United Nations Framework Convention on Climate Change

LEAST DEVELOPED COUNTRIES

SUPPORT NEEDED

to fully implement national adaptation programmes of action (NAPAs)

LDC Expert Group 2009

UNFCCC

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SUPPORT NEEDED TO FULLY IMPLEMENT NATIONAL ADAPTATION PROGRAMMES OF ACTION (NAPAs)

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I. INTRODUCTION

I-A. MANDATE AND SCOPE

1. The Subsidiary Body for Implementation (SBI), at its twenty-ninth session in December 2008, invited the least developed countries (LDC) expert group (LEG) to assess, in collaboration with the Global Environment Facility (GEF) and its agencies, the support needed to fully implement national adaptation programmes of action (NAPA) projects.

2. This paper analyzes the information submitted in NAPAs as well as costing data in project proposals submitted to the GEF for funding under the Least Developed Countries Fund (LDCF) to provide an estimate of the financial support needed to fully implement NAPAs. Other types of support, including capacity-building, technology development and transfer and institutional arrangements are also considered.

I-B. BACKGROUND

3. The LDC work programme, established by the Conference of the Parties (COP) at its seventh session in 2001 through decision 5/CP.7, includes preparation and implementation of NAPAs, strengthening climate change secretariats and focal points, training in negotiation skills and language, promotion of public awareness, and development and transfer of technologies for adaptation. At this session, the COP also established the LDCF to support the work programme, and the LEG to provide, among others, advice to LDCs on the preparation and implementation strategy of NAPAs.

4. The NAPAs provide a process for LDCs to identify priority activities that respond to urgent and immediate needs with regard to adaptation to climate change. They focus on urgent and immediate needs for which further delay could increase vulnerability or lead to increased costs at a later stage. Their rationale rests on the limited ability of LDCs to adapt to the adverse effects of climate change. Through their preparation, NAPAs have build strong capacity in LDCs from grassroots to policymaking levels, high levels of awareness on climate change, ownership of the NAPAs resulting from stakeholder engagement, and appreciation for the international community to support NAPA projects in LDCs. NAPAs do not address full adaptation in LDCs, and more still remains to be done to assist LDCs address the full challenges of climate change.

5. LDCs have thus far prepared and submitted NAPAs with appreciable progress. As of 15 September 2009, 42 LDCs had submitted their NAPA to the UNFCCC secretariat, and the remaining 6 LDCs are in advanced stages of preparation and are expected to submit their NAPAs within the coming year.

6. Meanwhile, the current status of contributions to the LDCF, allow a maximum access of USD 3.5 million for each LDC. This limit was put in place to ensure equitable access and that all LDCs can at least start to implement their NAPAs. Since June 2009, this ceiling has been raised to USD 5 million. The COP continues to encourage Annex II Parties to contribute to the LDCF to enable full implementation of the NAPAs and the other elements of the LDC work programme.

I-C. AVAILABLE FUNDING FOR NAPAS

7. The LDCF was established to support LDCs in the preparation and implementation of NAPAs. As of September 2009, it has supported the preparation of 42 NAPAs, and has committed to implementation of 32 NAPA projects totaling USD 100 million. The Fund relies on voluntary contributions and is open to all LDCs that are Parties to the UNFCCC.

8. The Special Climate Change Fund (SCCF), also reliant on voluntary contributions, was established to finance projects relating to adaptation; technology transfer and capacity-building; energy, transport, industry, agriculture, forestry and waste management; and economic diversification. It is a competitive Fund open to all developing countries under the Convention, and LDCs can also access this Fund for implementing NAPA projects.

9. The Adaptation Fund was established to finance concrete adaptation projects and programmes in developing countries that are Parties to the Kyoto Protocol. The Fund is financed by a share of proceeds from clean development mechanism project activities and may also receive funds from other sources. The Fund is soon to be open for project proposals and NAPA projects are also eligible for funding. It has USD 20.067 million from the monetization of certified emission reduction proceeds as at 30 September 2009.[1]

10. Other potential sources of finance include Japan Cool Earth Partnership, World Bank Pilot Programme for Climate Resilience, Development Market Place, Global Climate Change Alliance, International Climate Initiative, International Development Association, Millennium Development Goals Achievement Fund, Nordic Development Fund, Program on Forests, Small Activities Scheme, and GEF Small Grants Programme.

11. The UNFCCC adaptation funding interface,[2] provides a platform to access and screen information on funding options available for adaptation worldwide. It contains a description of the funding mechanism, example projects, contact information and relevant websites for further information.

[1] AFB/B.8/9. Financial Status of the Adaptation Fund Trust Fund and the Administrative Trust Fund. Available at: <http://www.adaptation-fund.org>.

[2] <http://unfccc.int/4638>.

II. CLIMATE CHANGE ADAPTATION AND DEVELOPMENT

12. Human activities have always been influenced by the climate conditions people find themselves in, and it has become difficult to delineate where socio-economic development ends and adaptation to climate change begins. Moreover, the decision of such activities that are entirely driven by climate change as opposed to regular development activities arises when assessing and developing adaptation projects. Therefore, it is important to understand adaptation in the development framework while developing adaptation projects.

13. Indeed adaptation and development are closely linked, with overlaps between the two, and efforts to draw a distinct line between them can prove counterproductive.[3] Activities undertaken to achieve development objectives can automatically lead to adaptation benefits,[4] and the precision of financial assessments on the financial flows and investment needs for adaptation can be improved only through a better understanding of adaptation and how it is additional to a development baseline.[5]

14. In its programming paper for funding implementation of NAPAs under the LDCF, the GEF notes that the provision of human needs essential for continued development (e.g. water supply and sanitation, food security and health) will be threatened by the adverse impacts of climate change.[6] It continues to mention that adaptation must be viewed in the context of development, and cannot meaningfully be addressed in isolation. It concludes that the LDCF will support projects to increase the adaptive capacity and to reduce the vulnerabilities of the LDCs to climate change by addressing the most urgent and immediate needs as part of efforts to foster climate-resilient development.

15. It becomes evident, therefore, that climate change adaptation should be approached in an integrated manner with development. Adaptation goals should be linked with development goals accordingly, so that NAPA priority activities and projects can be brought to be in line with common development activities.

[3] McGray, H. *et al*. (2007), Weathering the Storm, Options for Framing Adaptation and Development, World Resources Institute, Washington.

[4] OECD (2009). Integrating Climate Change Adaptation into Development Corporation. OECD Paris.

[5] UNFCCC (2009). Investment and Financial Flows to Address Climate Change, An Update. UNFCCC, Bonn.

[6] GEF/C.28/18. Programming Paper for Funding the Implementation of NAPAs under the LDC Trust Fund. Available at: <http://www.thegef.org>.

III. THE URGENT AND IMMEDIATE NEEDS FROM NAPAS

III-A. ANALYSIS OF NAPAS SUBMITTED TO THE UNFCCC

16. The first completed NAPA document was submitted to the UNFCCC secretariat in November 2004 by Mauritania. To date, 42 NAPAs have been prepared and submitted to the UNFCCC secretariat and the remaining 6 are expected to be completed by 2010. These submitted NAPAs identify a total of 433 projects, and their costs vary from USD 3 to 770 millions (see FIGURE III-1).

17. Total estimated funding required to implement these projects is USD 1.66 billion. The average cost for entire NAPA projects per country is USD 39.5 million. It is also worth noting that cost estimates in several NAPAs are very low because of an interpretation of the GEF guidance to mean that a country would only be able to access up to USD 3 million. In reality, the GEF guidance indicated given the level of contributions to the LDCF at that time, that the first set of projects could only be up to USD 3 million per country, to ensure equitable access for all LDCs.

18. In comparison, in a programme that is similar to preparing and implementing a NAPA for a whole country, the World Bank through a Pilot Programme for Climate Resilience (PPCR),[7] indicates that USD 10 – 100 million would be allocated to each of the 9 selected participating countries (7 are LDCs) for scaled up action and transformational change in integrating consideration of climate resilience in national development planning consistent with poverty reduction and sustainable development goals. This further indicates that adaptation projects would cost much more than what NAPAs estimate.

19. The largest number of projects is in agriculture and food security where 123 projects have been identified. Water resources follows with 69 projects. Coastal zones and marine ecosystems, terrestrial ecosystems and early warning and disaster management have projects ranging between 45 and 60. Health, energy, education, capacity-building and public awareness have fewer number of projects.

20. The highest estimate cost of adaptation is in water resources where USD 837 million is required, followed by agriculture and food security with a total of USD 352 million, coastal zones and marine ecosystems with USD 146 million, and terrestrial ecosystems with USD 133 million. Together these four sectors constitute more than 80 per cent of the overall costs of implementing the urgent and immediate needs in LDCs. Other sectors, which include health, energy and education, capacity-building and public awareness, occupy the remaining percentage costs.

21. Individual project costs per country are USD 0.1 – 45 million for agriculture and food security, USD 0.06 – 700 million for water resources, USD 0.03 – 60 million for coastal zones and marine ecosystems, terrestrial ecosystems and early warning and disaster management. Health, energy, education, capacity-building and public awareness have projects with individual costs ranging between USD 0.02 – 8, 0.2 – 11, and 0.08 – 7 million respectively.

22. In addition to the costs of NAPA project activities, LDCs identify other elements needed to support implementation of NAPAs. These elements are not necessarily quantified and usually become clearer during project development:

(i) human and institutional capacity to implement adaptation at the national level and among implementing agencies;
(ii) capacity to access and/or make use of vulnerability assessment tools; and
(iii) capacity and support for the design of adaptation projects.

[7] <http://go.worldbank.org/2N8K0LZ7C0>.

III-B. ANALYSIS OF GEF LDCF PROJECTS

23. The first project identification form (PIF) for NAPA implementation was submitted to the GEF by Niger in March 2007.[8] As of 15 September 2009, 32 PIFs have been submitted to the GEF. These PIFs address 75 of the 433 identified projects. A mixed approach has been used in developing the PIFs: a project based approach of developing a PIF from one project out of an average eleven projects per NAPA, and a programmatic approach using a combination of two or more projects in the NAPA or the entire NAPA in some cases, to develop one project.

24. The overall budget of the 32 submitted PIFs is USD 286 million. Of this, USD 100 million is expected to come from the LDCF, USD 70 million from multilateral agencies, USD 57 million to be raised by LDC governments, USD 36 million from bilateral donors, and USD 4 million from national private sector. The current level of funds in the LDCF is USD 176.5 million.

25. An advantage of the PIFs and subsequent project documents is that they present the full areas of support needed to implement NAPAs with cost attachments. The following support areas are common among the submitted projects:

(a) Financial resources to implement the NAPA projects,
(b) Institutional and human capacity to design and implement adaptation projects,
(c) Capacity to access and/or make use of vulnerability assessment data and tools, and
(d) Awareness of the current and potential impacts of climate change.

26. FIGURE III-4 presents project types for the NAPA projects submitted to the GEF for funding under the LDCF. Agriculture and food security has taken the highest priority with a total of 13 projects, followed by coastal zones and marine ecosystems, early warning and disaster management and then water resources. Other categories from the NAPAs (e.g. health, terrestrial ecosystems, education and public awareness) appear as integrated elements within the larger components.

27. On the costs of the projects, an individual NAPA project per country costs around USD 3 million, with roughly USD 2 million dedicated to actual adaptation solutions, USD 0.5 million to policy, capacity-building, and public awareness, USD 0.2 million to knowledge management [9] and the rest to project management. This is comparable to support for similar/related projects under the UNDP led Africa Adaptation Programme,[10] of USD 92.1 million to support 21 African countries (of which some are LDCs) in implementing integrated and comprehensive adaptation actions and resilience plans.

28. Finally, an important fact about the PIFs that is worth noting is that they are confined to the ceiling of available funding and hence may not be representative of the full scale of implementing NAPA projects in the LDCs.

[8] Submission of projects under the Global Environment Facility (GEF) begins with the submission of a Project Identification Form (PIF) which is aimed to demonstrate: a country's eligibility for funding; consistency of a submitted project with GEF strategic objectives/programs; comparative advantage of GEF Agency submitting the PIF; estimated cost of the project, including expected co-financing; availability of resources; and milestones for further project processing. For further information please visit <http://www.gefweb.org>.

[9] This component has acquired significance in the project preparation process and almost every NAPA project has this component as a contribution to adaptation learning.

[10] <http://www.undp-adaptation.org/africaprogramme/>.

Figure III-1. **Total costs of NAPA projects per country based on submitted NAPAs as of 15 September 2009**

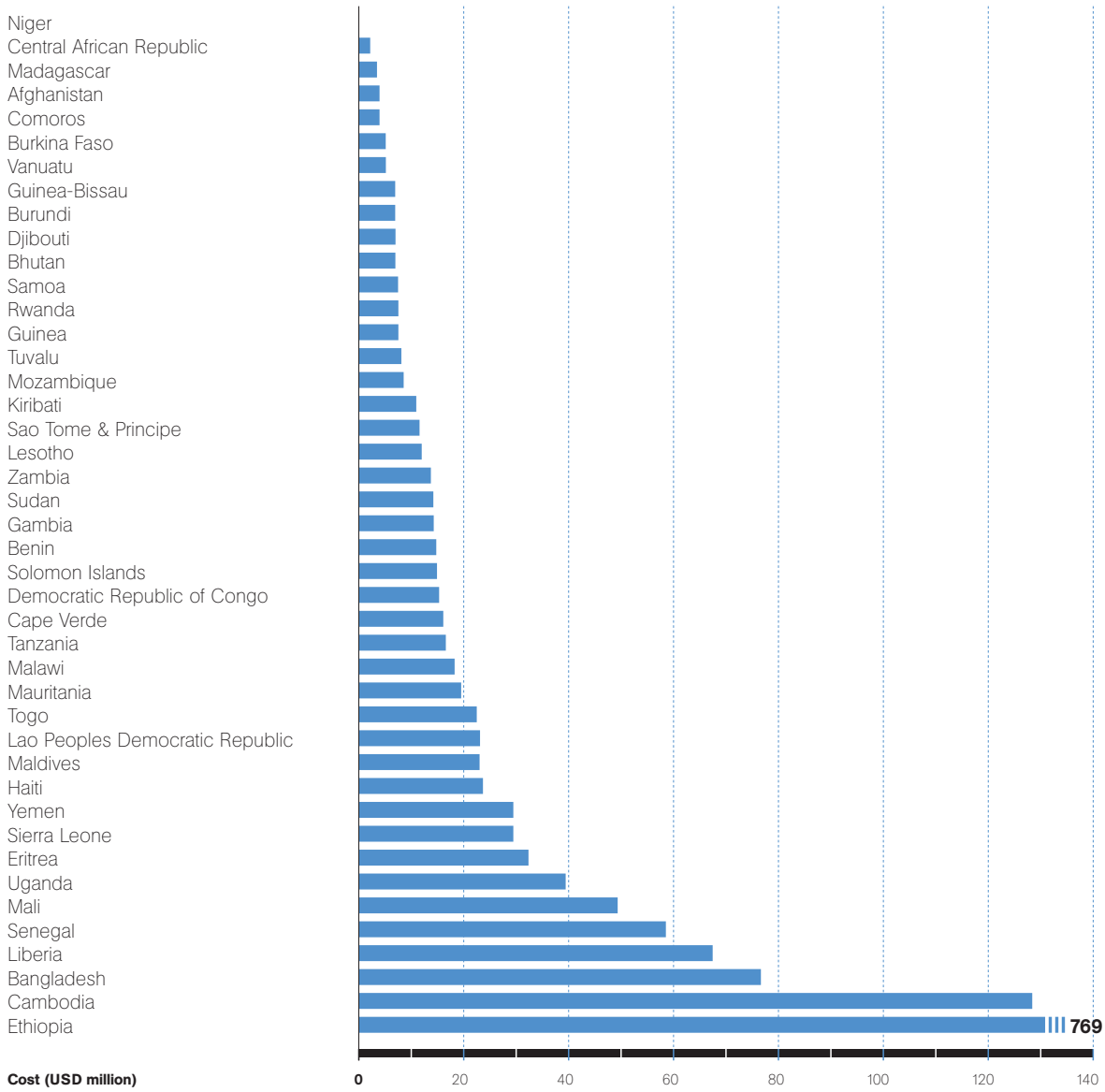

Figure III-2. **NAPA project costs per sector based on submitted NAPAs as of 15 September 2009**

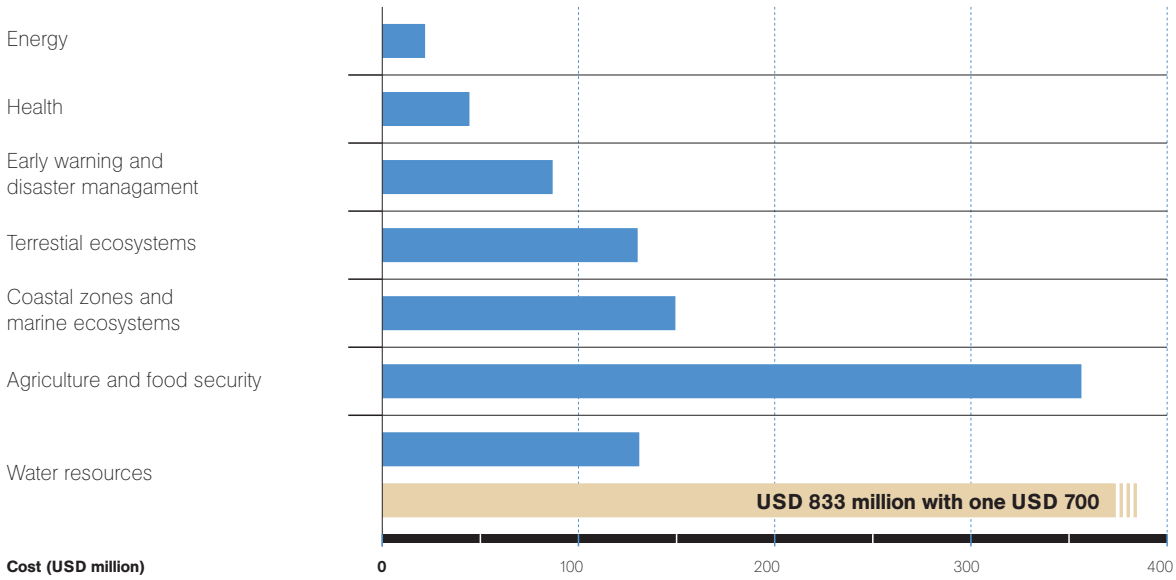

Figure III-3. **Number of priority projects identified in the NAPAs based on submitted NAPAs as of 15 September 2009**

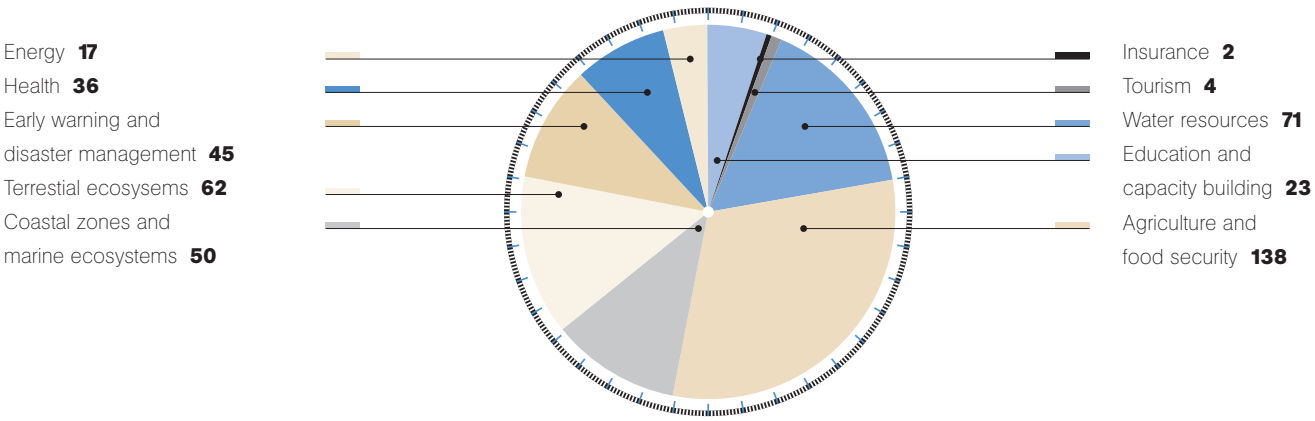

Table III-1. **Examples of adaptation strategies and activities in four areas identified in the NAPAs**

Agriculture and food security	Coastal zones and marine ecosystems	Water resources	Early warning and disaster management
• change of planting dates • diversification of crop production by breeding resilient crops (drought resilient for drought prone areas, and salt resistance 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 improvement of small scale industries • food/cereal banks	• 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	• rain water harvesting • rehabilitation of wetlands • integrated watershed management with land use and coastal areas protection benefits • rehabilitation of boreholes/ wells • resilient designs of reservoirs, irrigation canals, ponds and dykes • water use efficiency • promotion of eco-sanitation • construction of gabions to stop erosion and rehabilitate wetlands. • rehabilitation of silted ponds and reconstitution of basin slopes	• artificial lowering of lakes • construction of dykes, current breakers, and shifting dune bars • radar reflectors and live vests for fishermen • hazard/risk maps and related response maps, escape routes • planning settlements in low risk areas • resettlement of communities at risk. • disaster management, preparedness and awareness • rehabilitation of existing and/or install new observing stations/equipment • establishment of communication systems for early warning

Note: The adaptation activity examples have been derived from the NAPA GEF-LDCF projects in the implementation pipeline, based on data available as of 15 September 2009.

Figure III-4. **Types and number of projects submitted by least developed countries (LDCs) and approved by Global Environment Facility (GEF) for funding under the Least Developed Countries Fund (LDCF) as of 15 September 2009**

IV. ESTIMATES OF THE COST OF ADAPTATION TO CLIMATE CHANGE

29. It is important to note that NAPAs do not present the full range of activities related to adaptation that will be required, but rather only address urgent and immediate adaptation needs. It is also important to note, however, that NAPAs are the only estimates based on real figures developed through bottom-up stakeholder consultative processes. The actual costs of full adaptation in the LDCs would be several orders of magnitude higher than costs presented in the NAPAs alone. The paragraphs below give some examples of the global estimates of adaptation to climate change, mainly based on top-down assessments and some case studies. However, it remains to be noted that it is difficult to assess costs of adaptation, as is assessing the benefits from climate change or adaptation measures.

30. Since 2006, several studies have presented assessments on empirical estimates of the global costs of adaptation to climate change across multiple sectors. These include the Investment Framework for Clean Energy and Development of the World Bank,[11] the Stern Review,[12] the Intergovernmental Panel on Climate Change (IPCC) Working Group II,[13] the Oxfam International,[14] the UNFCCC,[15] and the United Nations Development Programme (UNDP),[16] Climate Works Foundation's Project Catalyst.[17] All, with the exception of the IPCC, provide specific numerical estimates for the costs of adaptation to climate change.

31. In its initial study in 2006 study, the World Bank estimates adaptation costs as the cost of climate proofing three sets of financial flows in developing countries: the Official Development Assistance (ODA) and concessional finance, Foreign Direct Investment (FDI), and the gross domestic investment (GDI). The assessment assumes 10 – 20 % of the investment to be exposed to climate change and yields a figure of USD 9 – 41 billion per year required for adaptation to climate change. In a recent update (2009)[18], the World Bank again estimates that it will cost $ 75 – $ 100 billion each year to adapt to climate change from 2010 to 2050.

32. The Stern Review, Oxfam International and UNDP studies use the World Bank (2006) study and approach as a basis for costing adaptation and present figures of USD 4 – 37 billion per year, at least USD 50 billion per year, and 86 – 109 billion per year respectively. The IPCC does not present numerical values of adaptation to climate change but provides an assessment of adaptation practices, options, constraints and capacity and notes that another key area where information is currently very limited is the economic and social costs and benefits of adaptation measures.

33. The UNFCCC study on investment and financial flows presents a more in-depth analysis of estimates of adaptation to climate change. It examines investment and financial flows for adaptation to climate change in five sectors: agriculture, forestry and fisheries, water supply, human health, coastal zones and infrastructure. The total annual costs of adaptation are calculated to range in USD 49 – 171 billion per year globally, with USD 28 – 67 billion per year in developing countries.

34. While potentially relevant for the global discussion on adaptation and its financing, these estimates have some limitations, brought by limited case studies to test the top-down analysis used in these studies. Little or no analytical information is currently available on key estimate parameters and, therefore, the assumptions that are made become particularly critical, given the very large magnitude of baseline investments to which the assumptions are applied. For example, (i) the percentage value of assets/flows that might be exposed to climate risk is unknown (except in the case of NAPAs for LDCs) and (ii) the percentage incremental costs of "climate-proofing" such exposed assets is assumed as 2 – 35 % of total investments with no underlying principle.

35. In addition to the global estimates of the cost of adaptation to climate change, NAPAs are quoted in some reports with a call for indicative levels of financing for their implementation. Various analyses propose and urge donor countries to mobilize USD 1 to 2 billion of additional ODA to finance immediate needs in LDCs (especially in Africa), selected small island developing States (below a certain gross domestic product), and other most vulnerable developing countries that are already suffering from climate impacts.

[11] World Bank (2006). Investment Framework for Clean Energy and Development. World Bank, Washington, DC.

[12] Stern, N. (2006). The Economics of Climate Change. The Stern Review, Cambridge University Press, Cambridge.

[13] IPCC (2007). Climate Change 2007: Impacts, Adaptation and Vulnerability. Working Group II Contribution to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Chapter 5: Food, Fibre and Forest Products, pp. 273 – 313; and Chapter 17: Assessment of Adaptation Practices, Options, Constraints and Capacity, pp. 717 – 743. Cambridge University Press, Cambridge.

[14] Oxfam (2007). Adapting to Climate Change: What's Needed in Poor Countries, and Who Should Pay. Oxfam Briefing Paper 104. p. 47.

[15] UNFCCC (2007). Investment and Financial Flows to Address Climate Change. Climate Change Secretariat (UNFCCC), p. 273.

[16] UNDP (2007). Fighting Climate Change: Human Solidarity in a Divided World, Human Development Report 2007/2008. Palgrave Macmillan, New York, p. 399.

[17] Project Catalyst (2009). Adaptation to climate change: Potential costs and choices for a global agreement. Climate Works Foundation.

[18] World Bank (2009). The Cost to Developing Countries of Adapting to Climate Change. World Bank, Washington, DC. Unpublished, excecutive summary available at <http://www.worldbank.org>.

V. SUPPORT NEEDED TO FULLY IMPLEMENT NAPAS

V-A. FINANCIAL RESOURCES

36. The adaptation priorities and projects presented in NAPAs are realistic and better reflect priorities on the ground. However, while appreciating the quality of the NAPAs, it is important to note that the priorities presented in the NAPAs represent the urgent and immediate needs and do not necessarily represent entire adaptation costs. The estimates in the projects were also highly influenced by the amount of available financing, specifically the Least Developed Countries Fund (LDCF). One may note that most national estimates remain below USD 40 million in total (FIGURE III-1). The then active rules for accessing GEF funding for implementing adaptation projects under the LDCF applied a sliding scale on which the level of funds needed to co-finance adaptation projects rises significantly with adaptation cost estimates, and exceeding that beyond adaptation estimates of USD 6 million or more. To secure suitability under the LDCF within achievable co-financing levels (preferably not to exceed 50 percent as per the sliding scale) some LDCs may have downscaled the costs of some or all of their activities. The other factor that influenced the estimates may have been the mis-understanding of the GEF guidance as mentioned in PARAGRAPH 17.

37. In SECTION III-A of this paper, an analysis of NAPAs submitted by the LDC Parties is presented. The current level of estimate costs required to fund the 42 submitted NAPAs is USD 1.66 billion. With the submission of the remaining seven NAPAs, the cost of implementing the NAPAs for all the LDCs will be at least USD 1.93 billion.

38. SECTION III-B also provides an in-depth analysis of the projects that are being developed for funding for implementation under the LDCF. An analysis of the 32 NAPA projects submitted for implementation indicates an approximate cost of USD 3 million per project per country. If all the 433 NAPA priorities are to be implemented, including ones to be identified in the 7 NAPAs yet to be submitted, the cost of implementing the entire NAPAs from this estimate will be USD 1.55 billion.

39. In a comparison between the projects costs indicated in the NAPA documents and the costs used while submitting projects for implementation under the LDCF, it has been evident that there are underestimations in the figures presented in the NAPA documents. As an example, Benin estimated from its NAPA document that it would cost USD 8.19 million to implement a NAPA project on forecasting system for early warning and climatic risks for food security. In preparing this project for implementation, the cost rose up to USD 10.02 million, of which the LDCF only allows a ceiling access of USD 3.5 million, meaning the project will only be implemented partially. In Burkina Faso project costs increased by more than 80 per cent from the initial estimation in the NAPA submission. This is the case for many LDCs.

40. Therefore the estimates indicated in this paper should appreciably be considered as the lowest limit of required financing. The LEG has developed guidance for LDCs to revise the project profiles and costs in order to present updated costs for addressing the urgent and immediate needs, given the passage of time, new information, and new and additional impacts.

V-B. SCIENTIFIC AND TECHNICAL SUPPORT

41. The design and implementation of adaptation requires extensive data and information including its analysis, and the application and choice of appropriate methodologies. NAPAs have been completed with appreciable success, and this has mainly been due to the technical support provided by a number of institutions under the supervision, coordination and facilitation of the LEG. The preparation process was guided by the NAPA preparation guidelines, regional training workshops a rich synthesis of data, information and methods to guide the preparation process, technical papers and synthesis reports.

42. The implementation process will be more complex than preparation. In order to achieve the desired goals of addressing the immediate and urgent needs in the LDCs, noting that a significant amount of time has elapsed since the establishment of the NAPA process, similar and enhanced support for this phase of the process is highly critical. The support should be provided to the LDCs through project design and implementation guidelines, and training workshops to design and implement NAPA projects. The support should also look further to expand on guidance, sharing of examples best practices at the sub-national, national, regional and global levels, targeting synergies with broader development programmes.

V-C. TECHNOLOGY DEVELOPMENT AND TRANSFER

43. Adaptation involves application of technologies for adaptation, which in the broadest sense include not just material and equipment but also diverse forms of knowledge, decision-making tools, institutional organization and processes. These technologies for adaptation can be divided into hard and soft technologies. Hard technologies include machinery, equipment and structures, while soft technologies comprise know-how, management techniques, education, training, and enable hard technologies to be applied (e.g., software). The international arena provides great opportunities for major actions such as technology transfer.

44. For the LDCs, technology is in greatest deficit, yet essential for implementing adaptation. For example, under the Nairobi work programme on impacts, vulnerability and adaptation to climate change, a synthesis of technologies for adaptation was made based on invited submission from Parties to the UNFCCC and relevant organizations. Only one LDC country made a submission to this, showing the existing gap in the understanding of technologies for adaptation by the LDCs. In the NAPA implementation process, institutions that will take part (e.g. government ministries or departments, local development councils or community organizations), and that would hence spearhead the development, deployment and transfer of locally viable technology solutions need to be adequately capacitated.

V-D. CAPACITY-BUILDING

45. The capacity to plan, manage, implement and account for results of policies and programmes as in the NAPAs is critical to achieving the desired goals of addressing the urgent and immediate needs in LDCs. For the LDCs, such capacity is limited, and hence why the COP, by its decision 2/CP.7 provides a specific scope for capacity-building in LDCs. Among others, it recognizes the need for capacity-building in developing and enhancing technical capacities and skills to carry out and effectively integrate vulnerability and adaptation assessments into sustainable development programmes and develop NAPAs.

46. At a stock-taking exercise that was conducted by the LEG in 2007, the following capacity development needs were identified: human and institutional capacity to implement adaptation at the national level and among implementing agencies; capacity to access and/or make use of vulnerability assessment tools; and capacity and support for the design of adaptation projects.

47. Furthermore, whereas the exercise of vulnerability assessment is assumed to be fundamental, it involves extensive amount of work with continuous needs for applying assumptions. This exercise can prove difficult among LDCs with limited capacities, and hence needs to be given attention. This goes along with the subsequent steps of the NAPA process which involve ranking and prioritization of activities, and most importantly costing of the adaptation activities. For the LDCs that may wish to revise their list of priorities and project costs, there needs to be additional guidance on the ranking and costing of such activities. A difficult question is always to present a most representative analysis for the cost of adaptation to climate change while being aware that it may be difficult to dissociate from development activities.

48. One way to address capacity constraints in the LDCs could be through greater involvement of technical expert groups like the LEG, expanding from the support for the design of adaptation projects through the training workshops on NAPA implementation, together with any other appropriate materials. Capacity-building must be country-driven, addressing the specific needs and conditions of developing countries and reflecting their national sustainable development strategies, priorities and initiatives.

SUPPORT NEEDED TO FULLY IMPLEMENT NAPAS

V-E. INSTITUTIONS FOR IMPLEMENTATION

49. NAPA implementation requires coordinated interactions between communities and the institutions providing support for implementation. Support for the establishment of strong national inter-institutional arrangements for NAPA implementation planning needs to be put in place in order not to lose momentum from NAPA preparation and implementation of NAPA projects. National NAPA teams, could form the basis for the establishment of implementing institutions, and can prove helpful in the monitoring and evaluation of projects.

50. Communities alone cannot coordinate, implement and monitor NAPA projects without the existence of effective and accountable organizations and institutions. Disseminating information, building knowledge, articulating needs, ensuring accountability, exchanging goods and services, and transferring resources are essential elements for adaptation projects, and are guided by and happen through institutions. Therefore, families, neighbourhoods, communities and their local institutions must have effective links with national, regional, and international institutions, which help set the frameworks and provide many of the means in which and by which adaptation can be implemented.

51. In line with the NAPA rationale and goals, such institutions can be established within the local context using local experts as much as possible. Local institutions know their communities and would have the main responsibility for identifying the poor and vulnerable and supporting them in implementing NAPAs. An independent evaluation of the operation of the LDCF[19] highlights that engagement of consultants to do the work without proper engagement with government staff and thereby capacity development will often lead to a lack of national ownership of plans developed. NAPA financing should therefore have a large degree of flexibility and be able to deliver the specific financial and technical resources that different countries need.

52. National governments can provide enabling policy frameworks covering management, planning and service delivery functions for NAPA implementation that facilitate and support local governments and other actors' efforts. National policy coordination for NAPA, disaster risk reduction, poverty alleviation and human development should be led from the highest political and organizational level. Governments need to be ready with the appropriate social safety nets, and external technical support would be needed to strengthen institutions responsible for such systems, and national and international organizations should cooperate in this effort.

53. At the regional level, specific areas to support include linking NAPAs to addressing climate change at the level of river basins and agro-ecological zones, producing regional climate information and knowledge, designing common early warning systems for extreme weather conditions, managing shared water resources, controlling regional infectious diseases, and developing and creating various agricultural and ecosystem management systems. Regional institutions can also provide the best opportunities for identifying added values, analyzing lessons learned, and ensuring the provision of information on experiences and ongoing activities in adapting to climate change.

54. International institutions can consider playing enhanced roles in building scientific knowledge and capacity for climate change research in the LDCs.

55. Existence and functioning of all the institutions mentioned above, especially local and national institutions for the LDCs requires direct financial support.

[19] Ministry of Foreign Affairs of Denmark and GEF Evaluation Office (2009). Joint External Evaluation: Operation of the Least Developed Countries Fund for Adaptation to Climate Change.

VI. CONCLUSION

56. A total of 42 NAPAs indicating a total of 433 priority activities in the LDCs has been submitted as of 15 September 2009. These projects indicate that at least USD 2 billion is required to implement the urgent and immediate needs to address the challenges of climate change in LDCs, and given the passage of time since completion of most of the NAPAs, the cost is even expected to be higher.

57. Besides financial support, NAPAs indicate human and institutional capacity to implement adaptation at the national level and among implementing agencies, capacity to access and/or make use of vulnerability assessment tools, and capacity and support for the design of adaptation projects as integral elements of a package of support to fully implement urgent and immediate priorities as identified by the NAPAs.

ANNEX

Table A-2. **Breakdown of NAPA project costs based on four broad categories identified at the project identification form preparation level (United States dollars)**

Country	Project area	Total cost	Adaptation solutions component	Policy, capacity building, and public awareness	Knowledge management	Project management
Benin	Agriculture and food security	3,100,000	2,560,000	0	270,000	270,000
Burkina Faso		2,900,000	1,660,000	510,000	519,500	210,500
Cambodia		1,850,000	911,000	608,000	176,750	154,250
Democratic Republic of Congo		3,000,000	1,900,000	500,000	400,000	200,000
Eritrea		3,314,891	2,611,781	449,610	8,000	245,500
Lao People's Democratic Republic		4,445,450	2,150,000	1,845,450	200,000	250,000
Malawi		3,000,000	0	0	0	0
Mali		3,000,000	2,050,000	500,000	350,000	100,000
Niger		3,500,000	2,188,263	956,842	117,000	237,895
Samoa		1,911,000	1,634,000	0	70,000	207,000
Sierra Leone		2,644,800	1,900,000	504,800	0	240,000
Sudan		3,300,000	2,300,000	400,000	300,000	300,000
Zambia		3,450,000	2,300,000	500,000	300,000	350,000
Bangladesh	Coastal zones and marine ecosystems	3,300,000	2,782,375	43,200	143,000	331,425
Djibouti		1,950,000	1,395,000	355,000	0	200,000
Guinea		2,970,000	1,700,000	700,000	300,000	270,000
Haiti		3,500,000	1,850,000	980,000	400,000	270,000
Kiribati		2,900,000	2,500,000	150,000	0	250,000
Liberia		2,900,000	1,705,000	660,000	260,000	275,000
Maldives		4,250,000	2,500,000	1,300,000	100,000	350,000
Tuvalu		3,000,000	2,000,000	400,000	400,000	200,000
Yemen		4,500,000	2,300,000	750,000	1,200,000	250,000
Bhutan	Early warning and disaster management	3,445,050	3,070,050	295,000	20,000	60,000
Gambia		895,000	655,000	155,000	0	85,000
Lesotho		1,545,000	600,000	800,000	0	145,000
Rwanda		3,110,000	2,250,000	300,000	250,000	250,000
Sao Tome and Principe		3,250,000	2,950,000	0	0	300,000
Vanuatu		2,577,272	1,400,000	1,000,000	0	177,272
Cape Verde	Water resources	3,000,000	1,600,000	600,000	500,000	300,000
Comoros		3,300,000	1,500,000	1,000,000	500,000	300,000
Guinea Bissau		4,000,000	2,350,000	650,000	600,000	400,000
Mauritania		3,500,000	2,900,000	300,000	0	300,000
Total costs (USD)		**97,308,463**	**62,172,469**	**17,212,902**	**7,384,250**	**7,478,842**
Average costs (USD)		**3,040,889**	**1,942,890**	**537,903**	**230,758**	**233,714**
Percentage costs (%)		**100.0**	**63.9**	**17.7**	**7.6**	**7.7**

Note: The data is based on the analysis of 32 project identification forms (PIFs) submitted by least developed countries (LDCs) to the Global Environment Facility (GEF) for funding under the Least Developed Countries Fund (LDCF) as at 15 September 2009.

For further information contact

Climate Change Secretariat (UNFCCC)
Martin-Luther-King-Strasse 8
53175 Bonn, Germany

Telephone +49. 228. 815 10 00
Telefax +49. 228. 815 19 99

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