

Annex X Part E
NAPA process country case study – Sudan

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List acronyms

AF – Adaptation Fund
CBOs – Community-Based Organizations
CCA – climate change adaptation
COP – Conference of Parties
FNC– Forests National Corporation
HCENR: Higher Council for Environment and Natural Resources
DFID – UK Department for International Development
GEF: Global Environment Facility
GO – governmental organization
LDC – Least Developed Countries
LDCF – Least Developed Countries Fund
MEAs – Multilateral Environmental Agreements
NAPA – National Adaptation Program of Action
NDDU– National Drought and Desertification Unit
NGO – Non-Governmental Organization
ODA – Overseas Development Assistance
PPCR – Pilot Programme on Climate Resilience
SEI_B Stockholm Environmental Institute-Boston
UNFCCC – United Nations Framework Convention on Climate Change
UNDP – United Nations Development Programme
UNEP – United Nations Environment Programme
PRSP – Poverty Reduction Strategy Paper

1. Introduction

The Sudan NAPA was completed and submitted to the UNFCCC in July 2007. It was implemented by the UNDP and its development was coordinated by the Higher Council for Environment and Natural Resources (HCENR). The Sudan's NAPA provided an assessment of likely impacts of climate change on several sectors including decreasing annual rainfall, increasing rainfall variability, and increasing average annual temperatures – all of which contribute to drought conditions in many areas.

By the end of 2008 the NAPA Follow up project started after the completion of NAPA with the aim of developing a number of identified priority options into full projects for funding.

1.1 Purpose and objective:

This report presents the results of a case study for evaluating the Least Developed Countries Fund (LDCF), drawing upon secondary data and key informant interviews.. The purpose of the LDCF evaluation case studies is to assess and evaluate the means by which the LDCF supported CCA planning in Sudan focusing mainly on The NAPA products/process and catalytic effect and using eight criteria (relevance, efficiency, effectiveness, impacts, sustainability, coherence, complementarity and coordination). A key objective is to identify and reflect the perspectives of a range of stakeholders that have taken part in the planning, development or implementation of national CCA planning, the NAPA and post-NAPA phases in particular. The case studies allow the examination of country specific aspects of the LDCF performance.

1.2 Methodology

The case study was conducted from the 1st to 30th Of April 2009, by a team consisting of:

- Balgis Osman Elasha – National Expert (Senior Researcher, Higher Council for Environment and Natural Resources (HCENR));
- El Amin Sanjak –Prof. University of Khartoum – A member of the NAPA Team of Experts ;

Simon Anderson – Evaluation Team Leader – provided guidance on the methods to be used and the reporting format.

The case study employed interviews with relevant stakeholders including government representatives, NAPA team and NAPA follow up activities. Evidence and information was gathered from documents, interviews, and discussions. Evidence was sought according to the evaluation areas: Process, product and catalytic effects; and evaluation criteria – relevance, efficiency, effectiveness, results/ impacts, and sustainability.

Interviews and discussions were conducted with: Government officials (GOs); GEF Agency staff, UNDP/GEF; and, NAPA experts from universities and research institutes. Information collected from different stakeholders is analyzed to get ideas about the perspectives and views carried by each group. Further literature and documents including the NAPA document (HCENR, 2007) and NAPA Follow Up Report (not officially released yet)

were reviewed and used for checking evidences and as support material. Stakeholders interviewed are shown in Annex 3.

The information and opinions provided by different respondent were summarized and evaluated against major criteria. Evidences were compared and contrasted across stakeholder groups and areas of concurrence and disagreement were identified.

2. Background

2.1 Country context

Sudan is the largest country in Africa. Its total area is over 250 million hectares, much of which comprises arid lands and desert. Like many of its neighbors, Sudan is a country of inherently fragile ecosystems, frequent droughts, ongoing desertification, and as a result, pressing challenges to address the national priorities of food security, water supply, and public health. In spite of its diverse ecological zones, but more than half the country can be classified as desert or semi-desert, with another quarter, arid savannah. A large portion of the country's land area is considered highly sensitive to changes in temperature and precipitation. These changes in temperature and rainfall patterns represent a major threat to food security in Sudan's agriculture-based economy. These changes often do not show strong signals, but the well-observed trends of decreasing annual rainfall and increased rainfall variability have contributed to drought conditions in many parts of Sudan (Hulme, 2001).

Sudan along with other countries in the African Sahel Such as Niger and Ethiopia experienced heavy rains and flash floods during the last ten years resulted in devastations with considerable impacts on the environment, human activities, and regional economy (for more information on climate variability in the African Sahel see box 1 in annex 2 / climate variability and change in the African Sahel). It had also showed that the traditional coping strategies were completely inadequate for dealing with these climate variability problems. Even without climate change, the agriculture in Sudan faces serious challenges including land degradation, low technology, overgrazing, and competition of resources, rural-to-urban migration, low economic development and lack of access to climate information. This situation emphasizes necessity for improving the adaptive capacity of the people to deal with new climate change challenges and for making use of the opportunities that could be brought about by the projected increase of rainfall and hence, water availability.

Changes in food production are likely to significantly affect health in Sudan. Moreover, the increasing frequency and severity of extreme weather may affect the distribution and seasonal transmission of several vector borne infectious diseases (such as malaria, dengue and schistosomiasis) (WHO, 2004, HCENR, 2003).

Throughout much of the country, water resources are limited and soil fertility is low These underlying conditions coupled with frequent climatic shocks and a number of socio-economic stresses – and apart from taking adaptive measures are ,creating a situation in which Sudan is highly vulnerable, (DFID, 2008). The country's inherent vulnerability may best be captured by the fact that food security in Sudan is determined primarily by rainfall, particularly in rural areas, home to 70% of the total population. Sudan will become even more vulnerable in the face of future climate change, where projected changes in temperature

and precipitation could cause shifts in the precarious distribution of its ecological zones, in the productive capacity of rain fed agriculture, and thus, in the security of the nation's food supply. In countries where food insecurity can lead to massive dislocation and loss of life, food security becomes synonymous with human security in general (Osman-Elasha, 2008).

Fifty one percent (about 1,259,440 square kilometers) of Sudan's land area between latitude 10 to 18 degrees north is affected by desertification ranging from light to severe. This area is characterized by extreme arid conditions continuously fed by recurrent drought, land degradation, deforestation, soil nutrient loss. Studies conducted by National Drought and Desertification Unit (NDDU) showed the shift of the rainfall isohyets during the period 1930-1990 from north to south indicating the southward expansion of arid condition (HCENR, 2003). The prevailing conditions of poverty, environmental degradation and climatic variability expose Sudan to a number of pressing challenges, particularly related to food security. Depletion of forests threatens species, human communities, and reduces other valuable services forests provide. Each of these examples represents the type of current environmental concerns that could be exacerbated under climate change conditions.

2.2 Sudan's climate

The North (Lats. 17 – 22 North) is arid, where agricultural production is confined to small areas along the banks of river Nile. The Northern Central (Lats. 13N to 17N) has semi-arid climate with higher rainfall, it is the main region for commercial agriculture, both irrigated and rain-fed. Southern Central Sudan (Lats. 8N to 13N) is humid savannah with more than 800mm of rainfall suitable for rain-fed products such as rice, Sugar Cane, etc. Southern Sudan (Lats. 4N to 8N) with rainfall exceeding 1000 mm (High rainfall Savannah) suitable for various equatorial crops, tea, coffee, tobacco, pine apple, mango, etc.

3 LDC Fund support of the NAPA process

The case study assessed the performance of the LDCF in Sudan across the NAPA and post-NAPA phases by examining the relevance, efficiency, effectiveness, impacts & results and sustainability of the NAPA process, product and catalytic effects. The assessment was made by drawing on the perspectives and evidence offered by the stakeholders interviewed (see Annex 3 for a list of stakeholders interviewed). For ensuring sustainability of the NAPA, there is an agreement that the NAPA process must essentially build on actual needs, options and priorities identified by the local stakeholders and on a country-driven basis.

The information that makes up the assessment here is presented under each evaluation area for each criterion. In the ensuing sub-sections, the main evaluation question pursued for the criteria/ area is stated and then the most significant perspectives revealed during the case study are presented and a summary made. The most significant perspectives were identified through analysis of evidence by the Evaluation Team.

3.1 Vulnerable sectors identified under the NAPA

The traditional sector dominated by rain-fed agriculture, which is basically subsistence production based on shifting cultivation and sedentary animal husbandry. Rain-fed crop production is mostly practiced through shifting cultivation with traditional technology, using manual implements and is generally characterized by low productivity. Main crops grown are Sorghum, millet, sesame, groundnut, melons, hibiscus sabdarifa, legumes and

vegetables. The extreme rainfall variability has made this group of traditional farmers highly vulnerable to climatic variability; as a result they have increasingly expanded into traditional grazing lands. The complete dependence on rainfall constitutes the main hazard, especially in recent times, due to the high variations in volume, distribution and spans between showers, all of which are hardly predictable, in spite of the great efforts by the Meteorological Authority and other regional institutions for providing seasonal rainfall forecasts.

3.2 Institutional framework

In terms of institutions for dealing with climate change issues, the Sudan's administrative setup is shown in box 2 in annex (4). Institutionalization of Climate Change adaptation activities was among the immediate objectives of the climate change Enabling Project in Sudan (1998-2003). The project titled, "Capacity Building to enable Sudan's Response and Communications to the UN Framework Convention on Climate Change (UNFCCC)," is a GEF/UNDP supported project aims at building Sudan's capacity to prepare Sudan's communication to the UNFCCC. Specifically, it aims to strengthen institutional networks, develop Greenhouse gases GHG inventory assessments, create awareness, establish policy dialogues and develop and evaluate climate change mitigation measures

The strategies for achieving the above mentioned objectives included *inter alia*; building human and institutional capacities within the relevant institutes and giving more emphasis to issues that are perceived as having environmental importance as well as development priorities. The national communication report highlighted agriculture, water and health as the highest priority sectors where urgent and immediate action is needed. Sudan's National Adaptation Programme of Action (NAPA), submitted to the UNFCCC in July 2007, identified urgent adaptation initiatives in these sectors to reduce the increasing vulnerability of the rural communities to current and future climatic risks. The NAPA was developed based on the LDCF guidelines, GEF/C.28/18, 2006), and it employed a consultation process to identify the interventions representing the *highest priority* areas for investment. The focus of the NAPA interventions is the improvement of food security through building the adaptive capacity of the rural population in the country, particularly rain fed farmers and pastoralists. The NAPA project stressed the need for strengthening local adaptive capacity, institutions and policies for managing climate related threats and for financing pilot demonstration activities.

The NAPA development and organizational setup have largely benefited from and built on the basic institutional structures and capacities created under the 1st, climate change project, through employing the same technical committee and assessment teams under the following organizational structures:

a. ***NAPA Project Coordination Team (NPCT):*** *mainly drawn and* hosted within the HCENR, this is also the UNFCCC Focal Points. The NPCT consists of two Coordinators who are responsible of managing and supervising all the activities leading to the development of the NAPA. They are also responsible for the management of the implementation of activities at different levels (from national to states) and networking with all partner institutions and stakeholders (ministries, universities, research centers, NGOs and CBOs).

b. **Steering Committee:** consists of high-level policy makers and government officials. The

Steering Committee members provide strategic oversight, establish and prioritize overall policy directions and guidance to the NAPA Teams.

c. Project National Technical Committee (NTC): chaired by the Secretary General of the HCENR, and consist of experts and technical staff representing all relevant sectors (water, health, agriculture, planning and finance etc) in addition to research, academic and non-governmental organizations (NGOs). The (NTC) provides technical advice to the project teams and helps maintain communication and dialogue. NTC members have been actively involved in the technical supervision of the different processes as well as in assessing adaptation options and priorities. The NTC continued functioning after finalizing the NAPA document, when they later formed the NTC for the NAPA Follow Up project.

d. The State-Level Project Coordination Team: are formed in each of the five ecological regions selected for NAPA interventions (see annex 1 for the map). The teams consist of technical staff from the relevant sectors, mainly responsible for carrying out all the activities under the NAPA at the state and the coordination with stakeholders at locality levels. The State level teams with members representing different disciplines were able to provide for an integrated assessment of the various vulnerable sectors and proved very effective in undertaking comprehensive grass roots consultation and continuous dialogues. . They also help in linking National Project team with state-level policy makers.

3.3 Sudan Administrative and legislative structure:

The basic feature of Sudan legislation pertaining to environmental issues is that it is uni-sectoral based. The greatest proportion falls in the agriculture, forestry, fisheries, public health and animal resources, which represent the major vulnerable sectors identified under the NAPA. At the present time the line ministries with direct mandate on various aspects of the environment and natural resources are Agriculture and Forests, Animal Resources, Internal Affairs, Energy and Mining, Irrigation and Water Resources, Health and Industry.

The HCENR, created in 1992, with a mandate of *inter alia* coordinating environment related activities, and developing policies and strategies. The Secretariat hosts the National Biodiversity Strategy and Action Plan (NBSAP), the Sudan National Action Plan to Combat Desertification (NAP) in collaboration with the Ministry of Agriculture and Forests (MAF), the implementation of the UNFCCC, UNDP Capacity 21 project and the formulation of the national strategy for sustainable development. It is responsible for integrating environmental concerns in the various sectoral plans and policies. The HCENR constitutes ministers of all the above mentioned lined ministries and is chaired by the Minister of Environment and Physical Development (MEPD). In spite of all the efforts by the HCENR to effect coordination, but still the cross-sectoral integration is typically difficult to achieve, especially when various sector institutions are in the process of building their individual capabilities and are competing for resources for doing so. Moreover, legislations dealing with natural resource management have several shortcomings, in addition to the duplication of responsibility between federal and state institution.

Some steps are taken to incorporate environmental concerns in the development planning e.g. the development and implantation of the Comprehensive National Strategy (CNS). This was a 10-year (1992 - 2002) Strategy that provided the policy directions of all economic and social sectors. The Strategy emphasized the protection and improvement of environment, which will lead to a balanced development, unfortunately the strategy has limited success in

implementation.

A newly launched agricultural development plan referred to as Sudan's "Green Mobilization" (El-Nafra) and is realized in a Five-Year Strategic Plan (2007-2011) to improve the performance of the agricultural sector and meet development targets. A strategic objective in the Agricultural Nafra is poverty reduction and equitable economic growth through livelihood improvement, food security, sustainable natural resources management, and self reliance. This Nafra depends on nine key indicators of success: the creation of policy-environment conducive to production, capacity building, sustainable and rational land use, adequate support services for agricultural research and development, the development and modernization of farming systems, and the protection and development of the natural resources.

4. The NAPA process and output

The development of the NAPA in Sudan used information on vulnerability and adaptation that has been gathered through intensive consultation and interviews. The ideas and views expressed by different stakeholders reflected major concerns regarding vulnerability in various aspects of their livelihoods, with emphasis on three very much interconnected areas: food security, water and health.

Experts drawn from the different ecological zones used the information and views to prepare reports on the vulnerability situation over each ecological region as well as highlighting the most urgent adaptation need. The priority interventions identified under the NAPA process for enhancing food security situation under current variability and future changes include the provision of permanent water supplies through application of water harvesting technologies, increase agricultural productivity through intensification and the use of heat and drought resistant crop varieties, introduction of new cash crops to improve economic returns. Other measures include the overall improvement of the production environment through the introduction and improvement of small-scale irrigation techniques, shelter belts to reduce the wind erosion and desertification, afforestation of water canal sides, increasing the green vegetation cover and the rehabilitation of rangelands for sustaining pastoral production and enhancing livestock resilience. A validation process was conducted by the NAPA teams to verify the potential effectiveness of these measures in improving the community' livelihoods and reduce their vulnerability. The validation process was also conducted by means of consultation with all the stakeholder groups across the various ecological zones of Sudan.

4.1 The NAPA Follow up project

The goal of this project is to contribute to reduce the vulnerability and increase the adaptive capacity of Sudanese people to climate change impacts. Following the completion of the National Program of Action (NAPA) for Sudan, the highest priority area for follow-up interventions are those that improve food security. The proposed project presents a first step towards a programmatic approach to adaptation in the country and is consistent with guidance for the LDCF (GEF/C.23/18, May 12, 2006) and aligned with funds earmarked for strengthening local adaptive capacity, institutions and policies for managing climate related threats and for financing pilot demonstration activities. The objective is to implement an urgent set of adaptation-focused measures that will minimize and reverse the food insecurity of small-scale farmers and pastoralists, thereby reducing vulnerability of rural

communities resulting of climate change, including variability. The project has a major focus on building resilience and adaptive capacity of rural communities relative to their agricultural and water resource management practices, and relative to current and future climate risks.

The LCDF (200K) under the NAPA follow up project was used to develop the selected priority projects for implementation. The project employed a programmatic approach to address adaptation in Sudan and the selected program has five main components addressing adaptation concerns in the five ecological zones with each component aiming at achieving three major outputs, that are closely linked to food security, including (a) water resource management; (b) rainfed agricultural production, (c) rangeland productivity.

5. Why has the LDCF performed the way it has?

The LDCF evaluation has mainly considered the following aspects:

- **Process**, with a focus on performance of LDCF management, how was the fund implemented in the preparation of prepare the NAPA, whether it has built on national development plans – does it involve all stakeholders etc.
- **Product, which considers the** relevance of the LDCF product of the LDCF. The relevance of the identified NAPAs priorities and if they are expected to accommodate the national adaptation requirements under different climatic challenges..
- **Catalytic effects** if the LDCF has contributed to the improvement of adaptation planning and the ability of stakeholders to identify and prioritize their adaptation needs and options. It also considers if and how the LDCF has facilitated the national capacity to plan and develop adaptation measures addressing different sectors.

5.1 Relevance

Product – The relevance & feasibility of NAPA priority activities to address climate change adaptation?

- The NAPA products and proposed priority adaptation projects are very relevant compared to the actual local and national needs as they reflect the perceptions of the most vulnerable groups.
- Additional cost has only been assessed for priorities I.e. the most urgent needs, however, the consultation process indicated that many other basic needs were not reflected in the NAPA document and consequently not assessed in terms of costs – this is found to be disappointing to those people who were told to restrict their final selection to top priority options only, leaving their unselected options for future consideration by other means of investment or funding programs.

Product – the relevance & feasibility of NAPA priority activities to address CCA?

- Some of the outputs from the NAPA process are integrated in the national development strategies specifically the identified project ideas (50% agreement). This represents a positive development, since Sudan lacks the systematic approach for integration among different sectors and disciplines. So and compared to many other environmental strategies the NAPA is relatively better situated in the national development planning.

Catalytic effects – climate change adaptation mainstreaming; Rationale of separate climate change adaptation (CCA) finance mechanisms; Overlap & coordination of CCA funding mechanisms; Relevance to and inclusion in national development strategies?

- The NAPA follow-up project is partially embedded in baseline activities with its focus on reducing the impacts of climate change and variability; it may contribute to improve the effectiveness of on-going development initiatives.
- The overall score of the NAPA products and process' relevance compared to

actual needs ranges between highly satisfactory to satisfactory

5.2 Efficiency

Process-main lessons learned from the NAPA process with respect to efficiency?

- The funding allocated to the NAPA development was considered small compared to the size of Sudan and the diversity of ecological conditions and subsequent vulnerabilities (from tropical in the south to desert in the North). However, there is high agreement that the project has succeeded – with the involvement and support of a wide range of stakeholders including the state governments (in kind support) – to create awareness and capacity though the organization of a large number of workshops and consultation sessions.

Product-view on the cost-efficiency of producing the NAPAs, outputs achieved compared with input from LDCF and other sources.

- Many output have been achieved in spite of the limited LDCF received, this indicates the cost-effectiveness in the use and allocation of funds. Beside the preparation of the NAPA documents, an important output was the awareness created at the different levels particularly the grass-roots and policy makers at state levels. However, high expectations have been raised as a result, particularly in anticipation of improving livelihoods, food security, health provisions and conflict reduction. A situation that warrant due considerations in allocating funding for implementation, very high agreement.

Catalytic effects-accessibility of LDCF funding? time frame from project idea to project approval in the GEF project cycle, management of the LDCF by GEF and Implementing Agencies? Governance of the LDCF, scope for better synergies of LDCF with other bilateral and multilateral ODA funding – potential for synergy-

- The project time frame is rather long taking into consideration that the NAPA is meant to address the most urgent and priority needs. This is the understanding of all stakeholders who participated in the preparation process and consequently they are expecting rapid responses. The time lag between the preparation of the NAPA and the final approval – which is rather lengthy – may not help in establishing credibility among stakeholders particularly local communities.
- Information on the governance of the LDCF, including the internal roles between the COP, GEF and the Implementing Agencies, and their roles in relation to the LDCs is known better to NAPA coordinating team at the focal point. The current situation with respect to the negotiation position by LDCs in the UNFCCC process demanding a new roles and modalities for the governance and management of adaptation funds to ensure a smoother and faster flow of funds and more flexibility related to access. Key to this issue would be the exchange of related information among stakeholders and regional partners and awareness creation among the national stakeholders to broaden participation since NAPA planning and implementation involve partners at different levels from regional to national to local community ..
- Better synergies with other bilateral and multilateral ODA funding development programmes and projects could be achieved through more coordination between institutions at national, regional and international levels. Currently each fund is planned

and administered separately and many environment and development related programs are considered in isolation from each other and from NAPA.

- The efficiency of the NAPA process and catalytic effect is rated as very efficient in terms of cost allocation to moderately effective in terms of accessibility of funds.

5.3 Effectiveness

Process – Extent to which adaptation activities and priorities identified/ the main lessons learned from the NAPA process, i.e. with respect to effectiveness? Has the NAPAs/NAPA process led to improved institutional capability and effectiveness in addressing adaptation to climate change?

- In order for NAPA process and products to effectively reduce the vulnerability of local communities in Sudan, it aimed at involving various stakeholders right from the start, taking into consideration that capacity building is a dynamic process that should be adjusted according to the changing national and local circumstances. The success of the NAPA Projects implementation will thus depend on the level and timely response to changing capacity needs at all levels. There is a general agreement that responses by funding organization is slow, lengthy and does not match the urgency expressed by vulnerable community for rapid implementation of actions on the . Desired results are likely to be achieved if these issues and concerns are seriously addressed during and after the NAPA implementation.
- Funding is not seen as sufficient and there is a need for the provision of more funds for training and capacity building specifically related to networking, information development, communication and networking.

Product – How effectively has the NAPA report contributed to bringing about urgent & immediate adaptation interventions?

- The NAPA project contributed to a better understanding of the vulnerability situation in Sudan and the identification of priority areas of interventions presented in the form of project ideas. The launching of the NAPA Follow-up project, with the objective of developing the project ideas into full projects provided a good opportunity for capturing all the lessons and best practices learned during the phase of NAPA preparation. However, the level of commitment by international organizations as well as by the national government institutions is still not seen as a strong enough..

Catalytic effects – Have NAPAs resulted in individual NAPA follow up projects or a further inclusion of adaptation priorities in national and sector policies, strategies and plans?

- Generally, the funding for the NAPA Follow up was perceived as comparatively better accessed within a shorter time. However, there is a general consensus among respondents that funding organizations should take serious steps to develop a more simplified procedures and an accelerated process for accessing funds, particularly for the LDCs where the time factor largely matters. They also stressed the need for building better understanding and capacities around these issues by national institutions and experts.

5.4 impacts

Process – main lessons learned from the NAPA process with respect to impacts? What impacts did the process have and why?

- So far the NAPA project is still at the planning stage. However the process of NAPA development brought about a number of impacts in terms of information generated and awareness created at different levels and scales, (more than 90% agreement). The planning process resulted in the identification of a number of adaptation projects, some of them are then selected for further development under the NAPA Follow up project for future implementation. The selection of these specific projects is based on the criteria of their having the most favorable conditions for success such as the selection of a water harvesting project in a drought-prone region of Sudan. By choosing such a project, which is expected to have a tangible impact on the community's livelihoods, the NAPA team hope that it will set a good example for adaptation and ensure replication (high agreement). A number of stakeholders expressed their concern regarding the lack of actual project impact on the ground indicating that the process from NAPA development to implementation is taking longer than expected.

Product – functional framework for issues related to adaptation to climate change? What impacts have this had/is this expected to have?

- A functional framework has been established in Sudan to deal with issues related to climate change adaptation. The Climate Change Unit within the HCENR is a permanent unit with the mandate of supervising researches and studies related to climate change in coordination with research and academic institutions.
- The unit is also coordinating the work of different adaptation-related technical committees and expert teams at the national and state levels. Never the less, there is a need for the strengthening of the HCENR in order to effectively perform its coordination mandate and achieve the necessary integration between sectors and institutions.

Catalytic effects – NAPA process links to Disaster Risk Reduction (e.g. Hyogo Framework for Action)?

- Generally, the government of Sudan (GoS) is showing a good level of commitment towards addressing a number of NAPA related issues such as food security, disaster risk reduction and poverty alleviation which all are closely linked to adaptation. However, there is a lack of clear agenda as to how this commitment is going to be translated into actions additionally, each of these initiatives has developed and is implementing a separate framework which is not necessarily linked to or integrated with climate change adaptation.

5.5 Sustainability

Process – Sudan ownership of NAPA process and outcomes and commitment to follow-up by Sudan and development partners? Main lessons learned from the NAPA process with respect to sustainability – are priority adaptation projects identified likely to be sustainable?

- There is a general agreement that most of the adaptation projects identified could likely be sustainable – mainly because they are addressing the actual vulnerabilities of the people and reflect their real interest as well as the priority areas for interventions.

- A number of additional activities are identified as necessary to ensure the sustainability of adaptation measures. Those are mainly related to improving managerial skills and technical capacity. At the local level, the sustainability of a project depends on the continuous provision of technical support by means of a committed extension and skill development programs (medium agreement).

Product – access to adequate financing for the priority adaptation projects identified under the NAPAs?

- Available funds are seen by most as inadequate. Additional funds will be required to implement all adaptation measures identified by the communities, ensure sustainability of the activities and the replication of activities into other areas ..

Catalytic effect-adequacy of assessment procedure and approval by GEF of the PIFs for the proposed implementation projects / sufficiency of the awareness of the NAPA process and outcomes among decision makers, line agencies, media and civil society

- It is widely acknowledged that the GEF has always been implementing very detailed and lengthy procedures for assessment and approval of proposed project. This situation is not accepted in relation to NAPA because it is perceived by many as an emergency case that doesn't stand delays. So, it is hoped that these procedures would not hinder the timely implementation of NAPA.
- It is well recognized that the NAPA process succeeded in creating good awareness among policy makers and community members. This is highlighted as essential for garnering their continuous commitment and support. It is also perceived that by focusing on enhancing food security, and improving rural livelihoods , the project provide multiple benefits addressing short term basic needs of rural communities and build their coping capacity in the face of long term climate risks .

5.6 Coherence

Process – What is done to ensure that the LDCF funding is provided in accordance with both adaptation needs and development priorities?

- The involvement of all stakeholders has been repeatedly mentioned in relation to coherency and integrity of the NAPA process. Creation of functional structures and a continuous follow up process are considered as important element for ensuring that the LDCF funding is provided in accordance with both adaptation needs and development priorities as well as avoiding negative impacts of development on adaptation (mal-adaptation), Avoiding mal-adaptation is also addressed by tapping local knowledge and revisiting past experiences (Medium agreement).

5.7 Complementarities

Process – complementarily with the national development programmes? Inclusion of development programmes vulnerable to potential climate change risks in the NAPA process

- A general agreement is that NAPA follow up projects could be considered to a large

extent complementary to the national development programmes. The NAPA project involved a number of adaptation interventions that aimed at reducing risks associated with climate change, including variability. These should essentially be integrated into development programmes that are vulnerable to the potential climate change risks such as agricultural plans at the local and national levels. NAPA is also closely linked to the key goal of poverty reduction strategy,.

5.8 Coordination

Process – coordination among Implementing Agencies and with other ODA development partners / coordination and consultations within the involved stakeholders, / comparing lessons of NAPA and LDCF with other GEF enabling mechanism

- It is widely recognized that sufficient vertical and horizontal integration was made during the NAPA development process among different stakeholders including implementing agencies such as the HCENR, UNDP, state ministries along with other ODA development partners. The process also involved coordination and wide-scale consultations within the involved stakeholders, *inter alia* within recipient government institutions and with non-governmental organizations. Technical support was provided to the project by Stockholm Environment Institute – Boston (SEI-B).

6. Main findings relevant to evaluation of the LDCF process and outcomes

Sudan's National Adaptation Programme of Action (NAPA), submitted to the UNFCCC in July 2007, highlighted agriculture, water and health as the highest priority sectors where urgent and immediate action is needed in order to reduce the increasing vulnerability of the rural communities to current and future climatic risks.

The Higher Council for Environment and Natural Resources (HCENR) coordinated the preparation of the NAPA document and the NAPA Follow up project. In spite of the great efforts by the HCENR in coordinating and harmonizing the different environment-related plans and strategies but the cross-sectoral integration is typically difficult to achieve, especially when various sector institutions are in the process of building their individual capabilities and are competing for resources for doing so.

The NAPA document highlighted the climatic risks associated with climate change in Sudan including climate variability and extremes in term of drought and floods in addition to rising temperature and their potential devastating impacts if no adaptation actions are implemented in time.

It indicated that the complete dependence on rainfall constitutes the biggest challenge in rain fed areas, especially in recent times, due to the high variations in volume, spread and spans between rainfalls. All of these factors are hardly predictable.

The experiences of drought as well as heavy rains and flash floods in Sudan during the few decades had resulted in considerable impacts on the environment, human livelihoods and economic development. It had also reflected the inadequacy of traditional coping strategies for dealing with increasing climate variability problems. Beside climate variability and change, the agriculture in Sudan faces serious challenges including land degradation, low technology, overgrazing and competition of resources, rural-to-urban migration, , low economic development and lack of access to climate information. This situation emphasizes the urgent need for improving the adaptive capacity of the people to deal with new climate change challenges and to make use of the opportunities that could be brought about by the projected increase of rainfall (Brooks, 2004). Although the opportunities associated with increasing rainfall has not been captured or considered in the NAPA document which focuses mainly on the drying scenario.

Initially the NAPA process identified 32 priority adaptation initiatives in the agriculture, water and health sectors to address vulnerability of rural communities to climate change hazard.. In addition a number of national programs and initiatives have been developed to address some of the urgent problems such as poverty and social stability. The highest priority area for the NAPA Follow-up project are those interventions that improve food security including ; provision of permanent water supplies through application of water harvesting technologies, increase agricultural productivity through intensification and the use of heat and drought resistant crop varieties, introduction of new cash crops to improve economic returns.. The proposed project will be a first step towards a programmatic approach to adaptation in the Sudan. However, inadequate financing has been considered by most stakeholders as a major concern to the implementation of these measures.

Assessment of the performance of the LDCF in Sudan across the NAPA and post-NAPA phases was conducted through examining the relevance, efficiency, effectiveness, impacts & results and sustainability of the NAPA process, product and catalytic effects. The results showed largely positive responses by the various stakeholder groups and a high degree of satisfaction by the process and the outcome. High expectations are being raised which necessitate the commitment by funding organization for providing sufficient funds and in due time to meet their aspirations and maintain their confidence and cooperation.

The LDCF supported the development of the Sudan NAPA by providing a USD 200k grant through UNDP as the implementing agency. This fund has largely assisted in initiating a process of institutional buildings in terms of wider awareness and to a lesser extends technical capacities. However, the LDCF fund was not enough to provide for equipment and tools necessary for sustaining communication and information flow. In addition to that the current administrative structures of government institutions related to natural resources are continuously changing, with high percent of turn over. This of course has a negative impact on the process of institutional building. The number and qualifications of staff involved in climate change at any time are inadequate.

7. Lessons learned

The main lessons learned from the NAPA process with respect to efficiency is that to achieve the ultimate objective which is to improve the coping capacity of the most vulnerable groups, it is essential to start by investing in awareness and capacity building. With the financial support of the LDCF, the NAPA Follow-up project managed to build on awareness created by NAPA and further involve relevant stakeholders, enhancing local knowledge and capacities. This is expected to facilitate the future scaling up and up and replication of viable adaptation measures.

There is a general agreement that the methods and processes recommended in the development of NAPA were relevant because it is based on a number of basic principles and standard procedures which are relevant when assessing vulnerability and adaptation in a national context. These procedures include the country-wide consultation process conducted at different scales and level; a two-way communication and dialogue between multidisciplinary experts and stakeholder groups and more importantly the creation in of an institutional structure that is capable of working in harmony and can bridge the gap between communities at local levels and policy makers (81% agreement). However, the essential part in assessing relevance is not considered because it depends more on the implementation where real results and outcomes could be seen and judged.

It is also agreed that the NAPA process and product is likely to achieve acceptable progress towards *most* of its major relevant objectives if implemented with flexibility, in due time and its activities replicated and expanded to other areas of similar settings and conditions within the Sudan.

The accessibility question is a major concern for many in Sudan. Accessing funds from GEF/UNDP is always seen as a lengthy process that requires going through complicated procedures, starting by the preparation of a project proposal following a specific format which in turn should pass several revisions before getting the approval of UNDP/GEF and finally the approval and endorsement by the national counterparts – a situation that limited

the accessibility to GEF-funded programs and initiatives.

A number of stakeholders requested that the management procedure of the LDCF by GEF/UNDP to be made publicly available or accessible to them. Hence, it is important strengthen the communication channels between the GEF, the HCENR and the stakeholders. It is also essential to support and empower the coordinating process through the HCENR (focal point) and the regional coordinating units to facilitate the dissemination and exchange of information, and to support the development of technical capabilities and skills and ensure efficient implementation and integration of adaptation into sustainable development programme and action plans, as well as enhancing public awareness.

It is essential to develop and facilitate cooperation and synergy between the different development initiatives and adaptation strategies, since they could have the same ultimate objective – human well being. . The LDCF could be merged with any of these programs when they reach down to the national and local levels. However, more work is needed to better coordinate the development initiatives at local levels and the funding mechanisms at the international levels in a manner that ensures harmonization, timely flow and accessibility to developing countries in general and LDCs in particular.

Sustainability of interventions is considered as an integral part of NAPA development and future implementation. Some of the most important sustainability element that have been considered include the adoption and ownership of the proposed NAPA projects by the stakeholders which is achieved through participation and involvement in all the NAPA planning and implementation process. Major actors responsible for project sustainability include: the local communities, state-level authorities (Ministries of Agriculture, Animal Wealth, Irrigation, and finance) in addition to national and state level NGOs CBOs and donors.

It is relevant to compare lessons of NAPA and LDCF with other GEF enabling funds for MEAs, such as biodiversity and desertification. It is indicated that their funding has been limited and far below the amount required to achieve tangible results on the ground. It has also been proved that in these cases insufficiency of funds had interrupted the implementation process, and raised doubts about its sustainability.

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9. Annexes

Annex (1) Map of Sudan showing the five NAPA ecological zones



Annex (2) Climate variability and change in the African Sahel.

Box 1-Climatic variability and change in the African Sahel

- General Circulation Model-based climate change scenarios are generally consistent in indicating temperature rise across Africa but show considerable variation in both the magnitude and direction of changes in precipitation (GCOS, 2006). Based on historical records, a warming of approximately 0.7°C over most of Africa during the 20th century is reported in the IPCC TAR (2001). Observational records show that this warming occurred at the rate of about 0.05°C per decade with a slightly larger warming in the June-November seasons than in December-May (Hume *et al*, 2001). Moreover, some studies have indicated that an average of a 25 percent decrease in rainfall has occurred over the African Sahel during the past 30 years. This change has been characterized by a decrease in the number of rainfall events. Regional differences in rainfall variability have been observed over Africa e.g. East Africa has displayed a stable rainfall regime, while a considerable multi-decadal variability and recent drying has been experienced over the Sahel with up to a 20 percent expected decrease of rainfall (Hulme *et al*. 2001). Hulme, 1989 stated in a paper that “until our understanding of current drought mechanisms and modelling of the effects of global warming improves, it would seem prudent for Sudan to assume a continuation of the current depleted rainfall resource into the twenty-first century”. However, recent studies using climate model for the Africa's Sahel projected an increase rainfall over the African Sahel and East Africa including Sudan, with progressive wetting and expansion of vegetation into the Sahara (IPCC, 2007, Brooks, 2004). The controversies between the models become very clear here reflecting the high uncertainty surrounding climate projection for this region of Africa. Increasing variability in terms of frequency and magnitude in this region is expected to increase its vulnerability to extreme climatic hazards including flash rains, floods or sudden dry spells, taking into consideration that people's livelihoods in this region basically depend on climate parameters such as rainfall and temperature, rendering agricultural production particularly sensitive to climate variability. The impact of an increasing rainfall can also be as damaging as the impact of drought in the Sahel, as severe hazards could result from floods, flash rains, river floods etc. This is particularly critical in Sudan where no effective early warning mechanisms are in place.

Annex (3) Name of NAPA stakeholders interviewed

Name	Position in relation to the LDCF/NAPA/
1 – Dr.Mutasim Nimir	NAPA – follow up PPG coordinator
2 – Fatima Yousif	Member of the steering committee following up the implementation of the draft National Program of Action for Adaptation to Climate Change
3 – Kamil Ibrahim	Member of the steering committee following up the implementation of the draft National Program of Action for Adaptation to Climate Change
4 – Dr. Saadeldin Ibrahim	Secretary General, HCENR, Focal Point of the UNFCCC – Chair of the NAPA Steering and Technical Committees
5 – Dr. Ali Mohamed Ali.	National Team of Experts – NAPA Follow up Project
6 – Dr, Elamin El Sanjak,	NAPA, National Team of Experts & Follow up Project-
7 – Ms. Samia M.Ibrahim	Regional NAPA Coordinator, Gedarif State
8 – Mr. Rashid AlTigani	Regional NAPA Coordinator, Kordofan State
9 – Dr.Abdel Rahman AlTahir	Regional NAPA Coordinator, Darfur State
10 – Hanan Abdalla Mutawakil	UNDP/GEF Senior Program Officer
11– Mohamed A, Alfelabi	Sudan Environment Conservation Society – Journalist
12 – Redwan A/Rahman	Member of the NAPA Team of Experts
13 – Tarig Amin	Focal point for NAPA and NAPA follow-up projects in semi-desert zone – North Kordofan State
15 – Balgis Elasha	Climate Change Expert
16 – Ahmed Sulaiman ElWakeel	NAPA Team of Experts
17 – George Kamillo Lado	Head – NAPA Technical Team – State Ministry of Agric, Forestry, Animal Resources and Fisheries – Juba – Southern Sudan
18 – Michael Lazarus Dero	NAPA Technical Team – Central Equatorial State – Southern Sudan
19 – Haythem Ragab El Ramlawi	NAPA Focal Point Gedarif State-Gedarif University
20. Mohamed Gumma	NAPA, National Team of Experts – Soil Conservation, Gedarif State

21. Hayder Hassan Yousif	NAPA, National Team of Experts – Forests National Corporation, South Darfur
22. Hassan Abou	NAPA, National Team of Experts – NGO

Annex (4) Box 2 – Administrative structure in Sudan

Box 2

Sudan has twenty-six states, each state with a legislative body and a state government. Lower levels of government exist in each state. The states are: Northern, River Nile, Khartoum, White Nile, Blue Nile Sennar, Gezira, Northern Kordofan, Western Kordofan, Southern Kordofan, Northern Darfur, Western Darfur, Southern Darfur, Upper Nile, Jonglei, Warab, Unity, Western Bahr El Ghazal, Northern Bahr El Ghazal, Warab, East Equatoria, West Equatoria, Bahr El Jebel, Gedaref, Kassala, Red Sea.

- Initially matters relating to the exploitation of natural resources had been incorporated in the responsibilities and terms of reference of the central government departments. Each department has been given responsibility for the management of a single resource, i.e., forestry, wildlife, rangelands, water, agriculture, throughout the country. However, this setup has changed now and gradually processes of decentralization and devolution of power took place. At the state level after the launching of the federal system of government environmental matters and concerns became divided between the portfolios of the state ministries for agriculture and animal resources, health and engineering affairs. The Ministry of Agriculture has responsibility over agriculture and forests, and the environment and animal resources (NAPA Follow Up, 2009). The mandate of the State Ministry of Engineering Affairs includes overseeing land and surveys, construction and housing, roads and public waters, transportation and communication, water resources and energy and electricity.

Annex (5)

List of the Sudan NAPA priority projects – from the UNFCCC NAPA database

COUNTRY	Order of Project Priority	PROJECT TITLE	PROJECT SECTOR	SECTOR COMPONENT (S)	PROJECT COST (USD)
Sudan	1	Enhancing resilience to increasing rainfall variability through rangeland rehabilitation and water harvesting in the <i>Butana</i> area of <i>Gedarf</i> State	Cross sectoral	Livestock, water harvesting and disaster Management	2,800,000
Sudan	2	Reducing the vulnerability of communities in drought-prone areas of southern Darfur State through improved water harvesting practices	Cross sectoral	Vulnerability Mitigation, water harvesting and reforestation	2,500,000
Sudan	3	Improving sustainable agricultural practices under increasing heat stress in the <i>River Nile</i> State	Food security	Agriculture	2,350,000
Sudan	4	Environmental conservation and biodiversity restoration in northern <i>Kordofan</i> State as a coping mechanism for rangeland protection under conditions of increasing climate variability	Terrestrial ecosystems	Terrestrial Biodiversity	2,400,000
Sudan	5	Adapting to Strategies to adapt to drought-induced water shortages in highly vulnerable areas in Central Equatorial State	Cross sectoral	Agroforestry, environmental and health mitigation and water management	5,000,000

Annex (6) Summary of temporal and financial information on the Sudan NAPA preparation and post NAPA processes

UNDP was the GEF Agency for the Sudan NAPA preparation. The NAPA preparation grant of USD 200,000 was approved in May, 2003. The completion date of the NAPA was July 2007 implying a duration of 1,522 days or four years and 62 days, which is the fourth fastest of the five case country countries. The Sudanese NAPA was the 23rd to be completed.

After the NAPA completion Sudan started preparing the PIF and this was submitted to the LCDF Secretariat for approval on 20th August, 2007. The first PIF was not approved and a Review Sheet was prepared by the LCDF Secretariat and returned to UNDP with a description of the issues blocking the proposal from being cleared. Sudan was subsequently requested to resubmit the PIF.

Sudan resubmitted the PIF requesting approval of the PIF and it was received by the LCDF Secretariat on the 26th November, 2007, and with some minor amendments again on the 28th November, 2007. The project "Implementing NAPA priority interventions to build resilience in the agriculture and water sectors to the adverse impacts of climate change in Sudan" was above USD 2 million and needed to be web posted for approval for four weeks for possible objections. The project was cleared for work programme inclusion by the CEO on the 19th December, 2007, and was web posted for four weeks for Council Review.

A technical problem was encountered at this stage. Under normal circumstances the PIF would have been automatically approved one month later – unless objections were raised. However, it was actually never posted and this was first discovered in April. When the problem were corrected it was again formally web posted early April and subsequently gained automatic Council approval on the 6th May, 2008, as no objections were raised by the Council members.

Council approval is a formality and the Council has so far never blocked a LCDF project. The above time line appears to show a prolonged process time within the LCDF Secretariat.

The CEO cleared the PIF for Council approval on the 19th December, 2008, and UNDP/Sudan received a letter the same day that the PIF was cleared by the CEO and that the requested PPG was approved and ready for disbursement. Hence, UNDP/Sudan could continue the process preparing the full project document. However, they did first receive the formal Council approval of the project, but it did not prevent the GEF Agency in continuing preparing the full project document.

Funds for the estimated Project Grant and the Agency Fees were automatically reserved or set aside for the project after Council approval in May, 2008. The PPG is approved separately.

Sudan submitted a request for obtaining a project preparation grant (PPG) of USD 100,000 on the 28th November, 2007, and the CEO approved the PPG grant on the 19th December 2008. Note that the PPG can only be approved when the PIF is approved and the CEO approved¹ the PPG grant on the 19th December, 2008.

The process time from the first PIF was submitted to the approval date of the PIF was 121 calendar days in Sudan. However 21 calendar days elapsed from the date of final PIF was submitted to the approval of the PIF, which was the actual process time at the LCDF. The

¹ The LCDF will never approve a project preparation grant unless it was found eligible for PIF financing.

process time from the PPG was submitted to the date of the PPG approval date was 21 calendar days.

UNDP was not able to finalise the preparation of the full project document according to the original implementation plan and requested an extension of the deadline for completion of the full project document. The LDCF Secretariat received the request for milestone extension on the 18th of September 2008 and the CEO approved the request on the 30th of September 2008.

The table below provides summary statistics on the Sudan NAPA priority project.

Implementing NAPA priority interventions to build resilience in the agriculture and water sectors to the adverse impacts of climate change in Sudan					
PPG (Approved)	Project Grant (Approved)	Agency Fee (Approved)	LDCF Total Costs (Approved)	Co-financing Total (Approved)	Total Project Cost (Approved)
100,000	3,000,000	300,000	3,400,000	3,000,000	6,400,000

Sudan requested financing from LDCF of USD 3.4 million and the co-financing comprised USD 3 million giving a total project cost of USD 6.4m. The LDCF financing, including the PPG, Agency fees and the Project Grant, comprised approximately 53% of the Total Project Cost.

The Agency Fee was equal to 9.68% of the PGG and the Project Grant or 8.8% of the Total LDCF Costs. The Agency fee in terms of the direct Project Grant constituted 10.0%.

For every USD financed by the LCDF the co-financing is 0.88 USD. This implies that the LCDF around half of the Total Project Cost.

For Sudan USD 200,000 has been disbursed for the NAPA preparation only. USD 100,000 has been set aside for the PGG and USD 63,414 has been disbursed.