a significant challenge. For meaningful adaptation actions, there is a need to target the most vulnerable households or communities.

B. Case study of the Lao People's Democratic Republic

63. The case study of the Lao People's Democratic Republic indicated that the sectors in the country most affected by climate change are agriculture, water, forestry and health. The study found that the economy of Lao People's Democratic Republic is agrarian and dependent on natural resources. It also found that Lao People's Democratic Republic is one of most vulnerable countries in the Lower Mekong region, owing to its high dependency on climate-sensitive natural resources, low adaptive capacity, and the nature of its agriculture sector being solely dependent on land and climate resources (rainfall and temperature). It indicated that temperature rise has an impact on human health and ecosystems, that sea level rise threatens coastal livelihoods in terms of food security and poses nationwide concerns owing to migration, and that rainfall changes determine the productivity of agriculture and industries.

64. The study found that Lao People's Democratic Republic has generated experience in addressing climate change at the national level through various processes, including:

(a) The preparation of its first and second national communications;

(b) The preparation of a National Capacity Self-Assessment;

(c) The preparation and implementation of its NAPA;

(d) The development and implementation of a National Strategy on Climate Change (NSCC);

(e) The development of technology needs for adaptation;

(f) The preparation of a readiness plan for reducing emissions from deforestation and forest degradation.

65. The country's NSCC aims to secure a future in which Lao People's Democratic Republic is capable of adapting to changing climatic conditions in a way that promotes sustainable development, reduces poverty, protects public health and safety, enhances the quality of Lao People's Democratic Republic's natural environment and advances the quality of life for all people, by pursuing the following goals:

(a) Reinforcing the sustainable development goals of Lao People's Democratic Republic, including measures to achieve low-carbon economic growth;

(b) Increasing the resilience of key sectors of the national economy and its natural resources to climate change and its impacts;

(c) Enhancing cooperation, strong alliances and partnerships with national stakeholders and international partners to implement the national development goals;

(d) Improving public awareness and the understanding of various stakeholders in relation to climate change, vulnerabilities and impacts, and of how climate change will have an impact on the country's economy, in order to increase stakeholders' willingness to take action.

66. The case study identified the following considerations regarding medium- and long-term adaptation:

(a) The planning and implementation of medium- and long-term adaptation activities will build on the NAPA process;

(b) The Lao People's Democratic Republic will seek to pursue a gradual integration of climate change adaptation into its key development plans in steps of five, 10, 20 and 50 years;

(c) The country wants to place more focus on the implementation of concrete adaptation measures;

(d) More resources and capacity-enhancement will be needed;

(e) Continued and coordinated support from development partners is an integral part of the process;

(f) The need for major capacity-building within governments, the private sector and academia;

(g) The need to develop more absorptive capacity;

(h) The need to further strengthen South-South cooperation.

C. Examples from other countries in developing and implementing adaptation plans

67. Measures aimed at supporting adaptation to climate change are also being implemented by other developing and developed countries, beyond the NAPAs of the LDCs. This has accelerated in recent years as climate change is increasingly becoming accepted as a reality and climate change impacts are increasingly being observed. Different countries have developed adaptation strategies, frameworks or plans that are aimed at guiding adaptation action at the national level.

68. The LEG studied examples from a few countries (Australia, Austria, Ghana, Nigeria, Philippines and United Kingdom of Great Britain and Northern Ireland) in order to identify best practices and lessons learned that can be transferred to and utilized by the LDCs in their efforts for medium- and long-term adaptation. The examples indicate that adaptation is highly context-specific and that medium- and long-term adaptation plans should be tailored to countries' specific circumstances.

69. The efforts and priorities of the different countries are very much determined by the resources available. The Philippines, for example, focuses efforts on the attainment of socio-economic development in parallel with adaptation and the mainstreaming of adaptation into its sustainable development policies. Other countries, like Australia, focus more on the generation of new knowledge and building the capacity of different actors, including the private sector.

1. Institutional arrangements

70. In all of the studied countries, the national adaptation process is overseen by specific, or a combination of, institutional arrangements. For example, in Austria the national adaptation strategy is led by the Federal Ministry of Agriculture, Forestry, Environment and Water Management, with inputs as necessary from other ministries and institutes, including universities. In Australia, the Council of Australian Governments Working Group on Climate Change and Water provides high-level oversight of the development of the country's national adaptation strategy. The United Kingdom's adaptation strategy is led by the Department for Environment, Food and Rural Affairs (DEFRA). In the Philippines, the national Government leads the adaptation process, by guiding the roles of the different stakeholders, providing sound regulatory policies and structures to attract relevant technology and investment, and creating strategies for adaptation, particularly for the most vulnerable sectors. In Ghana, implementation of the national adaptation strategy is overseen by the Ministry of Environment, Science and Technology. In Nigeria, the Climate Change Unit of the Federal Ministry of Environment coordinated the development of Nigeria's national climate change adaptation strategy and plan of action.

71. The countries place significant importance on research, with most of them seeking the engagement of national research facilities or institutes for adaptation, such as:

(a) The national climate change adaptation research facility established at Griffith University in Australia;

(b) The United Kingdom Climate Information Programme, for coordinating scientific research on the impacts of climate change, and the United Kingdom's Met Office, which provides climate and weather information to inform domestic policy;

72. Other established institutional arrangements include committees of experts playing an advisory role with regard to sectoral and other matters, such as:

(a) The adaptation subcommittee of the Committee on Climate Change in the United Kingdom, which provides expert advice to the Government's programme for adaptation;

(b) In Ghana, the national climate change committee, which supports the implementation of the adaptation programme at the national level by working in partnership with relevant ministries, departments and agencies;

(c) The Presidential Task Force on Climate Change in the Philippines.

2. Financial, technological and capacity-building support

73. Funding for the national adaptation processes is directed through the lead ministry or department. In Australia, the Government provided 126 million Australian dollars to support the country's Climate Change Adaptation Program. This funding was used to support the development and implementation of strategies related to vulnerability and risk assessments, knowledge generation, knowledge management, information-sharing, capacity-building and raising awareness. The implementation of adaptation activities is in line with each jurisdiction's budget. Additional funding was also pledged to the Commonwealth Scientific and Industrial Research Organisation's Climate Adaptation Flagship, the aim of which is to provide more accurate information about localized climatic change.

74. In the United Kingdom, DEFRA is funding research into the impacts of climate change, better measurement of greenhouse gas emissions and the valuation of ecosystem services. DEFRA also provides funding for the implementation of specific adaptation

actions. Other specific programmes, including the Rural Development Programme for England, provide funding for the implementation of agriculture and forestry businesses, environmental land management, energy crops and wider rural development.

75. In Ghana, the development of the national adaptation strategy was funded through the Climate Change Adaptation and Development Initiative programme of the United Nations Development Programme (UNDP) and the United Nations Environment Programme. Potential sources for funding the implementation of the strategy include the Adaptation Fund, other multilateral funds, bilateral support, the Government of Ghana and other climate change related sources.

76. In Nigeria, the national climate change adaptation strategy and plan of action project was developed on the back of the achievement of an earlier initiative called the Canada–Nigeria Climate Change Capacity Development Project, implemented with funding from the Canadian International Development Agency. The project facilitated the first multisector assessment of climate change impacts and adaptation in Nigeria, resulted in five assessment reports being prepared and gave rise to the development of a project on Building Nigeria’s Response to Climate Change, which includes four components: pilot projects, research, communication and outreach, and policy.

77. In the Philippines, funding is still mainly project-based, with support through the World Bank and other partners. Local-level government units have a certain amount of resources at their disposal for adaptation, and by mainstreaming adaptation into development processes funding can be channeled to adaptation planning and implementation.

3. Stakeholder engagement

78. Lessons can be learned from the Austrian model of stakeholder engagement. Throughout the development of the national adaptation strategy, the lead ministry engaged stakeholders through formalized processes. Experts from different sectors were engaged to undertake sectoral vulnerability assessments and define possible concrete measures. The experts’ work fed into a vast number of workshops, to which stakeholders, including from civil society, government institutes and the private sector, were invited, along with the set of experts already engaged in the development of the national adaptation strategy. The workshops dealt with the outputs of the experts’ work, as well as including general discussions on issues and deliverables of the process. Moreover, a survey was undertaken to engage the public in the process, to ascertain their awareness and knowledge of climate change adaptation, while at the same time also promoting it.

79. Furthermore, the stakeholder engagement process in Austria was fairly dynamic. During the first round of stakeholder workshops, all identified stakeholders were invited to all of the meetings. During the subsequent rounds the format of the workshops was changed, with the stakeholders from the original pool being invited to workshops on their particular topic of expertise, and new ones being engaged as necessitated by the particular topic. These sector-based workshops were also shorter and more focused.

4. Regional and sectoral approaches

80. All of the countries’ strategies and plans applied regional and sectoral approaches to adaptation planning and implementation. In Austria, for example, a strong sectoral approach was adopted, both in the process of creating the national strategy and in terms of the implemented activities. Different ministries, based on relevant sectors, are, and will be, required to implement the different actions identified in the action plan, with the Federal Ministry of Agriculture, Forestry, Environment and Water Management taking an oversight role.

81. In the United Kingdom, departmental adaptation plans identify individual departments' priorities and policies with regard to adapting to climate change on a sectoral basis. These include descriptions of the ways in which they are building skills and generating knowledge on climate change within the different departments, as well as of their efforts to assess risks to departmental estates. There are also regional differentiations in the United Kingdom's domestic adaptation process. Northern Ireland has the Northern Ireland Climate Change Impacts Partnership, established with the aim of widening knowledge on and the understanding of climate change impacts and the subsequent adaptation activities. Scotland has the Scottish Climate Change Impacts Partnership and Wales has its own climate change strategy.

82. In the Philippines, there is a strong sectoral focus in the adaptation pillar of the national framework strategy on climate change, with a focus on ecosystems, water, agriculture, health, and disaster risk reduction, with few cross-sectoral linkages at this stage. Risk assessments are also very much sector-based, with a strong prioritization of the agriculture sector. With regard to regional differentiation within the country, provincial and local government level decision makers have the capacity to identify and address adaptation needs, given their understanding of impacts on the ground.

83. The Australian Climate Change Adaptation Program has a strong focus on priority sectors and issues, namely coastal zones, biodiversity, World Heritage properties, the national reserve system, and vulnerability to fire and consequences for biodiversity. The programme was developed at the national level and is implemented by the different jurisdictions. There are also roles for national, state and territory-local government within the framework.

5. Deliverables

84. In the different national processes, countries have incorporated numerous outputs and activities as part of the deliverables for the adaptation planning process. These include the following, which can be part of the process at different times and in different orders, depending on the country-specific context:

- (a) The assessment, publication and dissemination of data, studies and reports on adaptation activities already being implemented, at different levels;
- (b) Regional or national vulnerability and risk assessments, as well as socio-economic and climate change scenarios;
- (c) Analyses of institutions and support mechanisms, financial risk and entry points for mainstreaming risk into budget planning;
- (d) Carrying out capacity assessments and incorporating environmental valuation methodologies;
- (e) Stakeholder workshops and expert meetings, as well as public surveys and forums;
- (f) Publications and online tools to guide the public and private sector in the assessment of climate change impacts and analysis of costs of adaptation measures;
- (g) The maximization of government funding mechanisms for more effective financing of adaptation planning and creation of new and additional funding;
- (h) The creation of step-by-step decision-making frameworks for those attempting to make adaptation risk assessments and decisions related to adaptation action;

- (i) The publication of sectoral plans or strategies based on subnational territories, regions, provinces or states as well as national strategies for medium- and long-term adaptation;
- (j) The creation of action plans outlining the various activities to take place. These usually include timelines, but do not specify an end-point as the adaptation is expected to be continuous;
- (k) The creation of policies, legislation and/or acts at the national and subnational levels;
- (l) The establishment of advisory committees, research institutes, networks, partnerships and other institutional arrangements for adaptation,;
- (m) The review, monitoring and evaluation of the implementation of the plans and strategies, and the subsequent publication of progress reports;
- (n) The launch of a formalized communications strategy and media campaigns to raise awareness about climate change, risk and adaptation;
- (o) The integration of climate change and adaptation into national educational programmes.

IV. Experiences, best practices and lessons learned from the least developed countries work programme

A. The design phase

85. The LDC work programme emanated from a process that was initiated to implement Article 4, paragraphs 8 and 9, of the Convention. In starting the process, the COP, at its third²⁸ and fourth²⁹ sessions, requested the SBI to undertake a process to identify and determine necessary actions to meet the specific needs of developing country Parties, specified under Article 4, paragraphs 8 and 9, of the Convention, arising from adverse effects of climate change and/or the implementation of response measures, including the consideration of issues relating to funding, insurance and transfer of technology.

86. The COP, at its fifth session, mandated a workshop on the consideration of initial actions, including actions relating to funding, insurance and transfer of technology, needed to meet the specific needs and concerns of developing country Parties, and the specific needs and special situations of the LDCs, arising from the adverse effects of climate change on, inter alia, water resources, agriculture and food security, economic activities, coastal zones and health.³⁰ The workshop provided a framework for the implementation of Article 4, paragraphs 8 and 9, of the Convention. A further workshop was organized on the special situations and specific needs and concerns of the LDCs, at which elements of a work programme relating to Article 4, paragraph 9, of the Convention (the LDC work programme) were developed.³¹

²⁸ Decision 3/CP.3, paragraph 1.

²⁹ Decision 5/CP.4, paragraph 4.

³⁰ Decision 12/CP.5, paragraph 5.

³¹ FCCC/SB/2000/12, annex I.

B. Decisions adopted by the Conference of the Parties at its seventh session

87. In recognizing that LDC Parties are among the most vulnerable to the adverse effects of climate change, and in acknowledging their specific needs and special situations in that they are least capable of dealing with the adverse effects of climate change, the COP, at its seventh session, adopted a package of decisions for the implementation of Article 4, paragraph 9, of the Convention. Paramount was decision 5/CP.7, through which the LDC work programme, which includes the following activities, was established:

- (a) Strengthening existing and, where needed, establishing national climate change secretariats and/or focal points to enable the effective implementation of the Convention and the Kyoto Protocol in the LDCs;
- (b) Providing training, on an ongoing basis, in negotiating skills and language, where needed, to develop the capacity of negotiators from the LDCs to participate effectively in the climate change process;
- (c) Supporting the preparation and implementation of NAPAs;
- (d) Promoting public-awareness programmes, to ensure the dissemination of information on climate change issues;
- (e) The development and transfer of technology, particularly adaptation technology (in accordance with decision 4/CP.7);
- (f) Strengthening the capacity of meteorological and hydrological services to collect, analyse, interpret and disseminate weather and climate information to support the implementation of NAPAs.

88. By the same decision, the COP established the LDCF, in accordance with decision 7/CP.7, to support the implementation of the LDC work programme. Further, it adopted the NAPA guidelines by decision 28/CP.7, and established the LEG by decision 29/CP.7.

C. Guidelines for the preparation of national adaptation programmes of action

89. The NAPA guidelines were developed in draft form in a workshop that was mandated by the COP,³² and were adopted by the COP by its decision 28/CP.7. According to the guidelines, NAPAs provide a process for the LDCs to identify priority activities that respond to their urgent and immediate needs with regard to adaptation to climate change. They are meant to focus on activities to address urgent and immediate needs in relation to which further delay could increase vulnerability or lead to increased costs at a later stage. They are to use existing information, requiring no new research. They are to be action-oriented, country-driven, flexible and based on national circumstances. In order to effectively address urgent and immediate needs for adaptation, NAPA documents are to be presented in a simple format that can be easily understood both by policy-level decision makers and by the public. A total of 46 NAPAs have so far been developed using the NAPA guidelines.

D. The Least Developed Countries Expert Group

90. The LEG was established with the primary objective of providing technical guidance and advice to LDC Parties on the preparation and implementation strategy for

³² FCCC/CP/2000/5/Add.2, paragraph 6(a).

NAPAs. Upon its latest consideration of the mandate of the LEG, the COP expanded the mandate of the LEG to cover the following areas in addition to the preparation and implementation of NAPAs:³³

(a) The revision and update of NAPAs, to further improve their quality, to facilitate the integration of adaptation actions of LDC Parties into development planning and to reflect increased adaptation knowledge and changed priorities in the countries, upon request by LDC Parties;

(b) The identification of medium- and long-term adaptation needs, their integration into development planning and the implementation of identified adaptation activities;

(c) Strengthening gender-related considerations and considerations regarding vulnerable communities within the LDCs;

(d) The implementation of the elements of the LDC work programme, other than the preparation and implementation of NAPAs, that are relevant to the expertise of the LEG.

91. The COP further requested the LEG to engage a wide range of organizations in implementing its work programme.³⁴ This provides an opportunity for the LEG to further engage with international, regional, national and subnational organizations, as well as networks, that are working on, inter alia, reducing vulnerability to climate change in LDCs, in order to enhance the support provided to the LDCs.

92. Throughout its mandates, the LEG has been able to perform to the satisfaction of Parties and to deliver its mandates.³⁵ A recent account of the work of the LEG can be found in the synthesis reports on possible elements for a future mandate for the LEG and on the NAPA process, including the operation of the LDCF,³⁶ and in its reports to the SBI.³⁷

E. The Least Developed Countries Fund

93. The LDCF was established under decision 5/CP.7, and in accordance with decision 7/CP.7, to be operated by the GEF. The LDCF was initially operationalized to provide support for the preparation of NAPAs, and later the COP adopted provisions for the LDCF to support the implementation of NAPAs, at its eleventh session,³⁸ and to facilitate the implementation of the remaining elements of the LDC work programme, at its fourteenth session.³⁹

94. It is worth noting that accessing the LDCF has proved to have been by far the greatest challenge for the LDCs in the NAPA process. Several efforts to address the challenge in accessing the LDCF were made under the process, including through mandates given by the COP to the GEF to take into account the special needs and circumstances of the LDCs in operating the LDCF, and to the LEG to seek further options for addressing the challenges faced by the LDCs. Some of the results of these actions are as follows:

(a) The GEF has, over the years, streamlined the operating procedures of the LDCF as compared with other funds to take into account the special needs and capacities of

³³ Decision 6/CP.16, paragraph 2.

³⁴ Decision 6/CP.16, paragraph 5.

³⁵ Decision 6/CP.16.

³⁶ FCCC/SBI/2010/17.

³⁷ See <<http://unfccc.int/6099.php>>.

³⁸ Decision 3/CP.11.

³⁹ Decision 5/CP.14, paragraph 2.

the LDCs as well as the need to further expedite access to funding for implementing NAPAs. For example, the need for additional cost reasoning and demonstration of global environment benefits was removed from the LDCF. The LDCF project cycle has been shortened by introducing a rolling approval process and the GEF resource allocation framework is not applied to the LDCF;

(b) The LEG has initiated a process of actively engaging the GEF and its agencies in its provision of support to the LDCs. This improved communication between LDC Parties, the GEF and its agencies and proved to eliminate many of the problems and obstacles encountered by LDC Parties in accessing the LDCF;

(c) Training workshops have been conducted by the LEG in collaboration with the GEF and its agencies on the implementation of NAPAs.

95. Through the efforts mentioned above, the process of converting NAPAs into actual projects on the ground has accelerated.⁴⁰

F. Launch of the national adaptation programme of action process and initial training

96. The LEG conducted a NAPA global launch workshop in 2002 and four regional training workshops on the preparation of NAPAs in 2003. These workshops drew three experts from each LDC, representing their ministries of the environment, planning and/or finance, and civil society, to equip them with hands-on tools for preparing NAPAs using NAPA guidelines, and to facilitate an exchange of experiences. The training workshops were conducted in close collaboration with the United Nations Institute for Training and Research and were funded by the LDCF.

G. Monitoring and review

97. The COP, at each of its sessions, reviews the implementation of Article 4, paragraph 9, of the Convention, under an agenda item on matters relating to the LDCs. In addition to this regular review by the COP, the following specific review processes, detailed in paragraphs 98–100 below, may be cited.

98. The LEG, following a request from the SBI at its twenty-fifth session,⁴¹ convened a meeting to take stock of the progress made by Parties in the preparation and implementation of their NAPAs.⁴² The meeting, held from 3 to 5 September 2007, enabled discussions on best practices, constraints and barriers related to NAPA preparation and implementation, support from the GEF and its agencies and other United Nations agencies and institutions, and the integration of NAPAs into national planning. In addition, meeting participants considered a list of possible actions to be taken by the LEG and other stakeholders in support of NAPA preparation and implementation.

99. The COP, at its sixteenth session, undertook a review of the preparation and implementation of NAPAs, including on accessing funds from the LDCF. The review found that, despite the length of time that it took for the LDCs to move from NAPA preparation to implementation, the preparation process has built enormous capacity and awareness at the national level in many LDCs, which is a positive step towards the development of tools to reduce their vulnerability to climate change. The COP concluded

⁴⁰ FCCC/CP/2010/5.

⁴¹ FCCC/SBI/2006/28, paragraph 84.

⁴² FCCC/SBI/2007/32.

that many lessons have been learned in the NAPA process, and that these lessons could form a concrete basis for the acceleration of the implementation of the urgent and immediate needs identified by the LDCs in their NAPAs, as well as to inform processes for the LDCs to identify and implement medium- and long-term adaptation plans. Further, it noted that, given the early stages of the implementation of NAPAs, a lot of learning by doing will need to be undertaken to ensure the differentiation of urgent and immediate needs from regular projects, and that the time it takes to build the projects versus the urgency and immediacy of the needs, owing to the threat of climate change, needs to be adequately taken into consideration.

100. With respect to accessing funds from the LDCF, the review referred to in paragraph 99 above revealed that, when the LDCs started to implement their NAPAs, there were concerns about the time it took to access funds from the LDCF. After a lot of dialogue between the GEF and its agencies with LDC Parties, as well as training conducted by the LEG in close collaboration with the GEF and its agencies, many of the bottlenecks were addressed and access to funding appeared to be much smoother. The time taken to obtain endorsement for projects from the GEF Chief Executive Officer reduced and many more GEF agencies became involved in NAPA implementation. In addition, the review noted that a key element that would need continuous monitoring is the communication between LDC Parties, the GEF and its agencies regarding the implementation of projects throughout the NAPA process.

H. Experiences, best practices and lessons learned from preparing and implementing national adaptation programmes of action⁴³

1. Guidelines for the preparation of national adaptation programmes of action provide a good basis to build on for medium- and long-term adaptation

101. The guiding elements for the preparation of NAPAs as contained in the NAPA guidelines are very solid and can be applied to processes that go beyond urgent and immediate needs. For instance, the guidelines advise the inclusion of not only government ministries but also the grass-roots participation of men, women and traditional and indigenous people in establishing multidisciplinary teams. The guidelines also suggest the involvement of the private sector, non-governmental organizations and civil-society organizations throughout the process.

102. The multidisciplinary approach prescribed in the NAPA guidelines ensures that NAPAs are more integrated and cross-cutting, capturing all the components of sustainable development (social, environmental and economic) by drawing on many disciplines. A complementary approach, building upon existing plans and programmes, at the national and regional levels, including under multilateral environmental agreements, ensures the exploration of synergies in the development of NAPAs.

103. The overall approach to NAPAs allows for a flexible process in which countries can choose how to design and implement their NAPAs, giving the NAPAs a truly country-specific nature. It is dynamic and is applicable to different geographical contexts, from local communities to the whole country or multi-country region, and equally well applicable to one, a few or all sectors. It takes full recognition of available knowledge and information.

⁴³ For a full list of key experiences, best practices and lessons learned from the NAPA process, please refer to the LEG publication entitled *Best practices and lessons learned in addressing adaptation in the least developed countries through the national adaptation programme of action process, volume I*. Available at <http://unfccc.int/essential_background/library/items/3599.php?such=j&symbol=FCCC/GEN/263%20E#beg>.

104. The elements of the NAPA guidelines can be equally applicable to medium- and long-term adaptation, with adjustments as necessary. For example, the involvement of multidisciplinary teams can be envisioned on a longer-term basis. Participatory rapid vulnerability and adaptation assessment, including risk, can be applied, but taking into consideration longer timescales and the associated impact potential.

2. Envisioning the involvement of national adaptation programme of action teams in the long term helps raise awareness and ensures the continuity of adaptation programmes and activities in the country

105. For many LDCs, support for the NAPA teams ceased with the closure of the NAPA preparation projects, leading to the disbanding of the teams. For those LDCs that were able to maintain continuity in their teams, the implementation of projects tended to be smoother and more effective. Therefore, continuing support for the NAPA teams to oversee implementation, beyond the end of the NAPA preparation project, is a critical need for many LDCs, in order to avoid any delays in implementation and to nurture the great capacity built in the LDCs during the preparation phase. This can be facilitated by allocating some of the budget for NAPA preparation towards maintaining the team during the implementation phase. Also, promoting local expertise was seen by many as a means of ensuring stronger national ownership of NAPA projects, as the personnel will be around after the NAPA preparation project is finalized.

106. Furthermore, as opportunities for adaptation arise, it will become important to build on existing capacity and to promote continuity. Maintaining national teams beyond the preparation of NAPAs could serve as a catalyst to mainstream climate change issues into national development plans by engaging line ministries.

3. Regular interaction between the Least Developed Countries Expert Group and the least developed countries has been very useful

107. The regular interaction between the LEG and Parties during various events of the LEG, at side events during the sessions of the COP and the subsidiary bodies and through surveys, as well as with the GEF and its agencies, has created a useful bridge between all stakeholders in the NAPA process, and has led to many difficulties being resolved, thus facilitating the smooth preparation and implementation of NAPAs. The diverse membership of the LEG has also contributed to balanced support being given to LDC Parties, building on the individual expertise and experience of each and every member.

4. Designing a thorough implementation strategy can improve the effectiveness of the implementation of national adaptation programmes of action

108. Implementation strategies help take advantage of opportunities as increased funding becomes available. Countries that were able to carefully consider and plan their implementation strategy during the NAPA preparation phase generally had a smoother transition into the implementation phase. Nevertheless, the LDCs indicated that the absence of early guidelines for the implementation of NAPAs hindered the development of a comprehensive implementation strategy during the NAPA preparation phase. Future programmes could therefore consider including the development of implementation strategies as part of developing plans.

5. The simplified Least Developed Countries Fund project cycle provides expedited access to resources

109. The simplified project cycle for LDCF projects has made it easier for the LDCs to access funds from the GEF. Many concepts, such as co-financing adaptation projects, have been refined and simplified through the LDCF, leading to simpler project formulations. The

principle of ‘balanced access’ used by the LDCF is also a good practice, as it avoids the risk of a ‘first come, first served’ policy that would deplete all resources among a limited number of the LDCs, namely those with a higher institutional capacity for project development.

110. On the other hand, it was identified that, when changing procedures, due consideration should be given to transitional arrangements, so as to avoid unnecessary and/or excessive delays. The main recommendation arising from experiences with the switch in procedures is that, in future, no delays should be imposed on projects in the pipeline to the point of resubmission and reapproval of projects, if at all possible. Transparency in agency procedures during the design and implementation of projects was also identified as one element that can help to avoid the misunderstanding of expectations by countries.

6. Data and information gathered during the preparation of national adaptation programmes of action serve as a good starting point for medium- and long-term adaptation

111. It has been acknowledged that the NAPA process has enabled documentation of significant amount of indigenous knowledge on: local climate histories, environment–climate interactions, mechanisms for coping with climate-related disasters, and potential actions that could promote adaptation.⁴⁴ The LDCs used the NAPA process to incorporate vulnerability assessment from existing studies as well as direct information from the communities. This wealth of information will provide a good basis for identifying and implementing medium- and long-term adaptation activities.

I. Emerging needs

112. In an information paper entitled *Support needed to fully implement national adaptation programmes of action*,⁴⁵ the LEG noted that, besides financial resources, NAPAs indicate that human and institutional capacity to implement adaptation at the national level and among implementing agencies, the capacity to access and/or make use of vulnerability assessment tools, and capacity and support for the design of adaptation projects are integral elements of a package of support required to fully implement NAPA projects.⁴⁶ This is likely to also apply to medium- and long-term adaptation.

113. There is also an emerging need for the process to enable direct dialogue with agencies involved in the implementation of projects as opposed to indirect communication through the GEF.

V. Experiences gained from relevant programmes

A. The Pilot Program for Climate Resilience

114. The Pilot Program for Climate Resilience (PPCR) is a programme that was developed under the Strategic Climate Fund, a multi-donor trust fund within the Climate Investment Funds.⁴⁷ It is administered by the World Bank. It aims to pilot and demonstrate

⁴⁴ See <http://unfccc.int/resource/docs/publications/lcdc_tp2009.pdf>.

⁴⁵ See <http://unfccc.int/resource/docs/publications/09_ldc_sn_napa.pdf>.

⁴⁶ See <http://unfccc.int/resource/docs/publications/09_ldc_sn_napa.pdf>.

⁴⁷ <<http://www.climateinvestmentfunds.org/cif/ppcr>>.

ways in which climate risk and resilience may be integrated into core development planning and implementation in selected countries.

115. Under the programme, countries receive technical assistance in an initial phase of the programme to facilitate cross-sectoral coordination towards integrating climate resilience into national development planning and financing processes. They then develop a Strategic Program for Climate Resilience (SPCR), including a programme of priority investments within the broader context of sustainable development and poverty reduction to help embark upon a climate-resilient development path. The SPCR together with the financing plan is then submitted to the PPCR Sub-Committee to request funding, leading to the implementation of the programme.

116. Feedback from the process indicated the following lessons learned and good practices that may be useful for future adaptation work in the countries participating in the PPCR, and for other countries that may wish to take note of the lessons:

- (a) Strong leadership, country ownership and coordination have been strong pillars for the success of the programme;
- (b) Providing support to existing climate (e.g. NAPAs) and development strategies in countries to build upon is a good practice;
- (c) Prioritization is an important element of the adaptation process;
- (d) Enhancing critical readiness elements generates a critical mass of capacity, which also benefits other processes;
- (e) Results measurement and programmatic management need to be integrated into the process;
- (f) Predictable finance is key;
- (g) There is a need for adaptive management, learning and exchange of information in accessible ways, in order to enhance climate literacy;
- (h) A transparent inclusive participatory process at all stages, through mandatory documentation, results in more meaningful and continuous engagement of all stakeholders.

B. The Africa Adaptation Programme

117. The Africa Adaptation Programme (AAP)⁴⁸ is a programme that was launched in 2008 and is being implemented by UNDP. It is aimed at assisting 20 African countries⁴⁹ to incorporate climate change risks and opportunities into their national development processes. It is supported by USD 92.1 million from the Government of Japan, which is split among the countries for implementing national-level projects and for regional projects. The regional projects, coordinated by UNDP, aim to provide technical assistance, knowledge and expertise to countries, and include a media project for African print, broadcast and web-based journalists and other media professionals to provide them with a thorough knowledge of the climate change debate and to build their capacity to raise awareness among multiple stakeholders.

118. The AAP national processes follow a cycle involving validating project designs, preparing for and conducting inception planning and supporting the project implementation

⁴⁸ <<http://www.undp-adaptation.org/africaprogramme/>>.

⁴⁹ Burkina Faso, Cameroon, Congo, Ethiopia, Gabon, Ghana, Kenya, Lesotho, Malawi, Mauritius, Morocco, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Tunisia and United Republic of Tanzania.

cycle. A report⁵⁰ on the programme from June 2011 indicates that 2011 is the first full year of implementation for many national projects, owing to delays and challenges in completing the project design and inception planning processes during 2009 and 2010. It indicates that countries show different rates of progress: where some are progressing very well, some are showing slow rates of delivery. It points to several factors that have been found to limit progress or delivery, which include:

- (a) Lack of awareness among decision makers;
- (b) The need for specific tools, data and information;
- (c) Weak coordination mechanisms among multiple sectors;
- (d) Weak technical and management capacities and monitoring and evaluation;
- (e) Slow procurement processes.

119. Despite such challenges, the report also indicates that there are initiatives taking place within many countries and that these are expected to add significantly to national capacities to address climate change in the long term. Examples include a visual mapping tool for AAP that will enable countries to understand the range and interconnectedness of their existing climate change activities, documents and actors so that they can ensure the coherence and effectiveness of these varied elements.

VI. Concluding remarks

120. The following key messages can be drawn from this paper:

- (a) NAPAs provide a good starting point for medium- and long-term adaptation;
- (b) Medium- and long-term adaptation requires an iterative process, with stages or phases that may be designed to suit specific national circumstances;
- (c) Medium- and long-term adaptation is more policy-driven, and therefore effective integration of adaptation into national development becomes more important;
- (d) Medium- and long-term adaptation does not replace the need to address the urgent and immediate needs and concerns of the LDCs relating to adaptation to the adverse effects of climate change.

121. Furthermore, the following steps or phases of activities can be considered important for an effective medium- and long-term national adaptation process, as depicted in figure 3:

- (a) Setting up and/or strengthening appropriate national adaptation institutional arrangements for the overall coordination of the national adaptation process. This could be an interdepartmental or inter-ministerial multidisciplinary team, or a designated national authority, to enable and oversee adaptation work at the national level;
- (b) Setting up or strengthening climate services and climate change research facilities for the provision of data and information on an ongoing basis. Such data and information could be climate data, climate change projections, baseline social, economic and environmental data, sector-specific data, and information on changes and outputs/responses to deferent interventions. This should also include an assessment of the ability to access regional and global databases and tools, as these would provide a useful starting point or complementary information for national tools;

⁵⁰ <http://www.undp-aap.org/sites/undp-aap.org/files/AAP%20Mid%20Year%20Summary%20Report%20-%20June%202011_0.pdf>.

(c) Assessing available information on climate change vulnerability and adaptation, for example by looking at NAPAs, national communications and other relevant reports or processes to check what information is available and what are the gaps and needs, in order to enable the national medium- and long-term adaptation process. This may also include the assessment of national development and investment models and frameworks on their level of treatment or integration of climate change;

(d) Developing an overarching national adaptation strategy that: lays out a national vision for adaptation and proposes practical steps for the realization of that vision; sets provisions for cooperative actions among various stakeholders; proposes climate change research priorities; identifies human and infrastructure needs; identifies needs, areas and options for strengthening and/or establishing various institutions, bodies, programmes or facilities to support adaptation; proposes priority areas for action; sets the stage for developing sectoral or thematic adaptation plans; and sets timelines and milestones for national actions;

(e) Setting up a strategy for managing technical, financial and policy-level support for medium- and long-term adaptation. On technical support, considerations may include the use of existing national expertise, accessing external technical expertise at the regional and international levels when such expertise does not exist at the national level, and most importantly ensuring that programmes contribute towards progressively building adequate expertise and skills at the national level. To ensure sustainable and coherent financial support for the national process, a robust financial support strategy should be laid out. This will take into account needs and provisions for funding under the Convention, in order to ensure coherence with activities in the national process. The strategy may integrate possibilities for other multilateral and bilateral financing;

(f) Generating scenarios of climate change, future vulnerabilities and impacts on national-level systems (e.g. environment, economy and social dynamics), taking into account policy and technological changes;

(g) Conducting detailed vulnerability, risk and adaptation assessments by key social, economic and environmental sectors or themes. This will also need to include systematic assessments of secondary impacts (e.g. watershed management for irrigation, flood protection and mangrove replanting);

(h) Designing implementation strategies for various activities in the medium- and long-term adaptation process and exploring innovative approaches, such as programmatic approaches, sector-wide approaches and ecosystem-based approaches;

(i) Implementing various components and activities of the medium- and long-term adaptation process, including specific analyses and assessments on different scales, the generation of climate and socio-economic scenarios to facilitate a risk assessment of climate change, setting up climate information services, conducting economic cost and benefit analyses of projects' climate change impacts, and conducting sectoral and regional assessments leading to specific adaptation plans for implementation and specific adaptation activities;

(j) Regular communication and sharing of results, experiences, best practices and lessons learned at the national level and to the international community, including using knowledge platforms;

(k) Monitoring, evaluation, review and update of the medium- and long-term adaptation process, strategies, policies and programmes at the national level, as necessary, to align with the national context as well as with regional and international efforts.

Annex I

Frameworks for assessing vulnerability and strengthening adaptive capacity

<i>Framework</i>	<i>Description</i>
Intergovernmental Panel on Climate Change Technical Guidelines for Assessing Climate Change Impacts and Adaptations	<p>A set of technical guidelines for the scientists to assess the impacts of potential climate change and evaluate appropriate adaptations. The guidelines outline a seven-step process:</p> <ol style="list-style-type: none"> (1) Definition of the problem; (2) Selection of the methods; (3) Testing of the methods; (4) Selection of the scenarios; (5) Assessment of biophysical and socio-economic impacts; (6) Assessment of autonomous adjustments; (7) Evaluation of adaptation strategies. <p>A range of methods is identified for each step.</p>
United Nations Development Programme (UNDP) Adaptation Policy Framework	<p>The framework provides guidance on designing and implementing projects that reduce vulnerability to climate change by both reducing potential negative impacts and enhancing any beneficial consequences of the changing climate. It emphasizes five major principles: assessing adaptation policies and measures in a developmental context; explicitly including adaptation to short-term climate variability and extreme events as a step towards reducing vulnerability to long-term change; recognizing that adaptation occurs at different levels of society, including at the local level; recognizing that the adaptation strategy and the process by which it is implemented are equally important; and that building adaptive capacity to cope with the current climate is one way of preparing society to better cope with the future climate.</p>
Assessments of Impacts and Adaptations to Climate Change (AIACC) in Multiple Regions and Sectors	<p>AIACC aims to fill gaps in the current understanding of vulnerability and create opportunities for adaptation by funding, training, and mentoring developing country scientists to undertake multi-sector and multi-country research of priority to developing countries. While an explicit framework for undertaking vulnerability and adaptation assessments is not prescribed, a toolkit for researchers, including tools that are useful in the design of projects as well as the tenets of a general approach, is provided. The AIACC regional studies are diverse in their objectives and scientific methods, and in the sectors and systems to be investigated, but they share a common assessment approach that places understanding vulnerability at the centre of the assessment, engages stakeholders in the assessment process and gives priority to strengthening the information base for making decisions about adaptation to climate change</p>
Guidelines for the preparation of national adaptation programmes of action	<p>NAPAs provide a process for the least developed countries (LDCs) to address their current and urgent adaptation needs. Countries are required to rank adaptation measures for funding on the basis of such criteria as urgency and cost-effectiveness. The</p>

<i>Framework</i>	<i>Description</i>
(NAPAs)	<p>NAPA guidelines provide some guidance on the process of compiling a document that specifies priority adaptation actions in the LDCs; however, they do not provide a structured framework. The guiding elements emphasize:</p> <ol style="list-style-type: none"> (1) A participatory approach involving stakeholders; (2) A multidisciplinary approach; (3) A complementary approach that builds on existing plans and programmes; (4) Sustainable development; (5) Gender equity; (6) A country-driven approach; (7) Sound environmental management; (8) Cost-effectiveness; (9) Simplicity; (10) Flexibility, based on country-specific circumstances
UK Climate Impacts Programme – Climate adaptation: Risk, uncertainty and decision-making	<p>The framework and guidance aim to help decision makers and their advisers to identify important risk factors and to describe the uncertainty associated with them. The report identifies methods and techniques for risk assessment and forecasting, appraising options and analyzing decisions. There are eight stages in the framework:</p> <ol style="list-style-type: none"> (1) Identify problem and objectives; (2) Establish decision-making criteria; (3) Assess risk; (4) Identify options; (5) Appraise options; (6) Make decision; (7) Implement decision; (8) Monitor, evaluate and review. <p>It prescribes a circular process in which feedback and iteration are encouraged, and emphasizes a sequential implementation of adaptation measures. There is also an ‘adaptation wizard’, which can be used to identify, assess and implement adaptation options</p>
Maplecroft Global Risks Portfolio	<p>Maplecroft analyze over 500 global risks to provide a comprehensive portfolio of indices, maps, scorecards, briefings and in-depth reports as well as company ratings in a Climate Innovation Index.</p> <p>One of Maplecroft’s areas of focus is the development of tools to inform businesses about climate change related risks. At the core of this is Maplecroft’s Climate Change Atlas, a suite of indices, maps and scorecards and briefings assessing climate related risks. The focus is the Climate Change Vulnerability Index, which assesses vulnerability on a sub-national scale to climate hazards, the sensitivity of communities and the capacity of societies to</p>

<i>Framework</i>	<i>Description</i>
	adapt.
Global Adaptation Index (GAIN)	GAIN measures a country's vulnerability and its readiness to undertake adaptive actions to climate change and other forces. The vulnerability analysis captures the exposure to climate related hazards, sensitivity to their impacts and the ability to cope with those impacts. It deploys 24 indicators to measure three sectors that underlie human well-being (water, food and health) and three infrastructure sectors (coastal, energy and transport). With respect to readiness, GAIN seeks to measure the ability of a country to successfully absorb additional private sector investment resources and apply them effectively towards building resilience to climate change. It uses fourteen indicators to measure economic, social and governance readiness.
DARA Climate Vulnerability Monitor (CVM)	The CVM assesses vulnerability in relation to four main areas: health impacts, weather disasters, loss of habitat and economic stress. In order to establish a scale of climate-sensitive vulnerabilities across countries, the CVM uses historical records and satellite observations of phenomena that are influenced by climate change. Each measure represents a distinct set of stressors that can be analysed in isolation from the other measures. The CVM provides key practical actions that can be taken to reduce the impacts identified in a given area. It assesses impacts over a 20-year horizon, but it does not take into account the level of domestic/international resources available to a country to respond to climate-related challenges
World Resources Report	The report provides policymakers, governments, civil society and the private sector with analysis of and insight into major environmental and development issues. It is the product of a 20-year partnership between the United Nations Environment Programme, UNDP, the World Bank and the World Resources Institute. The 2010 report focuses on adapting to climate change and includes expert perspectives on key adaptation issues, national case studies, in-country scenarios, and emerging models for decision-making and coordination in a changing climate
World Resources Institute National Adaptive Capacity (NAC) Framework	The NAC Framework articulates a fundamental set of national-level functions that all countries will need to perform if they are to adapt effectively to climate change over time. These functions include assessment, prioritization, information management, coordination and risk reduction. The capacities to perform these functions can be thought of as elements of a national 'adaptation system' that can support and facilitate adaptation action by governments, communities, businesses and others. The NAC Framework can be used to assess by whom and how well functions are being performed, in order to identify opportunities and priorities for building adaptive capacity and implementing key activities. After a period of time, it can be used again to evaluate progress. Planners, evaluators and civil-society advocates may find it useful in their adaptation efforts

Annex II

Gender-related considerations in medium- and long-term adaptation

Gender-related considerations in identifying and implementing medium- and long-term adaptation activities

The importance of gender in climate change adaptation

Women's disproportionate dependence on natural resources and their predominant roles in the community and in the household make them particularly vulnerable when the resources on which they depend are adversely affected, become scarcer or are harder to access due to climate change (United Nations Women Watch).^a In addition, many women face historical disadvantages, which include limited access to decision-making and economic assets, and these can compound the challenges of climate change (Commission on the Status of Women).^b Further disadvantages include that, worldwide, women only own 1 per cent of property (United Nations Women),^c and of the world's nearly one billion illiterate adults, two thirds are women. Integrating a gender perspective into medium- and long-term adaptation is therefore necessary to ensure that adaptation activities undertaken by the least developed countries (LDCs) will not exacerbate gender inequalities and will ensure women's equal participation in the decision-making and implementation phases of adaptation. It will lead to better adaptation and more resilient communities.

Moreover, women need not always be perceived as victims when addressing climate change. They can act as agents of change at different levels of the adaptation process. 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 in the areas of farming, forestry and fisheries, make them valuable as adaptation decision makers and as key adaptation implementers. An evaluation conducted by the World Bank, as well as various other studies, found that projects are more successful when gender-related considerations and dynamics are integrated into their planning and implementation (Mearns and Norton, 2010).^d Moreover, the United Nations Millennium Development Goals emphasize a clear linkage between gender equality and reaching all other goals, including sustainable development, which is an integral part of adaptation.

Including women in identifying and implementing medium- and long-term adaptation activities

Vulnerability and risk assessments need to generate an understanding of the gender dynamics in social, economic and environmental systems. They need to identify those vulnerabilities, risks and impacts that are exacerbated by gender dynamics and roles, in order to formulate effective adaptation activities. They also need to identify the differentiated needs and strengths within communities of society, particularly those of women, the young and the elderly, so that the adaptation activities serve to improve the adaptive capacity and resilience of the people and communities most vulnerable to the impacts of climate change, through the active engagement of women. Sex-disaggregated data and gender-differentiated information need to be collected and analysed and utilized in formulating policies, programmes, projects and budgets for medium- and long-term adaptation activities. This type of gender-based analysis (of roles, activities, resources and participation in decision-making) can help to identify elements of specific vulnerabilities of both men and women. Countries may find the following steps useful for integrating

Gender-related considerations in identifying and implementing medium- and long-term adaptation activities

gender-related considerations into the medium- and long-term adaptation process:

- Understanding the disproportionate burden of climate change on women and the most vulnerable groups and communities;
- Undertaking gender-based vulnerability assessments and integrating gender perspectives into adaptation and risk assessments;
- Publishing and widely disseminating sex-disaggregated data and gender-differentiated information, and the outcomes of the assessments;
- Consulting women, women's groups and the most vulnerable in the planning of medium- and long-term adaptation, and ensuring that representatives from these groups are included in decision-making processes, including by integrating targets for participation;
- Ensuring that gender-related considerations are taken into account in capacity-building, education and training activities;
- Disseminating and utilizing lessons learned and best practices in the mainstreaming of gender-related considerations, including from the national adaptation programme of action (NAPA) process;
- Ensuring synergy between national adaptation planning and implementation and relevant international institutional arrangements that have a focus on gender;
- Ensuring that the specific departments in charge of gender- and women-related affairs are consulted in the preparation and implementation of adaptation activities;
- Ensuring that reporting guidelines include guidelines for reporting on gender- and vulnerability-related considerations;
- Including criteria for evaluating the integration of gender-related considerations in the monitoring and evaluation processes.

Specific ministries, departments and offices in charge of gender- and women-related issues need to be involved as key stakeholders throughout the process of identifying and implementing medium- and long-term adaptation activities. Likewise, non-governmental organizations, civil-society organizations, the private sector, specific gender groups, donors and a wide range of other relevant stakeholders need to be engaged. Ensuring that networks exist between different organizations is also important, particularly between those that work on issues related to gender and those that will support the identification and implementation of adaptation activities.

Some examples from national adaptation programmes of action

By design, NAPAs focused on the grassroots level participation of communities and societies, using a gender-sensitive approach that opened a window for the inclusion of women and men equally in the identification and implementation of urgent and immediate adaptation activities. The following is a non-exhaustive list of examples of gender-related considerations from the NAPAs of the LDCs:

- Burkina Faso's NAPA is based on four key economic sectors (namely agriculture, water resources, livestock and forests/biodiversity) and the inclusion of women, the young and low-production farmers was an overriding principle in the NAPA preparation process;
 - In the Democratic Republic of the Congo, gender-related considerations have been integrated into all stages of NAPA preparation and implementation. Gender-related
-

Gender-related considerations in identifying and implementing medium- and long-term adaptation activities

- elements are included as concrete elements within each project/activity (e.g. national workshops must have a 25 per cent representation of women, as a minimum target);
- Interventions proposed in Malawi's NAPA include activities targeting women in highly vulnerable situations, including: (a) the empowerment of women through access to microfinance in order to diversify earning potential; (b) ensuring easier access to water and energy sources by drilling boreholes and planting trees; and (c) the use of electricity provided through the rural electrification programme;
 - Mauritania's first approved NAPA project for implementation has the objective of improving the living conditions and incomes of women and young people in a sustainable way, by developing numerous agricultural value chains;
 - Nepal performed gender sensitivity analyses of climate change impacts in the formulation of its NAPA;
 - In Niger, women are the beneficiaries of three livestock/crop farming NAPA projects, one of which includes enhancing women's land use and ownership as an activity. Women were also involved in national consultations on the NAPA;
 - In Senegal, a NAPA project on water efficiency is aiming at distributing kits based on criteria which include gender. In addition, forestry projects specifically mention women as beneficiaries;
 - The activities identified in Sierra Leone's NAPA aim to train women in implementing adaptation activities and to undertake sensitization campaigns on the specific climate change impacts on women. The NAPA mentions that it is through the inclusion of women and children that the project will be sustainable.

These examples of gender-related considerations are not exclusive to NAPAs and can be applied to the medium- and long-term adaptation process.

^a United Nations Women Watch. 1997–2010. Available at <<http://www.un.org/womenwatch/>>.

^b Commission on the Status of Women. 2008. "Gender perspectives on climate change," *Issues paper for interactive expert panel on Emerging issues, trends and new approaches to issues affecting the situation of women or equality between women and men*. Available at <<http://www.un.org/womenwatch/daw/csw/csw52/issuespapers/gender%20and%20climate%20change%20paper%20final.pdf2008>>.

^c United Nations Women. 2011. Available at <<http://www.unwomen.org/>>.

^d Mearns, R. And Norton, A. (eds). 2010. *Social dimensions of climate change: equity and vulnerability in a warming world*. The World Bank.

Annex III

Key vulnerabilities and adaptation solutions

<i>Adaptation development goal/sector</i>	<i>Key vulnerabilities</i>	<i>National adaptation programme of action interventions (adaptation solutions)</i>
Agriculture and food security: achieving and safeguarding food security	<ul style="list-style-type: none"> • Shorter growing seasons • Declining fish populations • Loss of agricultural land (erosion during floods, and desertification as a result of droughts) • Floods causing loss of soil fertility • Soil salination due to saltwater intrusion • Uncertainty about what and when to plant • Droughts and unpredictable rainfall plus heat spells leading to increased evapotranspiration • Reduced crop yields 	<ul style="list-style-type: none"> • Change of planting dates • Diversification of crop production by breeding resilient crops (drought resilient for drought-prone areas, and salt resistant for coastal zones) • Fodder production • Reseeding of rangelands • Water harvesting • Construction and rehabilitation of reservoirs/dams • Water-saving irrigation techniques • Land-use planning • Soil conservation • Food preservation and processing through the improvement of small-scale industries • Food/cereal banks
Water resources and water security	<ul style="list-style-type: none"> • Drying up of rivers and springs • Increased water stress • Rising sea levels compromising fresh water sources • Scarcity of potable water • Unsustainable use of groundwater resources 	<ul style="list-style-type: none"> • Rainwater harvesting • Rehabilitation of wetlands • Integrated watershed management with land-use and coastal area protection benefits • Rehabilitation of boreholes/wells • Resilient designs of reservoirs, irrigation canals, ponds and dykes • Efficient water use • Ecosanitation
Physical safety: protection of life and property against climate extremes and disasters, including along low-lying and coastal areas	<ul style="list-style-type: none"> • Increased extreme and new events (glacial lake outburst floods, droughts and floods) • Traditional early warning systems unable to simulate the new and frequent events • Landslides due to flooding 	<ul style="list-style-type: none"> • Artificial lowering of glacial lakes • Construction of dykes, current breakers and shifting dune bars • Radar reflectors and life vests for fishermen • Hazard/risk maps and related response maps, and escape routes • Planning settlements in low-risk areas • Resettlement of communities at risk • Disaster management, preparedness and awareness

<i>Adaptation development goal/sector</i>	<i>Key vulnerabilities</i>	<i>National adaptation programme of action interventions (adaptation solutions)</i>
Protecting livelihoods and enhancing adaptive capacity	<ul style="list-style-type: none"> • Inundation along coasts • Coastal erosion • Degradation of marine ecosystems • Absolute dependence on natural resources and ecosystems 	<ul style="list-style-type: none"> • Rehabilitation of existing and/or installation of new observing stations/equipment • Establishment of communication systems for early warning • Safety nets (e.g. social action funds) • Promotion of non-conventional food resources • Homestead food production • Mainstreaming of gender-related considerations • Vocational training facilities and centres for communities
'Climate proofing' major components of national economies and sustainable development (socio-economic growth engine)	<ul style="list-style-type: none"> • Climate change exposes farmers to uncertain risks with heavy losses • Farmers do not have access to credit • Increase in frequency and magnitude of climate extremes 	<ul style="list-style-type: none"> • Community training programmes on climate change • Including climate change in the national curriculum • Developing and introducing energy saving techniques • Drought indices • Insurance design • Contingency funding for droughts • Contingency funding for surviving during disasters
Supporting and enhancing human health and safety	<ul style="list-style-type: none"> • Alteration of spatial and temporal transmission of disease vectors, including malaria, dengue fever, meningitis, cholera and diarrhoea • Increased tropical storms increasing risks to life 	<ul style="list-style-type: none"> • Distribution of treated mosquito nets • Production of biopesticides • Rehabilitation and establishment of health-care centres • Securing potable water • Wastewater treatment systems
Protecting and enhancing ecosystem structure and functions for the sustainable provision of ecosystem goods and services	<ul style="list-style-type: none"> • Desertification • Deforestation • Degradation of grasslands • Replacement of native species and colonization by non-indigenous species • Sediment pollution during floods • Loss of biodiversity and ecosystem services due to erosion and watershed regulations 	<ul style="list-style-type: none"> • Coastal afforestation • Rehabilitation of mangroves and plantation management • Participative protection of coastal sediment barriers • Optimization of freshwater and drainage management, including construction of diversion furrows and terraces • Soil and vegetation management • Integrated watershed management • Reseeding of rangelands • Plantation of trees and grasses in gullies • Construction of gabions to stop erosion and rehabilitate wetlands • Rehabilitation of silted ponds and reconstitution of basin slopes • Wildfire prevention and management
'Climate proofing' renewable energy sources and supplies	<ul style="list-style-type: none"> • Energy insecurity resulting from disruption of hydropower systems • Diminishing of indigenous biomass resources 	<ul style="list-style-type: none"> • Energy efficiency • Micro-hydropower stations • Diversification of energy sources (solar, wind and biogas)
Protecting and preserving	<ul style="list-style-type: none"> • Cultural norms and heritage (housing, 	<ul style="list-style-type: none"> • Protection and conservation of indigenous species

<i>Adaptation development goal/sector</i>	<i>Key vulnerabilities</i>	<i>National adaptation programme of action interventions (adaptation solutions)</i>
cultural values and cultural systems	<p>clothing, medicine and other traditions) are closely linked to the environment</p> <ul style="list-style-type: none"> • A change of environment puts pressure on and forces changes in the culture 	<ul style="list-style-type: none"> • Preservation of cultural heritage sites and promotion of botanical gardens
Protecting and improving the design of critical infrastructure	<ul style="list-style-type: none"> • Accelerated beach erosion • Destruction of infrastructure during extreme events (floods and storms) 	<ul style="list-style-type: none"> • Redesigning and rehabilitating infrastructure • Planning settlements in low-risk areas