



**GREEN  
CLIMATE  
FUND**

**Meeting of the Board**  
18 – 21 August 2020  
Virtual meeting  
Provisional agenda item

**GCF/B.26/02/Add.11**

28 July 2020

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# Consideration of funding proposals - Addendum XI

## Funding proposal package for FP139

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### **Summary**

This addendum contains the following seven parts:

- a) A funding proposal titled "Building resilience in the face of climate change within traditional rain fed agricultural and pastoral systems in Sudan";
- b) No-objection letter issued by the national designated authority(ies) or focal point(s);
- c) Environmental and social report(s) disclosure;
- d) Secretariat's assessment;
- e) Independent Technical Advisory Panel's assessment;
- f) Response from the accredited entity to the independent Technical Advisory Panel's assessment; and
- g) Gender documentation.

## Table of Contents

Funding proposal submitted by the accredited entity	3
No-objection letter issued by the national designated authority(ies) or focal point(s)	71
Environmental and social report(s) disclosure	72
Secretariat's assessment	74
Independent Technical Advisory Panel's assessment	87
Response from the accredited entity to the independent Technical Advisory Panel's assessment	98
Gender documentation	100

# Funding Proposal

Project/Programme title:	Building resilience in the face of climate change within traditional rain fed agricultural and pastoral systems in Sudan
Country:	Sudan
Accredited Entity:	United Nations Development Programme
Date of first submission:	10 June 2017
Date of current submission	29 May 2020
Version number	V.007



## Contents

Section A	PROJECT / PROGRAMME SUMMARY
Section B	PROJECT / PROGRAMME INFORMATION
Section C	FINANCING INFORMATION
Section D	EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA
Section E	LOGICAL FRAMEWORK
Section F	RISK ASSESSMENT AND MANAGEMENT
Section G	GCF POLICIES AND STANDARDS
Section H	ANNEXES

### *Note to Accredited Entities on the use of the funding proposal template*

- Accredited Entities should provide summary information in the proposal with cross-reference to annexes such as feasibility studies, gender action plan, term sheet, etc.
- Accredited Entities should ensure that annexes provided are consistent with the details provided in the funding proposal. Updates to the funding proposal and/or annexes must be reflected in all relevant documents.
- The total number of pages for the funding proposal (excluding annexes) **should not exceed 60**. Proposals exceeding the prescribed length will not be assessed within the usual service standard time.
- The recommended font is Arial, size 11.
- Under the [GCF Information Disclosure Policy](#), project and programme funding proposals will be disclosed on the GCF website, simultaneous with the submission to the Board, subject to the redaction of any information that may not be disclosed pursuant to the IDP. Accredited Entities are asked to fill out information on disclosure in section G.4.

**Please submit the completed proposal to:**

[fundingproposal@gcfund.org](mailto:fundingproposal@gcfund.org)

**Please use the following name convention for the file name:**

“FP-[Accredited Entity Short Name]-[Country/Region]-[YYYY/MM/DD]”

A. PROJECT/PROGRAMME SUMMARY			
<b>A.1. Project or programme</b>	Project	<b>A.2. Public or private sector</b>	Public
<b>A.3. Request for Proposals (RFP)</b>	<p>If the funding proposal is being submitted in response to a specific GCF <a href="#">Request for Proposals</a>, indicate which RFP it is targeted for. Please note that there is a separate template for the Simplified Approval Process and REDD+.</p> <p>Not applicable</p>		
<b>A.4. Result area(s)</b>	<p>Check the applicable <a href="#">GCF result area(s)</a> that the <i>overall</i> proposed project/programme targets. For each checked result area(s), indicate the estimated percentage of <u>GCF budget</u> devoted to it. The total of the percentages when summed should be 100%.</p>		
	<p><b>Mitigation:</b> Reduced emissions from:</p> <p><input type="checkbox"/> Energy access and power generation:</p> <p><input type="checkbox"/> Low-emission transport:</p> <p><input type="checkbox"/> Buildings, cities, industries and appliances:</p> <p><input type="checkbox"/> Forestry and land use:</p> <p><b>Adaptation:</b> Increased resilience of:</p> <p><input checked="" type="checkbox"/> Most vulnerable people, communities and regions:</p> <p><input checked="" type="checkbox"/> Health and well-being, and food and water security:</p> <p><input type="checkbox"/> Infrastructure and built environment:</p> <p><input type="checkbox"/> Ecosystem and ecosystem services:</p>	<p><b>GCF contribution:</b></p> <p><u>Enter number</u>%</p> <p><u>Enter number</u>%</p> <p><u>Enter number</u>%</p> <p><u>Enter number</u>%</p> <p>50%</p> <p>50%</p> <p><u>Enter number</u>%</p> <p><u>Enter number</u>%</p>	
<b>A.5. Expected mitigation impact</b>	NA	<b>A.6. Expected adaptation impact</b>	1,181,538 (direct) and 2,499,712 (indirect) beneficiaries 21% of population
<b>A.7. Total financing (GCF + co-finance)</b>	41,185,114 USD	<b>A.9. Project size</b>	Small (Upto USD 50 million)
<b>A.8. Total GCF funding requested</b>	25,645,114 USD		
<b>A.10. Financial instrument(s) requested for the GCF funding</b>	<p>Mark all that apply and provide total amounts. The sum of all total amounts should be consistent with A.8.</p> <p><input checked="" type="checkbox"/> Grant <u>25,645,114 USD</u>      <input type="checkbox"/> Equity <u>Enter number</u></p> <p><input type="checkbox"/> Loan <u>Enter number</u>      <input type="checkbox"/> Results-based payment <u>Enter number</u></p> <p><input type="checkbox"/> Guarantee <u>Enter number</u></p>		
<b>A.11. Implementation period</b>	5 years, 0 months	<b>A.12. Total lifespan</b>	25 years
<b>A.13. Expected date of AE internal approval</b>	5/19/2020	<b>A.14. ESS category</b>	B
<b>A.15. Has this FP been submitted as a CN before?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>A.16. Has Readiness or PPF support been used to prepare this FP?</b>	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>

<b>A.17. Is this FP included in the entity work programme?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	<b>A.18. Is this FP included in the country programme?</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
<b>A.19. Complementarity and coherence</b>	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
<b>A.20. Executing Entity information</b>	Higher Council for Environment and Natural Resources Ministry of Agriculture and Natural Resources Mek Nimir Avenue, Khartoum, Sudan Phone: +2491213299559		
<b>A.21. Executive summary (max. 750 words, approximately 1.5 pages)</b>			
<ol style="list-style-type: none"> <li>1. Increasing climate variability is leading to major changes to rainfall and temperatures across Sudan’s arid and semi-arid drylands, exceeding the limited capacity of rural households to cope. Drylands are home to nearly 70% of the population of Sudan and there are places where increasingly erratic rainfall has resulted in recurrent drought episodes, together with associated crop failures, livestock deaths, and deepening of the already profound poverty levels. Climatic shocks, particularly drought, are occurring in the absence of adequate social safety nets in rural areas, forcing subsistence agro-pastoralist and nomadic pastoralist households living under deep-rooted levels of poverty into making livelihood decisions out of desperation because their co-dependence on water, agriculture, and rangelands is becoming unsustainable. State and federal government budgets, already under strain with development challenges unrelated to climate change, are unable to cope with mounting tolls of a changing climate.</li> <li>2. The project supports climate change adaptation efforts among subsistence agro-pastoralist and nomadic pastoralist communities in dryland zones across nine states in Sudan. Its overall goal is to promote a paradigm shift in dryland pastoral and farming systems through an integrated approach by increasing resilience of food production systems; improving availability/access to climate resilient water sources; and strengthening capacities of institutions/communities on climate resilience. The project capitalizes on synergies in climate risk management practices across agriculture, water, and rangelands to enhance water/food security under changing climate conditions. Key results are enhanced resilience to climate risks among subsistence farmer and nomadic pastoralist communities and promoting an enabling environment for long-term (post-project) adaptation activities in Sudan. Moreover, the enhanced capacity of the state-level administration in areas of environmental governance, management of shared natural resources, inter- and intra-state relations and how to establish a network of early warning systems will help prevent conflicts and out-mitigation in the targeted areas.</li> <li>3. The project introduces several interventions among highly vulnerable communities in the target communities. First, the project disseminates a set of sustainable technologies and practices including drought-resistant, early maturing seeds, establishment of integrated women-led sustainable farms, rehabilitation of communal rangelands, development of multi-purpose tree nurseries, and the establishment of shelterbelts to shield cultivatable plots from dust storms. Second, the project increases the availability of water resources through the construction and/or rehabilitation of hafirs (i.e., dugout enlargements into which surface-water runoff is converged during the rainy season), water yards (i.e., water extraction and distribution facility which includes borehole, storage tank, animal watering basins and tap stands), and sand water-storage dams (i.e., rain water harvesting structures). Third, the project strengthens local governance by building capacity among local leaders and stakeholders (i.e., village councils, village development committees, popular committees) regarding best practices, as well as increasing capacity of extension agents from state-level offices of the Ministry of Agriculture and Natural Resources on sustainable technologies/practices suitable for dryland areas.</li> <li>4. In introducing the above interventions, the project builds upon the lessons learned from recent climate change adaptation projects such as: 1) The GEF/LDCF-funded Climate Risk Finance for Sustainable and Climate Resilient Rain-fed Farming and Pastoral Systems; 2) the CIDA-funded Implementing Priority Adaptation Measures to Build Resilience of Rainfed Farmer/Pastoral Communities; and 3) the GEF/LDCF-funded Implementing NAPA Priority Interventions to Build Resilience in the Agriculture and Water Sectors to the Adverse Impacts of Climate Change in Sudan. The project complements these projects and applies a similarly integrated approach to crop, water, and rangeland management that addresses recurring drought concerns and the linkages between agro-pastoralist and nomadic pastoralist livelihoods.</li> <li>5. The barriers addressed by the project include weak drought contingency planning; low institutional capacity; limitations in food security research capacity; limited smallholder access to financing; and limited data infrastructure. Micro-credit and micro-finance systems that have been piloted successfully in other regions have been incorporated into project design to promote financial sustainability and overcome some barriers. The project facilitates transformational change in the short-term by building community resilience against climate change impacts, primarily recurrent drought, and in the long-term by integrating lessons learned into state-level planning, budgeting and implementation of risk reduction measures that will ultimately improve livelihoods in the targeted communities.</li> </ol>			

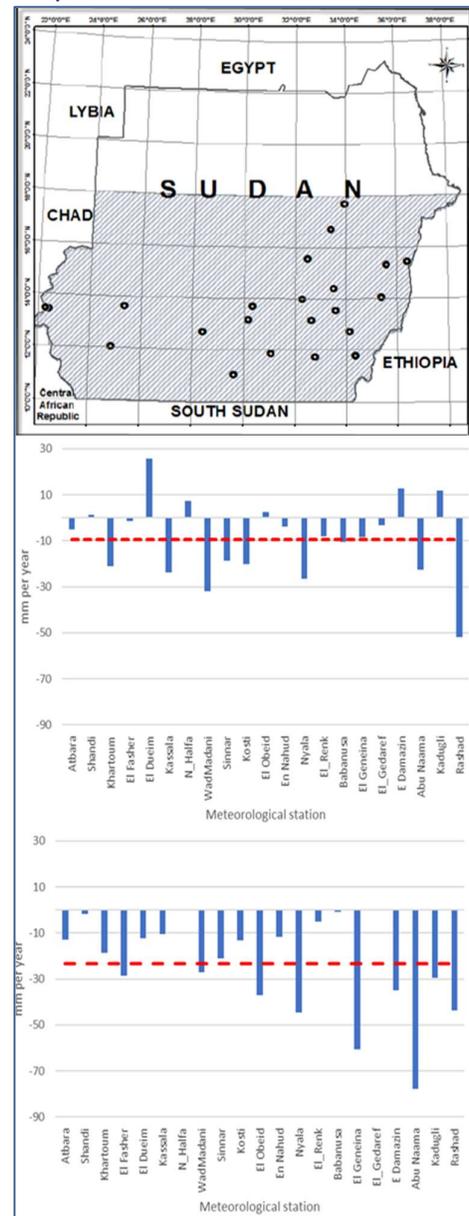
6. Project activities will directly benefit nearly 1,200,000 people in over 211,000 subsistence agro-pastoralist and nomadic pastoralist households. These direct beneficiaries are among 138 dryland villages across nine states. These households correspond to 10% of the total population in the targeted regions. Project activities will indirectly benefit an additional nearly 2,499,712 people through autonomous adoption by neighboring communities of the risk mitigation strategies that direct beneficiaries will implement. The project will take advantage of existing linkages with regional and global research institutions such as CGIAR and the Association for Strengthening Agricultural Research in Eastern and Central Africa.
7. The project's paradigm shift potential is rooted in the fact that that the specific adaptation interventions can be leveraged to empower women in large numbers across adjoining communities. Providing women with access to information and knowledge on climate change issues can help reverse their lack of power and build their autonomy. In parallel, the implementation of a suite of adaptation initiatives will build resilience among vulnerable rural communities from future climatic shocks that would otherwise deepen their poverty, while also enabling them to diversify household incomes and assets. Moreover, effective adaptation within traditional agricultural systems will not expand in the poorest states in the absence of catalytic donor support.
8. The project is aligned with Sudan's priorities as outlined in its Nationally Determined Contribution to the Paris Agreement and is line with Sudan's Country Work Programme, as submitted to the Green Climate Fund (GCF). Based on a request made to UNDP by the Ministry of Environment, Natural Resources and Physical Development, Sudan's National Designated Authority (NDA), the project is also a part of UNDP's Entity Work Programme to the GCF and is fully aligned with Government priorities upon which UNDP is focusing.

**B. PROJECT/PROGRAMME INFORMATION**

**B.1. Climate context (max. 1000 words, approximately 2 pages)**

9. Increasing climate variability is leading to major changes to rainfall and temperatures across Sudan's arid and semi-arid drylands, exceeding the limited capacity of rural households to cope. Drylands are home to nearly 70% of the population of Sudan and there are places where increasingly erratic rainfall has resulted in recurrent drought episodes, together with associated crop failures, livestock deaths, and deepening already profound poverty levels. Notably, climatic shocks, particularly drought, are occurring in the absence of adequate social safety nets in rural areas of Sudan, forcing many subsistence agro-pastoralist and nomadic pastoralist households into making livelihood decisions out of desperation because their co-dependence on water, agriculture, and rangelands is becoming less and less viable. State and federal government budgets, already straining to cope with numerous development challenges unrelated to climate change, are simply unable to cope with the mounting tolls of climate change.
10. There is strong evidence confirming that Sudan's climate has been changing over the past decades. First, there has been a steady decline in annual precipitation throughout Sudan. This is most pronounced in the Darfur States, where the data record from the sole meteorological station over the 40-year period from 1952-1992 indicates that rainfall has been declining by about 5.12 mm per year on average. Other areas such as Khartoum and South Kordofan show similar rainfall patterns (decline of 4.90 and 3.99 mm per year, respectively). These trends are reflected by mean annual normal rainfall isohyets. A comparison of the isohyets for the period 1941-1970 and 1971-2000 show that there is a southward shift by hundreds of kilometers.<sup>1</sup>
11. Moreover, a rainfall trend analysis for 21 meteorological stations across Sudan confirm that mean annual rainfall for the past two decades has been both decreasing and intensifying relative to the 40-year period from 1960 to 2000. This is illustrated in Figure 1 which shows the location of the meteorological stations (top) and indicates that, when compared to the historical period, average annual rainfall declined by an average drop of 9.3 mm per year during the 1990s (middle) and by an average of 23.4 mm per year 2000s (bottom).
12. These changes have posed profound adverse impacts for rural livelihoods. For farming activities, roughly 90% of cultivated areas depend exclusively on rainfall, with fluctuations in crop yield attributed almost solely to fluctuations in rainfall patterns. While irrigated agriculture is also practiced, it is minor in scope and limited to small areas along wadis and in small plots near hand-dug wells. For pastoralist activities, increasingly erratic rainfall patterns, as well as drought episodes, have led to the deterioration of natural rangelands. Declining rangeland productivity has been accompanied by an increase in seasonal fires, excessive grazing in communal lands, and by large livestock populations unsustainably concentrated around perennial water sources.
13. Second, there has also been a steady increase in temperature throughout Sudan over the period 1960-2010. During the March-June and June-September periods, temperatures have been increasing between 0.2°C and 0.4°C per decade, on average. The decadal trend of increasing temperature is more intense during the March-June period. When averaged across all seasons, temperatures in the 2000-2009 period are roughly 0.8°C to 1.6°C

**Figure 1: Top: Meteorological station locations from which rainfall data was collected; Middle: Change in average annual rainfall in Sudan, 1990-2000 compared to 1960-2000; Bottom: Change in average annual rainfall in Sudan, 2000-2010 compared to 1960-2000**



<sup>1</sup> For additional detail, see Section 1.3.1 of Annex 2.

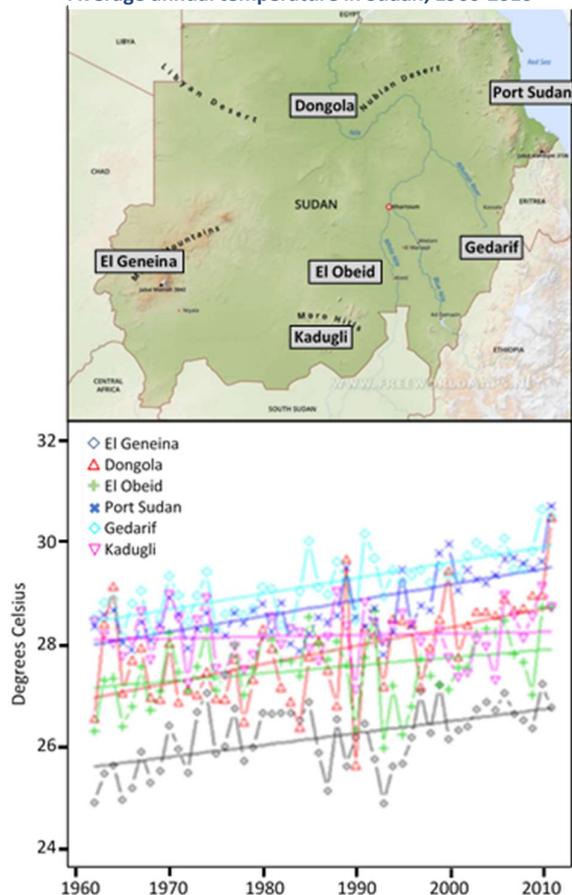
warmer than they were in the 1960-1969 period. Figure 2 illustrates annual average temperature trends for a subset of 6 meteorological stations located across Sudan (top) for the period 1960-2010 (bottom).

14. Third, the above adverse changes in rainfall and temperature have been accompanied by recurrent drought episodes across Sudan since the 1970s. There have been widespread recurring droughts across Sudan during the period 1967-1973 and again during the period 1980-1984, the latter period being the more severe. In addition, there have been a series of spatially localized droughts during the years 1987, 1989, 1990, 1991, and 1993. These drought episodes have occurred mainly in Kordofan and Darfur states in western Sudan and in parts of central Sudan near Khartoum.
15. Such mounting evidence of decreasing rainfall and increased temperatures, have reduced available grazing lands, have led to crop failures, high livestock mortality and increased rural to urban migration. These climate-related impacts have also aggravated urban health and sanitation concerns. Together this evidence suggests that drought has been a major stress factor on farmer and pastoralist communities and has worsened regional conflicts over environmental resources. Additional information on the climate rationale underlying project design is provided in Annex 19f.
16. In the future, these climatic changes are projected to intensify. Dynamic downscaling of an ensemble of General Circulation Modeling outputs suggests that over the next two decades, average annual surface temperatures across Sudan will increase significantly relative to the historical climatic baseline, with increasing levels of rainfall variability. This is illustrated in Figure 3 which shows an ensemble of temperature and rainfall projections under Representative Concentration Pathway 8.5 (RCP8.5) for three meteorological stations with sharply differing annual historical rainfall regimes: Port Sudan (medium annual rainfall), Dongola (low annual rainfall), and Gedaref (high annual rainfall).

### **Baseline situation**

17. The baseline situation is one in which rural households in Sudan are becoming increasingly unable to withstand and recover from climatic shocks, particularly drought. While there are other types of shocks that farmer/pastoralist households are forced to endure related to health, forced migration, or conflicts, they are largely derivative of an inability to effectively cope with recurring drought episodes. This vulnerability is likely to intensify for dryland households in Sudan in the absence of effective climate change adaptation interventions that build increased resilience to drought.
18. Since subsistence agro-pastoralist and nomadic pastoralist households derive a large share of their income from crop-and/or livestock-related activities, they are also particularly sensitive to drought. Household income from rainfed agriculture and pasture-based livestock production is far more vulnerable to climatic shocks than, for example, irrigated agriculture or other less shock-impacted activities such as the so-called cottage industries (i.e. a business activity carried on in an agro-pastoralist's home). At present and likely for the foreseeable future, sensitivity to drought among dryland households is largely determined based on prevailing risk-hedging strategies that regard land, water, and livestock – and the mix of those resources – as essential to livelihood preservation. To the extent that household incomes are not diversified, or alternative income-generating strategies not introduced, sensitivity to drought is expected to remain unacceptably high.
19. The ability of farmer/pastoralist households to cope with droughts has been compromised by the increasing frequency of drought episodes. In the baseline situation, the time between climatic shocks is becoming shorter and shorter, leading to inadequate time to rebuild household assets to withstand subsequent weather-related shocks. Given the lack of governmental safety nets and access to credit, households are forced to rely on their own already depleted savings and assets to try and make up as best they can for food/income shortfalls. Hence,

**Figure 2: Top: Meteorological station locations from which temperature data was collected; Bottom: Average annual temperature in Sudan, 1960-2010**



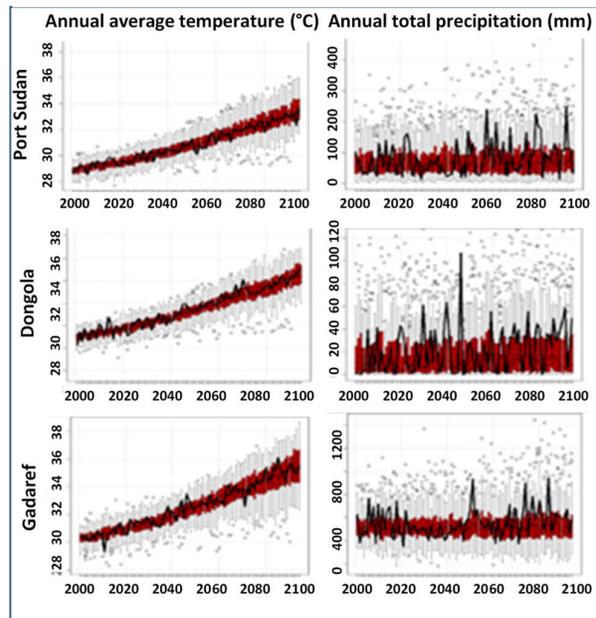
the liquidation of household assets to limit the harmful impacts of a drought episode is becoming less and less of a viable risk-hedging strategy, forcing households into increasingly desperate circumstances.

20. Taken together, the exposure and sensitivity of farmer/pastoralist households combined with their compromised coping capacity infers that overall vulnerability to climatic shocks is high in the baseline situation. Assent effective adaptation measures, climatic variability has become largely incompatible with traditional agro-pastoralist practices regarding crop selection, water resource management, communal rangeland management, drought preparedness, and household income generation. Additionally, access to tools and extension services designed to build adaptive capacity remains quite low given the overall lack of knowledge to make informed decisions under climate change.

#### **States targeted for project activities**

21. The target region of the project consists of 138 villages in dryland zones across 9 states in Sudan. The selection of these villages has been based on several common characteristics, namely subsistence agro-pastoralists and nomadic pastoralists who are highly vulnerable to climate change, with few opportunities for household income diversification and adaptation. Despite their vulnerability, local populations have little access to measures and practices that can increase their resilience in the face of climate change. A brief description of the major targeted state characteristics, together with key dimensions of vulnerability to climate change, is provided in the bullets below.
- **West Darfur:** West Darfur is characterized by great environmental diversity with seasonal valleys that can sustain forests, rangelands, and agriculture. About 80% of the state's economy is based on cash crops and livestock production. Nevertheless, the state has a history of chronic food insecurity - it is the most food insecure region in Sudan with greater than 40% of the population unable to obtain a health daily diet.
  - **East Darfur:** East Darfur is largely characterized by nomadic tribes facing acute water scarcity. Increasingly rainfall variability has led to serious rangeland degradation and in some cases, the disappearance of essential grasses and herbs. Nomads who rely on these resources have been forced to cope by resorting to inferior options for feeding their livestock, namely lower quality tree leaves; limited crop residues, or moving across the border to South Sudan. East Darfur has become the home for significant numbers of displaced people from other Darfur states, all suffering from reduced rainfall. This has amplified the consequences of climatic change for the state and further exacerbated environmental degradation and socio-economic disruption.
  - **Central Darfur:** Central Darfur is characterized by diverse climate and soils, including volcanic soils in Jebel Marra (a mountainous area) sandy, clay and alluvial soils in the different valleys traverse the state towards the west to Chad and Central African Republic. Most economic activities are focused on agriculture and pastoralism, with 80% of the population comprised of farmers and pastoralists. Communities are suffering from recurrent droughts, increasing temperature and rainfall variability, which together with high poverty rates have led to a growing misuse of resources as evidenced by overgrazing and denuding of forests.
  - **South Kordofan:** The state is characterized by widespread poverty, lack of basic services, poor infrastructure and continued land disputes. While South Kordofan is less prone to drought conditions than its northern counterpart, the state is vulnerable to the impact of forced migration. That is, as agricultural regions in other parts of Sudan become less productive, South Kordofan may see an influx of climate refugees while lacking the infrastructure to accommodate rapid population growth.
  - **West Kordofan:** West Kordofan is characterized by nomadic and transhumant tribes that concentrate in areas where water and other services are available. For farmers, higher temperatures and increased rainfall variability has led to crop failure, increased pest incidence, and out-migration by farmers. For pastoralists, lower humidity levels and higher temperatures have led to grassland degradation and animal diseases. The state has experienced diminishing levels of healthy drinking water due to lower rainfall as well as a higher incidence of certain climate-related epidemics.

**Figure 3: Temperature and rainfall projections under RCP8.5 for three meteorological stations in Sudan**



- **Kassala:** Kassala is characterized by widespread poverty and lack of basic services. Roughly 85% of the population live below the poverty line and rely on traditional rain-fed agriculture. Flash flooding is a growing risk with frequent seasonal flooding from the Gash and Atbara rivers in the western part of the state. While floods have occurred every 6-7 years over 1970-2000, they have been recently occurring every 4-5 years. Drought frequency has also been increasing, with two major droughts occurring in 2008 and 2011.
- **Red Sea:** The Red Sea state is distinguished from other states in the Eastern region as the only state with a coastline (750 km). The region supports varied and diverse coastal and marine habitats, including coral reefs, mangroves, and seagrass beds. Many species of birds and fish are supported by these ecosystems, many of which are not found anywhere else in the world. These resources also provide food and income for the communities living along the Red Sea coast. Water scarcity is a persistent problem across inland and coastal areas, while overgrazing is rapidly degrading rangelands.
- **Northern:** The Northern state is characterized by an economy that depends upon both irrigated and rain-fed agriculture. In this region, rainfall is typically very low, temperatures are high in the extreme, and vegetative cover is sparse outside the immediate vicinity of the Nile. Rising temperatures, decreasing rainfall, fluctuations in River Nile water levels, and increased wind speeds have combined to result in a mix of drought and flooding with adverse effects on crop yields, rangelands, animal production, and riverbank erosion. Shifting climates have also hastened the arrival of new plant diseases, such as the date palm disease in the Elgab area, and new skin diseases, such as Jarab, which are not historically common in the state.
- **Khartoum State:** Khartoum is the capital of Sudan and is in the tropical zone around the River Nile. It is characterized by rapid urban growth and the largest concentration of infrastructure. About 20% of the state population is located in rural areas and practice traditional cultivation and pastoralism. Dust storms are regular occurrences and river fluctuations threaten riverbank erosion and flooding. Increasing climatic variability have placed serious pressure on Khartoum's crop yields, rangelands, and natural forests.

#### **Related projects/interventions**

22. The project builds upon the lessons learned from recent climate change adaptation projects such as: 1) The GEF/LDCF-funded Climate Risk Finance for Sustainable and Climate Resilient Rain-fed Farming and Pastoral Systems; 2) the CIDA-funded Implementing Priority Adaptation Measures to Build Resilience of Rainfed Farmer/Pastoral Communities; and 3) the GEF/LDCF-funded Implementing NAPA Priority Interventions to Build Resilience in the Agriculture and Water Sectors to the Adverse Impacts of Climate Change in Sudan. The project complements these projects and applies a similarly integrated approach to crop, water, and rangeland management that incorporate recurring drought concerns and understanding linkages between agro-pastoralist and nomadic pastoralist livelihoods. Some of the specific lessons that have been directly accounted for in project design are outlined below.
- Rural water supply for domestic and small-scale irrigation using solar pumping has been readily adopted and effective in several rural settings, resulting in availability of water for agriculture and clean water for human and animal use and saving time of getting it;
  - Cultivation of drought-resistant horticultural crops (e.g., introduction of new vegetables and practicing cultivation in 3 seasons instead of one season cropping system in Gerf area in Gedarif State) has resulted in improved crop productivity;
  - Rehabilitation and improvement in irrigated agricultural production (e.g., in Wad Hassan village of Gedarif State) contributed to the creation of new income sources and labor opportunities, which contributed to improved socio-economic status of communities;
  - Shelter belts around some farms in River Nile State demonstrably protected farms from hot wind and also created favorable microclimates, which helped to increase productivity and yields;
  - Afforestation in North Kordofan State - where 7 community nurseries were established, and 53,000 trees were planted – effectively protected agricultural lands and residential areas; and
  - Awareness-raising and capacity building through demonstration women's farms led to improvement in crop productivity (e.g. faba beans) in river Nile State and led to women being more oriented to climate change adaptation practices.

#### **B.2. Theory of change (max. 1000 words, approximately 2 pages plus diagram)**

##### **Problem statement**

23. The entry point for the theory of change underlying the project concept is the acute vulnerability of subsistence agro-pastoralist and nomadic pastoralist communities in Sudan's dryland zones to the increasing frequency of

drought, a vulnerability that is compounded by deep poverty and reliance upon traditional rainfed agricultural practices that are proving to be increasingly unsustainable in the face of climate change.

#### **National barriers**

24. The project concept is specifically tailored to address and overcome institutional and local barriers that inhibit resilience-building by vulnerable populations with respect to climate change. There are several institutional barriers, as summarized in the bullets below. Each of these barriers is directly linked to the project's strategic components, namely improved resilience of food production systems, improved access to water, and strengthened capacity. Further details on gaps and barriers are presented in the Technical Feasibility Report, Chapter 3 (Needs, Gaps, and Barriers).

- **Weak drought contingency planning:** Sudan's current drought contingency planning framework contains a weak component for ensuring food reserves in the face of drought. The Strategic Reserve Authority (SRA) was established in September 2000 and is an autonomous body answerable to the Minister of Finance and National Economy. Its key objectives are to build a strategic reserve of commodities, collecting data on production, estimate consumption and determine surplus/deficits, provide services based on cost recovery, contribute to national income, and invest in neglected services. To date, the SRA has been ineffective in achieving these objectives due to the lack of a clear strategic vision, a shortage of funds, and a lack of a transparent system to allocate scarce food stores among competing entities. This barrier is linked to all three of the project's strategic components.
- **Low Institutional Capacity:** Institutional capacities to address some of the urgent adaptation needs are inadequate especially in relation to food security issues. There is an urgent need in Sudan for improving the link between adaptation and national policymaking, as well as for policies to be supportive of cooperation and participation in environmental activities that account for the special needs of local communities. Thus far, progress has been limited by a general weakness of capacity in areas including strategic development planning and coordination across state/federal ministries. Despite a well-developed adaptation action plan and substantial efforts to sensitize policymakers to the threat of climate change, the dominant effect of climate change agreements and capacity building has been to build the capacity within loosely connected networks in Sudan. This underscores the critical importance of mobilizing political will to address effective pro-poor, pro-adaptation expenditures at local levels of government through institutional capacity development. This barrier is linked to the project's enhanced capacity strategic component.
- **Limitations in food security research:** The government's Agricultural Research Corporation (ARC) has research stations across the ten targeted states. These stations have prioritized developing early maturing and drought tolerant varieties, improved crop husbandry practices, water harvesting technologies, and livestock improved husbandry practices. However, research is primarily on-station and farmer participation (on-farm research) is limited. This is a significant barrier as the benefits of community engagement (e.g., awareness-raising, personal investment of time/resources) is unrealized. Additionally, linkages with other government agencies, NGOs and the private sector are weak resulting in poor dissemination of improved technologies. This barrier is primarily linked to the project's food security and enhanced capacity strategic components.
- **Limited smallholder access to financing:** Financial and micro-finance institutions are limited due to the risks associated with a changing climate and unstable markets. Financial service providers (i.e., banks, microfinance institutions, and insurance companies) are discouraged from lending to farmers and livestock owners. As a result, smallholder rain-fed farmers and pastoralists have very limited access to finance and improved opportunities to improve their production. This has prevented investments in land preparation, the ability to have climate-resilient production practices (e.g., rainwater harvesting) and has kept many families (especially single female-headed households) in continuous cycles of poverty and food insecurity. Consequently, farmers and pastoralists have had trouble entering markets, have poor access to inputs and lack critical agricultural/livestock advisory- and extension services. This barrier is linked to all three of the project's strategic components. To overcome this barrier, micro-credit and micro-finance systems that have been piloted successfully in other regions have been incorporated into project design to promote financial sustainability.
- **Limited data infrastructure:** Effective adaptation needs reliable data. Currently, there is limited local information that can be used as the basis to establish climate change patterns, vulnerability, adaptive capacity, mitigation options and technologies that will ensure sustainable response systems and minimize impacts and risks associated with climate change. Several knowledge and research gaps related to climate change such as risk/vulnerability assessments/mapping, improved varieties and cultural practices, water and soil conservation have been identified as of very high importance. This barrier is primarily linked to the project's enhanced capacity strategic component.

#### **Local barriers**

25. In addition, there are several local project implementation barriers that are unique to water supply/demand, agricultural production, and rangeland management that need to be overcome, which GCF funding will be able to directly address. At the local level, these barriers are largely socio-economic in nature rather than technical, reflecting issues related to community practices, available financial resources, and coordination. Overcoming these local barriers is based on the key assumptions that the engagement of local communities and government agencies will be sustained over the course of project implementation activities. Overcoming these local barriers is also based on the assumption that external climatic factors such as severe drought or flash flooding do not adversely impact project activities. The specific nature of local project implementation barriers are summarized in the bullets below and each is directly linked to the project's strategic components.
- Water supply/demand barriers: While it is well recognized among policymakers that sustainable water management in drought prone areas requires a participatory approach, projects and policies have often failed to reflect this understanding, leading to unrealized project replication potential at best, or failures in project implementation at worst. Too often a "silo" approach has been adopted to address water supply issues without due consideration to water demand aspects across the multiple sectors affected (i.e., agriculture, households, livestock). Hence, a key barrier in water management is the institutional reliance on linear management approaches to project/policy development in water supply/demand management. The project addresses this barrier through the implementation of win-win activities that address the integrated nature of water, agriculture and rangelands.
  - Alternative farming practices barriers: Despite widespread perceptions among dryland agro-pastoralists that a) there has been an appreciable decrease in rainfall amount; b) a concurrent increase in temperature; and c) a good understanding of the range of local risk-reducing options available, there is typically little effective action that can be taken by a large fraction due to the relatively high cost of farm inputs and limited or no access to credit. Hence, a key barrier in agricultural production is the socioeconomic limitations of agro-pastoralists to adjust their farming/pastoralist activities. The project addresses this barrier through the provision of the capital investment for water harvesting, application of drought-tolerant and early maturing seeds, and the setup of microcredit schemes.
  - Alternative rangeland management barriers: Absent climate change, traditional communal rangeland management practices in Sudan have been an effective basis for managing land resources sustainably in a way that supports local resilience and sustainable livelihoods. With increasingly erratic rainfall, however, these systems have been breaking down, leading to overgrazing, deterioration, and conflict. In addition, there are mounting pressures on rangelands that are perceived as potential target for investment, including for mining and large-scale industrial activities. Against this background, there is minimal coordination and negligible partnering among pastoralists and between such communities and outside entities. Hence, a key barrier in rangeland management is the lack of local capacity to reimagine and implement alternative communal rangeland management strategies in response to climatic and other drivers. The project addresses this barrier through local capacity building to inform and build consensus on alternate communal rangeland management schemes.

#### **Assumptions and external factors**

26. Underlying the potential for paradigm shift is that effective adaptation in traditional agricultural systems will not expand rapidly in the poorest states in the absence of catalytic donor support. In parallel, the implementation of a suite of adaptation initiatives will build resilience among vulnerable rural communities from future climatic shocks that would otherwise deepen their poverty, while also enabling them to diversify household incomes and assets. A secondary theory informing the project is that the specific adaptation interventions can be leveraged to empower women in large numbers across adjoining communities. Providing women with access to information and knowledge on climate change issues can help reverse their lack of power and build their autonomy.
27. At present, there is little knowledge among agro-pastoralists about the types of alternative technologies and practices that can improve their ability to cope with climatic shocks. Nor is there a good understanding of the incompatibility of current practices with long-term sustainable livelihoods under climate change. A fundamental assumption underlying the theory of change is that capacity building on improved crop production, water harvesting, and rangeland management strategies will be well received by project beneficiaries and deliver benefits that extend beyond the near-term and entrench a new understanding of effective agro-pastoralism under the threat of climatic shocks. A corollary assumption is that such building of such capacity establishes a network of support for autonomous climate-resilient decision-making at the household level. At a more granular level, several key assumptions underly the theory of change, as outlined below:
- That strategic adaptation interventions will lead to increased resilience against adverse impacts of climate change among traditional subsistence farming communities;

- That local communities are willing to undertake adaptation measures and modify their current farming and pastoralist practices which will lead to long-term adaptive capacity;
  - That local governments and key stakeholders within the nine states are supportive and will remain engaged in the implementation process;
  - That all types of personnel implicated by project activities (i.e., State agricultural extension workers, farmers, pastoralists, women) are willing to participate in training workshops and recognize the benefits in engaging in adaptation processes to ensure food security; and
  - That extreme drought events during the period of project activities do not disrupt the implementation of the proposed adaptation measures.
28. There is substantial evidence underpinning the key assumptions and external factors in the theory of change. The assumptions emerge from direct evidence associated with a pilot adaptation project, on which the current project builds, that implemented high-priority measures identified during the NAPA process among several subsistence agriculture communities. In most villages, this typically included a similar package of forestry, traditional agricultural crops, new horticultural crops, water management and harvesting, livestock management, sustainable energy and training. Both men and women benefited in large numbers. The formal evaluation of that effort provides key evidence to support the above assumptions, as outlined below.
- New technologies, practices and approaches were introduced and generally adopted in all the Project target villages leading to many people in diverse socio-economic and ecological conditions being helped by the pilot adaptation project, and now have improved lives and food security.
  - Adaptation interventions could generate a strong engagement and interest amongst the community members and a consistent support from the State level participants.
  - There was strong and sustained coordination at the state level and good partnerships with necessary stakeholders.
  - Numerous local community organizations have been strengthened and established, and there is evidence that, at the village level, there is increased capacity with regards to both natural resources management and organizational capacity.
  - Pilot project activities took place over March 2010 through April 2015, a period which overlapped the 2011-2012 East Africa drought (El-Nino) which led to conditions ranging from high stress to crisis in some pilot project communities.

### Outputs

29. The project is specifically tailored to address and overcome the above barriers through a set of targeted and integrated interventions. Specifically, the project aims to increase climate resilience among agro-pastoralists and nomadic pastoralists, particularly women, in dryland areas through an integrated approach to agricultural production, water resource management, and rangeland management. These interventions, embedded within Outputs 1, 2, and 3, are briefly summarized in the bullets below. When implemented, they will help transition targeted communities toward an alternative development pathway that is a marked improvement on baseline conditions.
- Introduce sustainable practices. The project seeks to disseminate a set of sustainable technologies and practices through the distribution of drought-resistant, early maturing seeds, establishment of integrated women-led sustainable farms, rehabilitation of communal rangelands, development of multi-purpose tree nurseries, and establishment of shelterbelts to shield cultivatable plots from dust storms.
  - Install water supply and distribution infrastructure. The project seeks to increase the availability of, and access to, water resources for humans and animals through the construction and/or rehabilitation of hafirs (i.e., underground reservoirs designed for water storage), water yards (i.e., pump, above ground storage tank, and small-scale water distribution system), and sand dams (i.e., reinforced concrete wall built across a seasonal sandy river in order to retain rainwater and recharge groundwater). Climate-related factors as well as intra-group conflicts, have had a cumulative and destructive impact on water supply infrastructure, leading to significant deterioration and low yields, with a poor environment where animals and people intermingle. Improving access to water through improved/rehabilitated and/or construction of additional/new water sources will reduce vulnerability to increased water scarcity by mitigating water-related conflict in the project areas.
  - Enhance local governance capacity to address climate resilience. The goal of capacity building efforts is to generate new knowledge, develop skills, and facilitate a shift in attitudes toward climate resilient livelihoods. The project seeks to strengthen local governance by building capacity among Village Councils, Village Development Committees and Popular Committees on best practices, as well as increasing technical capacity

of extension agents from state-level Ministries of Agriculture and Forestry on sustainable technologies and practices suitable for dryland areas. The enhanced capacity of the native administration in areas of environmental governance, management of shared natural resources, inter- and intra-state relations and how to establish a network of early warning systems will help prevent conflicts and out-mitigation in the areas.

- Promote empowerment of women. The project's women-focused activities will help to overcome local barriers such as limited access to financing and low capacity by directly aligning the project with government commitments to gender equality as outlined in its National Policy for the Empowerment of Women (2007), formulated by the Ministry of Social Welfare, Women and Child. Of the six areas where the advancement of women and their capabilities are prioritized in the national policy, three (3) have been explicitly addressed in project design, namely a) Education Policies (Activity 3.2); b) Economic Empowerment (Activities 1.1. and 1.2); and c) Political Participation and Decision Making (Activities 2.1 and 2.2). The project also focuses on resilience building activities tailored to household nutritional demands and needs for which women function as primary agents. Particular care will be taken to ensure effective and active contribution of women's inputs as responsible parties for household diets and food consumption. Women will be facilitated to provide iterative feedback through surveys and structured interviews to agricultural extension service providers at the locality level to adequately identify, discuss, and meet their evolving needs as climatic conditions change. This process will lead to greater gender empowerment and an increased role of women's perceptions and views within community-related food/water security decisionmaking.

30. Moreover, in implementing the above activities, the project will support the integration of field activities into ongoing research activities. Research institutions in Sudan have for several decades been developing and promoting agricultural innovations aimed to deal with the changing environmental conditions. More recently, the Agricultural Research Corporation (ARC) released climate smart technologies, including early maturing-drought tolerant crop varieties and climate-smart husbandry practices for crops and livestock. However, few of these technologies have reached the beneficiaries due to limited outreach. One of the main challenges facing agricultural research in Sudan, is to enhance the dissemination of research findings regarding climate smart technologies. The project represents an opportunity for nearby research stations in target states to participate based in part on funds allocated to capacity building as well as governmental co-financing. The portion of the project budget to be devoted to research-related activities is small, less than 1%. Additional details about climate change research activities in Sudan are discussed in Chapter 1 of Annex 2.

**Project long-term vision and overall impacts:**

31. The project's long-term vision is a transition by dryland communities towards more climate resilience through improved food/water security, enhanced livestock productivity, and heightened community resilience achieved through the strategic investments discussed above that have either not been addressed in previous projects or have yet to be implemented in the target communities. These are innovative interventions relative to currently maladaptive farming and pastoral practices that recent research supports the conclusion that such interventions have reduced adverse climate change impacts and show significant upscaling potential. The project's overall impact is the enhanced resilience and adaptive capacity of vulnerable agro-pastoralists relative to their management of agricultural, livestock, and water resources under a changing climate.
32. The Theory of Change for the project is shown in the diagram that follows. It illustrates how each of the three outputs of the project will lead to an outcome of reduced climate change risks to rural livelihoods. In the longer-term, the outputs will lead to an overall impact of enhanced resilience and adaptive capacity of highly vulnerable subsistence farming communities related to their agricultural, livestock, and water resource management practices.

**Overall impact:** Enhanced resilience and adaptive capacity of highly vulnerable subsistence farming communities relative to their agricultural, livestock and water resource management practices

**Fund level impacts:**

- Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions
- Increased resilience of health and well-being, and food and water security

Increased food & water security

Enhanced livestock productivity

Heightened community resilience

**Output 1:** Resilience of food production systems and food insecure communities improved in the face of climate change in Sudan, benefiting at least 200,000 households of farmers and pastoralists with 35% women

Leading to increased adoption of early maturing, drought and climate resilient crop varieties; increased yield & food production; diversified alternative livelihood sources &

**1.1:** Introduce drought-resilient seed varieties of sorghum, millet groundnut and wheat that have demonstrated greater yields in the face of climatic changes through village procurement systems

**1.2:** Introduce sustainable practices in agricultural production at the community level

**1.3:** Introduce rangeland management practices that reduce pastoral stress on communal lands through demonstration farms and rangeland rehabilitation techniques

**1.4:** Establish shelterbelts/agroforestry to improve productivity and reduce land and environmental degradation

**Output 2:** Improved access of water for human, livestock and irrigation to sustain livelihoods in the face of climatic risks in the nine targeted states benefiting at least 200,000 households

Leading to improved surface water harvesting techniques to support of human and livestock water supply; Improved groundwater access and distribution efficiency

**2.1:** Construct/rehabilitate water yards and drilling of shallow/borehole for drinking water for human and livestock and small-scale irrigation in targeted locations

**2.2:** Establish sand water-storage dams in support of small-scale irrigation in targeted localities and villages

**2.3:** Construct improved Hafirs and upgrade existing ones, excavating natural pond and cistern to increase availability of drinking water

**Output 3:** Strengthened capacities and knowledge of institutions and communities on climate change resilience and adaptation

Leading to improved institutional capacity and knowledge on policies, strategies, plans, and technologies to reduce vulnerability to current and future climate change risks

**3.1:** Train extension officers and other government stakeholders on climate change resilience and adaptation related issues

**3.2:** Build capacity of beneficiaries for coping with climate change risks and local operation & maintenance of project interventions

**Assumptions and external factors:**

Local communities willing to modify current practices

Local governments and key stakeholders will remain engaged

All types of personnel willing to participate in training workshops

Extreme drought events during implementation do not disrupt efforts

**National & local barriers**

weak drought contingency planning

Low institutional capacity

Limitations in food security research

Limited smallholder access to financing

Limited data infrastructure

Local project implementation barriers (water, food, rangelands)

**Problem statement:**

Subsistence agro-pastoralist and nomadic pastoralist communities in Sudan's dryland zones are acutely vulnerable to the increasing frequency of drought, compounding existing vulnerabilities associated with deep poverty as well as their reliance upon traditional rainfed agricultural practices and fragile rangelands

### B.3. Project/programme description (max. 2000 words, approximately 4 pages)

#### **Strategic elements**

33. Project design has emphasized the fundamental need to build upon and complement government policies and programmes relative to climate resilience. For the past decades, government support of pastoralist communities have focused on, among other things, the rehabilitation of rangelands in all regions of Sudan, maintaining a reasonable balance between the carrying capacity of rangelands and the number of animals; developing rangeland resources; protecting and managing pastures and pastoral resources; expanding provision of basic water services; and building capacity of public institutions and civil society at state and local levels. Notably, these support programmes have lacked a climate component and are becoming increasingly ineffective as climate conditions change.
34. The emphasis of the project is on non-commercial, subsistence activities within small farmer/pastoralist communities in drought prone areas of Sudan. These traditional communities are heavily reliant on rainfed agricultural practices which have been hard hit by climate variability impacts such as increasing heat stress, greater rates of potential evapotranspiration, and increases in drought severity (see Section 1 of Annex 2 for details). They are also characterized as very vulnerable and poor for whom there is little scope to pay for the interventions (beyond the operation and maintenance costs for minor repairs that are partly borne by community-based organizations). The intensification of adverse impacts with future climate change will impose additional risks on their already vulnerable livelihoods. Hence, the project responds to the urgent need to build resilience and adaptive capacity of rural communities with respect to their agricultural and water resource management practices. By its simultaneous focus on enhancing food security, improving rural household livelihoods, lowering climate risks, and use of appropriate water harvesting technology, the project brings together the crucial elements needed for both targeted effectiveness and replicability potential. Specifically, the project addresses three major strategic elements as follows:
- **Food security:** Resilience of food production systems and food insecure communities improved in the face of climate change in Sudan, benefiting farmer and pastoralist households;
  - **Water resources:** Improved access of water for human, livestock and irrigation to sustain livelihoods in the face of climatic risks in the nine targeted states; and
  - **Capacity:** Strengthened capacities and knowledge of institutions and communities on climate change resilience and adaptation.
35. The project scales up a set of adaptation-focused measures that have been tested via a pilot project “Implementing Priority Adaptation Measures to Build Resilience of rainfed farmer/pastoral communities” and have been established as effective climate-proofing measures. They have been further validated by extensive stakeholder consultations as being effective to minimize and reverse the impact of weather and climate impacts on small-scale farmers and pastoralists. The specific measures are briefly described in the bullets below (see Section 2.3 of Annex 2 for a detailed discussion).

#### **Outputs and activities**

36. The expected outcome of the project is the alleviation of the adverse impact of changes in temperature and rainfall patterns on the livelihoods of subsistence agro-pastoralists and nomadic pastoralists. To achieve this outcome, the project established 3 major outputs as follows:
- **Output 1:** Resilience of food production systems and food insecure communities improved in the face of climate change in Sudan, benefiting at least 200,000 households of farmers and pastoralists with 35% women;
  - **Output 2:** Improved access of water for human, livestock and irrigation to sustain livelihoods in the face of climatic risks in the nine targeted states benefiting at least 200,000 households; and
  - **Output 3:** Strengthened capacities and knowledge of institutions and communities on climate change resilience and adaptation.
37. The above outputs involve a hierarchy of activities that span risk minimization, risk absorption, and risk avoidance strategies in water and agricultural systems. Together, these outputs span three major intervention categories: improve knowledge systems, diversify household incomes, and transfer appropriate technologies. Some of the measures are targeted towards public goods – communal rangelands for livestock grazing, village-level water supply, and decentralized irrigation systems – while other interventions aim to increase the adaptive capacity of households that are most vulnerable to climate change by introducing drought-resistant seed varieties and vegetable gardens for women-headed households.
38. The Executing Entity will be responsible for the procurement of any materials required in accordance with official bidding and selection protocols. In the past, procurement transactions have been carried out by government

agencies with the community acting as passive recipients. Community-based procurement enables local communities to implement and control the procurement process through their own organizations, resulting in more openness and accountability, reduced corruption and efficient uses of resources. The implementation community-based procurement in the project sites will involve two key stakeholders as well as the state-level project management team. The locality-level Ministry of Agriculture and Natural Resources (MoANR) is the first stakeholder. Their role in community procurement will be to ensure fair and non-discriminatory competition regarding all procurement procedures. Locality-level MoANRs have well-established community procurement procedures for service, supply and works contracts. CBOs represent the second stakeholder and will benefit from relevant technical assistance associated with community procurement activities. To this activity, they bring the necessary expertise on relevant legal, technical and financial regulations of procurement procedures. The state-level project management will coordinate/support all procurement activities as needed.

39. All materials procured to meet project needs such as solar PV panels are tax exempt. PV panels are associated with Activities 2.1 and 2.2.
40. To achieve Output 1, four major activities will be undertaken:
- Activity 1.1: Introduce drought-resilient seed varieties of sorghum, millet groundnut and wheat that have demonstrated greater yields in the face of climatic changes through village procurement systems;
  - Specifically, Activity 1.1 will involve a) developing and implementing a programme for drought tolerant and early maturing certified seed distribution; b) replicating successful implementation of drought tolerant and early maturing seed varieties of sorghum, millet, groundnut and wheat to neighboring communities through participatory process; c) establish climate adapted seed multiplication farms; d) conducting community-based drought tolerant and early mature seed procurement by ensuring farmer knowledge of technical aspects of seed production, handling and exchange, including establishment of seed multiplication farm at village level; and e) facilitation of access to micro-financing schemes . Drought tolerant and early maturing seeds constitute crop varieties that can better cope with heat, drought, flood and other extremes and help farmers adapt to climatic changes and lead to increases in agricultural production and productivity. The focus of seed varieties will be on adapted food and cash crops seed varieties that are currently available in Sudan that have shown desirable traits in withstanding climatic stresses such as drought, heat, and waterlogging. Seeds will be procured based on community-based procurement protocols that promote the role of the local farmers in procurement of quality seeds of improved varieties at household and community levels. It is predicated on the frequent circumstance of seed supply from the formal sector unable to reach or meet traditional farmers' demand. The viability of community-based seed procurement programs is well established in rural Sudan thanks to past projects and local resource management practices. Seed multiplication farms consist of community-based drought-resistant seed supply on local farms through introducing improved seed varieties and strengthening farmers' capacity and knowledge regarding technical aspects of seeds such as quality control, testing, storage, and certification. These farmers subsequently become a source of quality seeds of improved climate-smart varieties to the communities. The community-based seed supply can be a reliable and efficient way to access high quality seeds. Finally, micro-financing schemes (i.e., sandugs) will be established through the village communities with mechanisms in place to facilitate access to funds.
  - Activity 1.2: Introduce sustainable practices in agricultural production at the community level. This involves the introduction of greater irrigation efficiency in the management of water resources through the introduction of integrated women's farms, home gardens, and demonstration plots ;
  - Specifically, Activity 1.2 will involve a) establishing integrated women sustainable agriculture farms with access to micro-financing schemes; b) establishing sustainable women-centered home gardens, with access to micro-financing schemes; c) training farmers on sustainable wadi cultivated practices and subsequent cultivation in at least 5 specific wadi/depression zones; d) preparing technical manual and provide trainings to farmer groups on water management under climate change (for integrated farmland; home garden and Wadi); and e) setting up climate adaptation-oriented Farmers' Field Schools. Women-run farms and gardens are enterprises for cultivation of a small portion of land which are around the household or within walking distance from the residence. They will be planted with vegetables and fruits and as well as extra-early maturing crops that can serve as a supplementary and urgent source of food and income during period of food scarcity. Women's farms and gardens have proven to be a promising approach to enhance food security and wellbeing of resource-poor households in vulnerable areas, offering benefits of security, convenience, and marketable items. Sustainable wadi cultivated practices involve the implementation of climate-adapted technologies and practices that address the challenge of how to transition to a climate-adapt agriculture at needed scales for enabling agricultural systems to be transformed and reoriented to support food security under the new realities of climate change in rural Sudan. Two main categories of sustainable agriculture are the focus of project activities: a) improving water/soil management practices through the introduction of small scale irrigation and conservation tillage techniques and b) improving crop production practices through seed priming, fertilizer micro-dosing,

adjusting planting density, and changing planting dates to conform to new climatic trends. Farmers' field schools (FFSs) are based on the FAO's Farmer Field School methodology<sup>2</sup> and have been introduced successfully in other parts of Africa to increase farmers awareness about climate change and climate-smart technologies. Among other things, they help farmers learn to integrate weather and climate information with disaster management and agricultural planning while creating awareness about disaster risk reduction and climate change adaptation. The project will address the short time frame to develop climate information by incorporating protocols and lessons learned from the GEF-funded Climate Risk Finance (CRF) project mentioned in Section B.1. That is, the logistical challenge of the time it takes to get climate data, then the time to build climate advisories and then the time to disseminate in FFSs and expect usage for impact will be overcome by the head start provided by the CRF project through the mobile-phone partnership established between the Sudanese Meteorological Authority, the Agriculture Research Center, extension service representatives, and a mobile phone company to develop and distribute climate information to local communities across 6 states in Sudan. As a result, rain-fed farmers and pastoralists now receive forecast/climate information and risk / agricultural / pest / livestock advisories by Short Message Service (SMS). At the same time, the CRF project is developing a Mobile Based Application comprising weather information, agriculture practices, crop insurance scheme, marketing information and advisory services that should be readily available by the start of project activities. Such information will be integrated into the FFS programme.

- Activity 1.3: Introduce rangeland management practices that reduce pastoral stress on communal lands through demonstration farms and rangeland rehabilitation techniques;

Specifically, Activity 1.3 will involve a) the development of technical guidelines for climate adaptive rangeland management; b) establishment of communal rangeland reserves for drought resistant ranged seed production; and c) Rehabilitation of 2,000 hectares of degraded rangelands and an additional 2,500 hectares of strategic rangelands by using site-suitable types of soil conservation and water harvesting techniques. Technical guidelines will focus on climate-adaptive rangeland management techniques. Rangelands are a crucial resource for the poorest people in Sudan's drylands, representing the major source of fodder in livestock production systems. Today, however, these areas are threatened by severe livestock population pressures and environmental degradation. New rangeland management practices to be implemented include rotation grazing, reduced burning, reseeding, brush control, and scheduled rest periods. Rangeland rehabilitation will consist of four main activities: reseeding, water harvesting, grazing management, and fire control. The modalities for introducing and sustaining these new practices will be addressed in Output 3 capacity building activities to ensure that the need for vegetation/soil recovery is community-learned and community-practiced.

- Activity 1.4: Establish shelterbelts/agroforestry to improve productivity and reduce land and environmental degradation. This involves the plantation of trees to absorb energy from dust storms and protection of cultivatable areas

Specifically, Activity 1.4 will involve a) developing and implementing a programme for a total of 30 multi-purpose tree nurseries to be run by women groups; b) establishing shelterbelts with drip irrigation system; and c) establishing climate adaptive community-based afforestation. Shelterbelts will be equipped with drip irrigation systems to act as a barrier to reduce the harmful effect of wind velocities, wind erosion and sand drift and heat waves while improving existing harsh environmental condition. Community based afforestation will involve the planting of climate-resilient tree species and greater and continued community participation in the development of tree nurseries and the management and long-term protection of new forest cover. In addition to increasing resiliency against climate-related impacts, afforested areas will provide an important co-benefit of carbon sequestration. Principal species to be planted include Acacia Senegal with other Acacia species planted as needed, with a rotation of about 15 years and an uptake period of 30 years. Post-project sustainable management of nurseries, shelterbelts and afforested areas will rely on community mobilization/engagement, awareness-raising, and village institutional capacity building that has been achieved as part of Output 3.

41. To achieve Output 2, three major activities will be undertaken:

- Activity 2.1: Construct/rehabilitate water yards and drilling of shallow/borehole for drinking water for human and livestock and small-scale irrigation in targeted locations. This involves increasing the access to water by installing communal water infrastructure;

Specifically, Activity 2.1 will involve a) rehabilitation work for existing water yards to repair/replace components as needed (e.g., borehole, storage tank, animal watering basins, tap stands, solar pumps); b) drilling of new water yards, including boreholes, solar pumps, storage tanks and small-scale irrigated plots in vicinity of water yards; and c) conducting community training for maintenance in water yards, including access to micro-financing schemes. A total of 30 existing water yards will be rehabilitated, together with the installation of 50

<sup>2</sup> Described at: <http://www.fao.org/agriculture/ippm/programme/ffs-approach/en/>

new water yards among the targeted communities. Water yards are essentially a water extraction and distribution complex which includes borehole, storage tank, animal watering basins and tap stands. The borehole is equipped with a pump, typically powered by a diesel engine although in the proposed project, solar-powered pumping is the chosen alternative in order to avoid greenhouse gas (GHG) emissions. Project activities include both rehabilitation of existing water yards and the installation new ones. The installation of new water yards requires approval from State Water Councils which are part of the Ministry of Irrigation and Water Resources (MIWR), one of the Responsible Parties of the project. The MIWR has already committed to providing permission for the installation of new water yards. The procurement of all materials (i.e. pipe, fencing, solar panels, water storage tank, cement, sand, stone aggregate) for rehabilitating or installing new water yards are locally available, obviating the need for importing any goods from abroad. The 80 new and rehabilitated water yards will each provide a daily storage capacity of 50 m<sup>3</sup>, or 1.46 Mm<sup>3</sup> per year. Specific locations for rehabilitated and new water yards are indicated in Annex 2.

- **Activity 2.2:** Establish sand water-storage dams in support of small-scale irrigation in targeted localities and villages. This involves the blocking seasonal wadis for groundwater storage and exploitation;

Specifically, Activity 2.1 will involve a) constructing sand water-storage dams in drought-prone areas; b) installing small pumping units around sand water-storage dam for sustainable agriculture; and c) providing training for operation and maintenance of sand water-storage dam and solar pumps for water management scheme, including access to micro-financing schemes. A total of 30 new sand water-storage dams and 50 solar-powered pumps will be installed at selected locations within the project sites. These are cost-effective rainwater harvesting structures which are used as a response to conditions of water scarcity due to severe drought and climate extremes in drylands. They are simple structures that consist of a reinforced concrete wall built up to 5 meters high across a seasonal water stream that transports runoff-water from catchment areas to streambeds. They are designed like ordinary dams, but the spillway is raised to enable sediments to sit in the dam. Project activities include constructing new sand water-storage dams which do not require a permit or approval from State Water Councils. The procurement of any materials for constructing sand water-storage dams are locally available, obviating the need for importing any goods from abroad. Each sand water storage dam has an annual design capacity of 20,000 cubic meters. The 30 new sand water storage dams will contribute a total of 0.6 Mm<sup>3</sup> in new annual water storage capacity. Specific locations for the new sand water-storage dams and pumps are indicated in Annex 2.

- **Activity 2.3:** Construct improved Hafirs and upgrade existing ones, excavating natural pond and cistern to increase availability of drinking water. This involves the construction of water storage infrastructure

Specifically, Activity 2.1 will introduce 75 new hafirs at selected locations within the project sites. A hafir is simply an artificial excavation designed for harvesting rainwater. During the rainy season it will be filled by the discharge from seasonal streams and enhances the access of vulnerable communities to drinking water. Hafirs are usually constructed big enough to cater for the needs of the villagers/nomads and their livestock during the dry season. Each improved hafir has an annual storage capacity of 50,000 cubic meters. The 75 new improved hafirs will contribute a total of 3.75 Mm<sup>3</sup> in new water storage capacity. Project activities include both constructing improved Hafirs and upgrading existing ones. The installation of new hafirs does not require approval from State Water Councils. The procurement of any materials for rehabilitating or constructing new hafirs are locally available, obviating the need for importing any goods from abroad.

42. To achieve Output 3, two major activities will be undertaken:

- **Activity 3.1:** Train extension officers and other government stakeholders on climate change resilience and adaptation related issues. This involves the development of training materials tailored to local circumstances and delivered through a series of workshops;

Specifically, Activity 3.1 will involve a) conducting a training needs assessment for executing and concerned government agencies; b) developing manuals and technical guidelines for strengthening technical capacity for expanding climate-resilient practices throughout other communities; c) training extension staff from the Ministry of Agriculture and concerned government agencies; d) developing guidelines on adaptation measures for up-scaling to other localities; and e) developing a manual of best practices on climate change adaptation measures

- **Activity 3.2:** Build capacity of beneficiaries for coping with climate change risks and local operation & maintenance of project interventions. This involves a series of seminars and workshops to raise awareness among village leaderships councils about climate change coping strategies

Specifically, Activity 3.2 will involve a) conducting climate resilience training of village extension networks, including role of micro-financing schemes; b) conducting training of village development committees, including role of micro-financing schemes and community procurement processes; c) carrying out awareness-raising campaigns on building resilience to climate change, including role of micro-financing schemes; and d) facilitating exchange visits of communities and extension staff across localities. A fair and transparent selection

process will be established regarding beneficiary selection for capacity building. Several criteria will be employed to select training beneficiaries including specific level of stakeholder engagement; specific level of vulnerability, status as female-headed household, and other criteria to be determined.

43. In the absence of the above project activities, climate change is likely to lead to desertification in some targeted regions, while in others, flash flooding will increase in frequency and intensity, and in still others, subsistence agro-pastoralists and nomadic pastoralists may be forced to migrate to urban centers. The country's inherent vulnerability may best be captured by the fact that food security in Sudan is mainly determined by rainfall, particularly in rural areas, where most of the total population lives and where subsistence agriculture is practiced. The project focuses on building resilience and adaptive capacity of rural communities with respect to their agricultural and water resource management practices, and current and future climate risks. Project activities differ from baseline activities discussed earlier by their explicit focus on the interactions between three different systems in which pastoral people operate, namely the natural resource system (water, arable land, rangelands), the resource users' system (pastoralists, agro-pastoralists), and the larger state/federal geopolitical system in Sudan. The integrated nature of proposed activities builds upon and extends previous adaptation project efforts.
44. Some project activities are included in order to ensure that beneficiaries will continue to apply the new resilient practices beyond the project period. They include a) setting up rural micro credit schemes to ensure ready access to cash for purchase of more expensive drought resistant seed varieties; b) developing rural crop insurance programmes to reduce risks of financial loss resulting from extreme/recurring weather events; and c) developing and/or improving rural markets and market access through introduction of measures promoting partnerships between the public and private sector. Taken together, these interventions will increase agriculture yields, enhance access to water resources, reduce pressures on rangelands and mitigate the potential for future conflicts over dwindling resources resulting to improve household incomes for subsistence farmers. This will contribute towards the reduction of the proportion of rural communities classified as highly vulnerable to climate change impacts on food security. In turn, the project will contribute by way of lessons that can be scaled up to support the achievement of the Sustainable Development Goals 1, 2, 5 and 13.
45. Annex 2 provides technical descriptions of the technologies and practices included in project activities. Some measures are implemented across multiple activities, as briefly described below:
  - Rural micro credit schemes: These schemes are associated with the implementation of the "Sandug" scheme, a micro-financing system for rural households to cope with climate change impacts through a strengthening of rural finance systems. A "Sandug", which literally means a box for holding money, is a revolving fund that typically involves a group of 10 to 20 women who contribute an agreed upon amount of money or commodity to a group fund, at regular periods of time. The collected funds are then handed over to one member of the group on a rotating basis, until each one in the group has received the same service. Funds are used to procure agricultural inputs and provide interest free loans to women. Sandug schemes are associated with Output 1, Sub-activity 1.1.5. They will not only ensure ready access to cash for purchase of more expensive drought resistant seed varieties, but will offer a number of ancillary local benefits, including a) promoting an added level of resiliency against an adverse climatic event that could aggravate existing poverty conditions; b) increasing the available of funds for potential future local investments that can build resilience (e.g., wells, sanitation, health care); and c) creating potentially new employment opportunities as more revenues are available to improve village economies. Sandug schemes will be seeded with local or co-financing funds. No GCF funds will be allocated to the sandug micro-financing systems. Annexes 19g and 19h provide case studies of sandug administration in rural Sudan.
  - Community-based procurement: These schemes are associated with Output 1 (Activities 1.1 and 1.3) and Output 3 (Activity 3.2). They represent a well-vetted rural process that conforms to public seed administration protocols that include working with community based organizations (CBOs) that are registered with the Ministry of Social Welfare and/or the Humanitarian Assistance Commission (HAC) to guarantee access to services in local seed procurement using guidance consistent with Sudan's Public Procurement Act of 2010, the legal basis for community based procurement. Community-based procurement offers a number of advantages including a) creating awareness among communities about improved drought tolerant varieties and seed quality attributes based on local knowledge of the community's own needs; b) making improved high quality seeds affordable at the right time; c) improving the availability and access to improved varieties within the village by all groups of farmers; d) reducing dependence on external seed sources thereby encouraging community-level trade in drought-resistant seeds; and e) prioritizing farmers' preferred seed varieties. The parties involved in community-based procurement include local farmers, local CBOs, and local seed distributors. Capacity building will be undertaken in Activity 3.2 to ensure best value for money, fairness and transparency under community procurement processes. Procurement will be undertaken by the state-level PMUs under the oversight of the HCENR and subject to its approval on all protocols proposed. CBOs will benefit from relevant technical assistance associated with community procurement activities. The role of the

Executing Entity will be to ensure adequate training and transparent processes consistent with legal requirements.

**Project sites and beneficiaries**

46. The focus of the project is on 211,773 subsistence agro-pastoralist and nomadic pastoralist households distributed among 138 villages across 9 states in Sudan. These are the primary beneficiaries of project activities. These households correspond to a population of about 1,181,538 people, or roughly 10% of the total population in the targeted villages. In addition, a further 2,499,712 people are indirect beneficiaries of project activities. Community selection was based on several common characteristics shared across the targeted villages, namely subsistence agro-pastoralists and nomadic pastoralists who are highly vulnerable to climate change with few opportunities for household income diversification and adaptation. Despite their vulnerability, local populations have little access to measures and practices that can increase their resilience in the face of climate change.

47. A brief description of the scope of targeted beneficiaries and their current livelihoods are summarized below. A map showing the locations of the intervention area is shown at right. Additional details are provided in Annex 2 where the data and other information used to characterize local climatic threats are described and discussed.



- **West Darfur:** A total of 2,829 directly benefitting households in 5 villages in the Genana and Krenik localities are included in the project. Traditional agriculture is the most important form of production and characterized by various types of small-scale sedentary cultivation and pastoralism. Integration of animal and crop production is traditionally practiced as is horticulture along seasonal streams.
- **Central Darfur:** A total of 7,727 directly benefitting households in 13 villages in the Zalingi and Azoom localities are included in the project. Traditional agriculture is the most important form of production and characterized by various types of small-scale sedentary cultivation and pastoralism. Integration of animal and crop production is traditionally practiced. Small scale irrigated horticulture production is widely practiced by streams and seasonal water courses.
- **East Darfur:** A total of 47,700 directly benefitting households in 10 villages in the El Dain, Firdous and Asalia localities are included in the project. Traditional agriculture is the most important form of production and characterized by various types of small-scale sedentary cultivation and pastoralism, with horticulture practices along seasonal streams.
- **Western Kordofan:** A total of 5,683 directly benefitting households in 28 villages in the Asalam, Al Nohoud, and Alsunut localities are included in the project. The local economy depends upon small scale rain fed traditional production systems of cropping and animal husbandry. There is an exclusive reliance on rainfall for agricultural production.
- **South Kordofan:** A total of 10,350 directly benefitting households in 24 villages in the El Goz and Dilling localities are included in the project. Traditional agriculture is the most important form of production and characterized by various types of small-scale sedentary cultivation and pastoralism. Small scale irrigated horticulture production is widely practiced. Forestry are important income sources.
- **Kassala state:** A total of 74,208 directly benefitting households in 16 villages in the Kassala, Telkuk, and Rural Nhar Atbra localities are included in the project. Agriculture and livestock herding are the two major livelihoods. Small scale irrigated horticulture production is widely practiced.
- **Red Sea state:** A total of 52,000 directly benefitting households in 15 villages in the Agig, Dordaib/Haya, and Guneb Olib localities are included in the project. The main livelihood groups are pastoralists that rely on seasonal water courses. Other livelihood sources are limited traditional cultivation and fisheries in coastal areas. The state has experienced long period of extended drought conditions, with over 90% of cereals consumed coming from other parts of Sudan.
- **Northern state:** A total of 8,929 households in 18 villages in the Dongola, Marawi, and Al Dabaha localities are included in the project. The local economy depends upon both irrigated and rained agriculture. Nile which passes through the region from south to north. Most of the population is engaged in intensive agricultural production along both banks. Horticulture production is widely practiced.

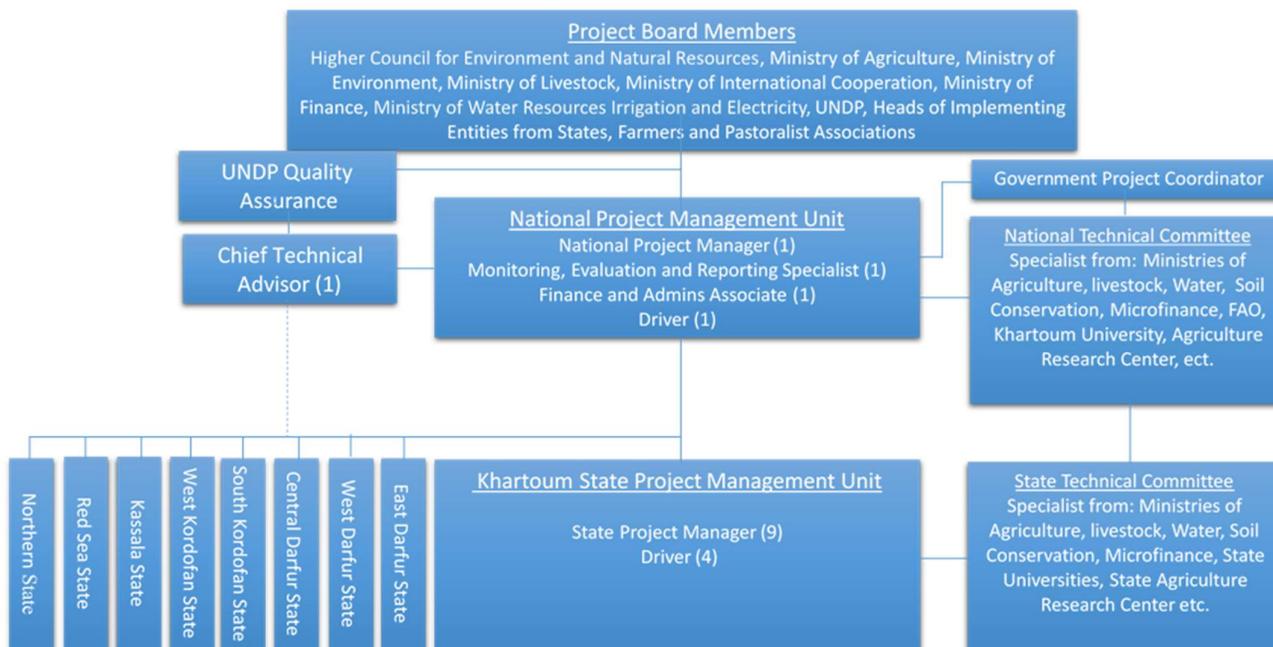
- **Khartoum:** A total of 2,347 households in nine villages in rural areas of the Omdurman and Sharg El Nil localities are included in the project. These households are among the 20% of the population that are located in rural areas. Irrigated agricultural production along both banks of the Nile. Horticulture production is widely practiced. Commercial livestock in ranches. Grazing along seasonal streams and limited traditional cultivation and pastoralism in the eastern and northern-eastern part.
48. Traditional local governance groups are important project stakeholders, both as participants in and as bridges between statutory institutions and local-level natural resource users. Attention will be directed to build the capacity of the native administration in areas of environmental governance, management of shared natural resources, inter and intra state relations and how to establish a network of early warning system for conflicts prevention and mitigation in the area. The project will draw on the experiences of NGOs, UNEP, FAO, UNICEF and UNDP in Sudan in applying integrated water resource management (IWRM) approaches to water and rangeland resources. These organizations (i.e., UNEP, FAO, and UNICEF) will not be directly involved in project activities, only the lessons learned from their project experiences as available in project reports.
  49. There are no projected increases in GHG emissions due to project activities focused on agriculture and livestock improvements. However, improvements in rangeland management as well as community reforestation, and the planting of shelterbelts with drip irrigation are likely to yield carbon sequestration co-benefits (see Section D.3). Finally, for all project activities involving groundwater abstraction from deep and shallow wells (i.e., water yards, hafirs, sand water-storage dams) the project will monitor groundwater abstraction rates to ensure to ensure sustainable abstraction rates. Current annual groundwater abstraction rates across the project areas are about 50 Mm<sup>3</sup>/year which is well below annual recharge rates that range from 375 Mm<sup>3</sup>/year for shallow (i.e., less than 10 meters to the groundwater table) alluvial aquifers to 600 Mm<sup>3</sup>/year for the Nubian Sandstone aquifer and 1,915 Mm<sup>3</sup>/year for the Um Rawaba aquifers where the depth to the groundwater table for these aquifers is between 70 and 80 meters. Even with project-related annual groundwater abstraction of about 106 Mm<sup>3</sup>/year, total groundwater withdrawals represent a small fraction of groundwater recharge rates for shallow and deep aquifers. Nevertheless, ongoing monitoring will be undertaken to ensure that abstraction rates remain below 70% of annual recharge rates (see Annex 2; section 2.3.13 and Annex F that follows).

#### **B.4. Implementation arrangements (max. 1500 words, approximately 3 pages plus diagrams)**

50. The HCENR is the executing entity of the project. HCENR is the technical arm of the Ministry of Agriculture and Natural Resources, in policies, legislation and strategic planning in relation to environmental and natural resources conservation and management. HCENR is the government coordinating body concerned with integration of environment into national development. HCENR is the focal point of many MEAs including Rio conventions. HCENR works in close collaboration with all government institutions at both the federal and States level. The HCENR coordinates all climate change-related activities in Sudan, including the National Communication under the UNFCCC, development of national adaptation plans, and the implementation of adaptation projects and research activities. As the National Designated Authority, the role of the HCENR has been catalytic in coordinating the dialogue across the many potential partners around project development opportunities for resilience-building in vulnerable communities.
51. As the executing entity, the HCENR will provide project management support for project implementation through its technical and administrative staff and systems. It will also be responsible and accountable for managing this project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP resources. Specifically, the HCENR will designate a National Project Director responsible for the overall direction, strategic guidance and timely delivery of the Project. Also, the HCENR is responsible for: approving and signing the multiyear workplan; approving and signing the combined delivery report at the end of the year; and, signing the financial report or the funding authorization and certificate of expenditures. Therefore, MoANR and MoIWR will not retain any discretion and decision-making with respect to implementation of project activities. The Government of Sudan typically uses this type of arrangement for project implementation and it has demonstrated effectiveness in other climate change adaptation projects.
52. The HCENR has a strong track record of effectively managing climate change adaptation projects. The HCENR has been the lead coordinating agency for each of the 13 baseline adaptation projects in food security, water resources, and rangeland management discussed earlier. A review of the HCENR's operating modalities for project implementation was recently completed in February 2017 (Republic of Sudan, National Audit Chamber). The results of the assessment indicated that risks are low for experiencing difficulties in managing future projects relative to the seven major risk assessment categories.
53. The project's implementation arrangements are designed to be consistent with lessons learned in the several successfully implemented climate change projects in Sudan.
54. The project will be implemented following UNDP's National Implementation Modality (NIM), according to the Standard Basis Assistance Agreement between UNDP and the Government of Sudan and as policies and

procedures outlined in the UNDP POPP (see <https://info.undp.org/global/popp/ppm/Pages/Defining-a-Project.aspx>), and in accordance to the Master Agreement between UNDP and the GCF.

55. The national executing entity is required to implement the project in compliance with UNDP rules and regulations, policies and procedures, including the NIM Guidelines. These include relevant requirements on fiduciary, procurement, environmental and social safeguards, and other performance standards. In legal terms, this is ensured through the national government's signature of the SBAA, together with a UNDP project document which will be signed by the Executing Entity to govern the use of the funds. The SBAA was signed with GoS in October 1978.
56. The (national) Executing Entity for this project is The Higher Council for Environment and Natural Resources (HCENR), which is accountable to UNDP for managing the project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of resources made available by UNDP. UNDP, in agreement with the Government of Sudan, will provide implementation support (support to NIM) and oversight through the UNDP country Office in Khartoum.
57. Day-to-day project oversight will be conducted in accordance with established HCENR and UNDP procedures. Implementation arrangements are focused on four (4) organizational elements, namely a Project Board, Project Management team, Technical Committee, and State Project Managers. Each is described in the subsections that follow. The duration of the project is 5 years, with activities sequenced to maximize sharing of lessons learned from the implementation of activities across the targeted communities.
58. The project organization structure is as follows:



### **Governance arrangements**

59. UNDP provides a three-tier oversight and quality assurance role involving UNDP staff in Country Offices and at regional and headquarters levels. The quality assurance role supports the Project Board, by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. Project Assurance must be independent of the Project Management function; the Project Board cannot delegate any of its quality assurance responsibilities to the Project Manager. The project assurance role is covered by the accredited entity fee provided by the GCF. As an Accredited Entity to the GCF, UNDP is required to deliver GCF-specific oversight and quality assurance services including: (i) Day-to-day oversight supervision, (ii) Oversight of project completion, and (iii) Oversight of project reporting. The 'senior supplier' role of UNDP is to represent the interests of the parties, which provide funding and/or technical expertise to the project (designing, developing, facilitating, procuring, implementing). The senior supplier's primary function within the Board, is to provide guidance regarding the technical feasibility of the project.
60. In addition, the Government of Sudan has requested UNDP to provide direct project services for this project. The UNDP and Government of Sudan acknowledge and agree that those services are not mandatory and will be

provided based upon the Government request as specified in the Letter of Agreement. Direct project services would follow UNDP policies on the recovery of direct project costs relating to GCF-funded projects.

61. Project Board: The Project Board (also called Project Steering Committee) is responsible for making, by consensus, management decisions when guidance is required by the National Project Manager, including recommendations for UNDP and/or the Executing Partner approval of project plans and revisions. In order to ensure UNDP's ultimate accountability, Project Board decisions should be made in accordance with standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition. In case a consensus cannot be reached within the Board, final decision shall rest with the UNDP Programme Manager. In addition, the Project Board plays a critical role in UNDP commissioned project evaluations by quality assuring the evaluation process and products, and using evaluations for performance improvement, accountability and learning.
62. Specific responsibilities of the Project Board include:
- Provide overall guidance and direction to the project, ensuring it remains within any specified constraints;
  - Address project issues as raised by the project manager;
  - Provide guidance on new project risks, and agree on possible countermeasures and management actions to address specific risks;
  - Review the project progress, and provide direction and recommendations to ensure that the agreed deliverables are produced satisfactorily according to plans;
  - Review and approve annual work plan and provide necessary guidance;
  - Appraise the annual project implementation report, including the quality assessment rating report; make recommendations for the workplan;
  - Provide ad hoc direction and advice for exceptional situations when the project manager's tolerances are exceeded; and
  - Assess and decide to proceed on project changes through appropriate revisions.
63. The composition of the Project Board will include the following roles:
64. Executive: The Executive is an individual who represents ownership of the project and chairs the Project Board. This role will be held by Secretary General of HCENR representing the Government. The Executive is ultimately responsible for the project, supported by the Senior Beneficiary and Senior Supplier. The Executive's role is to ensure that the project is focused throughout its life cycle on achieving its objectives and delivering outputs that will contribute to higher level outcomes. The executive has to ensure that the project gives value for money, ensuring cost-conscious approach to the project, balancing the demands of beneficiary and supplier. Specific Responsibilities include: (as part of the above responsibilities for the Project Board):
- Ensure that there is a coherent project organization structure and logical set of plans;
  - Monitor and control the progress of the project at a strategic level;
  - Ensure that risks are being tracked and mitigated as effectively as possible; and
  - Chair Project Board meetings.
65. Senior Supplier: The Senior Supplier is an individual or group representing the interests of the parties concerned which provide funding and/or technical expertise to the project (designing, developing, facilitating, procuring, implementing). The Senior Supplier's primary function within the Board is to provide guidance regarding the technical feasibility of the project. The Senior Supplier role must have the authority to commit or acquire supplier resources required. If necessary, more than one person may be required for this role. The UNDP will assume this role. Specific Responsibilities include (as part of the above responsibilities for the Project Board):
- Make sure that progress towards the outputs remains consistent from the supplier perspective;
  - Promote and maintain focus on the expected project output(s) from the point of view of supplier management;
  - Ensure that the supplier resources required for the project are made available;
  - Contribute supplier opinions on Project Board decisions on whether to implement recommendations on proposed changes;
  - Ensure the project is implemented in accordance with the signed project document; and
  - Arbitrate on, and ensure resolution of, any supplier priority or resource conflicts.
66. Senior Beneficiary: The Senior Beneficiary is an individual or group of individuals representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary's primary function within the Board is to

ensure the realization of project results from the perspective of project beneficiaries. The Senior Beneficiary role is held by a representative of the government or civil society. For this project, the Senior Beneficiary is representatives from farmers, pastoralists unions and civil society, a group of government agencies, namely the Ministry of International Cooperation, the Ministry of Agriculture and Natural Resources, the Ministry of Water Resources and Electricity, the Ministry of Animal Resources, Microfinance Institutions as well as others to be determined during the Inception Workshop. Training activities targeted toward state-level extension agencies will be based on formal agreements reached between the Executing Entity and state-level offices that outline expectations and projected outcomes. Training activities targeted toward agro-pastoralist stakeholders and beneficiaries will be by invitation only, pursuant to a transparent and fair selection process. The Senior Beneficiary is responsible for validating the needs and for monitoring that the solution will meet those needs within the constraints of the project. The Senior Beneficiary role monitors progress against targets and quality criteria. This role may require more than one person to cover all the beneficiary interests. For the sake of effectiveness, the role should not be split between too many people. Specific Responsibilities (as part of the above responsibilities for the Project Board):

- Prioritize and contribute beneficiaries' opinions on Project Board decisions on whether to implement recommendations on proposed changes;
- Specification of the Beneficiary's needs is accurate, complete and unambiguous;
- Implementation of activities at all stages is monitored to ensure that they will meet the beneficiary's needs and are progressing towards that target;
- Impact of potential changes is evaluated from the beneficiary point of view; and
- Risks to the beneficiaries are frequently monitored.

67. Project Management Unit (PMU): The PMU is composed of the NPM, subject matter specialists, Finance and Administrative Associate and a Monitoring, Evaluation and Reporting Specialist who will be contracted specifically for this project. The PMU will directly be supported by the project Chief Technical Advisor (CTA). The PMU is responsible for the day to day management of the project activities and is accountable to the PB. The Project Management Unit's overall role is to ensure that comprehensive technical and management support is provided to project activities and local beneficiaries, including overseeing knowledge management and Monitoring and Evaluation. The PMU must have adequate multi-disciplinary technical capacity to be able to support technical, financial and climate change adaptation-related activities. Thus, the PMU team must be able to work with a large range of natural resources, economic, policy and organizational issues, and can ensure that activities are designed and implemented in-line with national and international best practices.
68. State-level Project Management Unit (SPMU): At the state level, the project will have a State-level Project Management Unit (SPMU) consisting of 9 state project managers, one for each project site, who will be contracted specifically for this project, as shown in the project organogram. The State Project Managers are accountable to the NPM at the national PMU and will be responsible for planning, implementation, monitoring and reporting of state level activities. The SPMU will be assisted by a State Technical Committee (STC) composed of specialists in the fields of agriculture, livestock, water, soil conservation, microfinance as appropriate based on the focus of activities in the concerned states. This may be assigned by respective state ministries/institutions. The SPMU will be hosted by the state Ministry of Agriculture or Livestock as appropriate.
69. State Technical Committee (STC): The role of the STC is to guide and oversee the implementation at state level. The STC, which will meet on monthly bases, will be responsible of contributing to, approving and supervising the implementation of the project workplan and will be contracted specifically for this project. The STC members/specialists will also act as focal points for their respective component i.e. contribute to the planning, implementation, monitoring and reporting processes. Each STC member will be the strong link between the project and her/his ministry/institution and therefore ensure that policies, strategies and coordination with other ongoing programmes within the respective ministry is properly considered. Moreover, the STC will substantively contribute to identification, documentation and dissemination of best practices and lesson learnt. Members of the STC will work towards integration and streamlining of project activities and best practices in the plans of their respective ministries/institutions.
70. At the locality and village level, the project will work through well-trained agents and extensions officers on the different project-related fields in accordance to the focus of the project in the specific state. These project agents will be trained on subject matters, well connected with SPMU and placed properly within the locality. The agents will work through and provide support to beneficiaries through the Community Based Organizations (CBO). At the village level, the project activities will be implemented and coordinated through the Community Based Organizations. Such CBOs will include the Village Development Committee (VDC), sub committees on Water, Agriculture, natural resources and Microfinance. These committees will be created at the startup of the project, if not existing, trained and equipped with skills necessary for implementation of project activities.

71. National Project Manager (NPM): The Executing Entity will recruit a National Project Manager responsible for the day to day operation of the Project to be supported by the Project Management Unit. The NPM has the responsibility to run the project on a day-to-day management and decision making on behalf of the Project Board within the constraints laid down by the Board. The NPM will be accountable to the project Board, HCENR and UNDP. The NPM's prime responsibility is to ensure that the project produces the results specified in the project document, to the required standard of quality and within the specified constraints of time and cost. The UNDP and Implementing Partner recruit the NPM. Specific responsibilities include:
- Provide direction and guidance to the 9 state project managers;
  - Liaise with the Project Board to assure the overall direction and integrity of the project;
  - Identify and obtain any support and advice required for the management, planning and control of the project;
  - Responsible for project administration;
  - Plan the activities of the project and monitor progress against the project results framework and the approved annual workplan;
  - Mobilize personnel, goods and required services, including drafting terms of reference and work specifications, and overseeing all contractors' work;
  - Monitor events as determined in the project monitoring schedule plan/timetable, and update the plan as required;
  - Manage requests for the provision of financial resources by UNDP, through advance of funds, direct payments or reimbursement using the fund authorization and certificate of expenditures;
  - Monitor financial resources and accounting to ensure the accuracy and reliability of financial reports;
  - Be responsible for preparing and submitting financial reports to UNDP on a quarterly basis;
  - Manage and monitor the project risks initially identified and submit new risks to the project board for consideration and decision on possible actions if required; update the status of these risks by maintaining the project risks log;
  - Capture lessons learned during project implementation;
  - Prepare the annual workplan for the following year; and update the Atlas Project Management module if external access is made available;
  - Prepare the Annual Project Report and submit the final report to the Project Board;
  - Based on the Annual Project Report and the Project Board review, prepare the AWP for the following year;
  - Ensure the mid-term evaluation process is undertaken as per the UNDP guidance, and submit the final MTE report to the Project Board and identify follow-on actions and submit them for consideration to the Project Board; and
  - Ensure the terminal evaluation process is undertaken as per the UNDP guidance, and submit the final TE report to the Project Board.
72. Chief Technical Advisor (CTA): The CTA has the responsibility to provide technical support and guidance to the PMU. The CTA will ensure that the project implementation is consistent with the PRODOC and implementation agreements and that resources are geared towards the intended results. The CTA will be accountable to UNDP and will be hosted in the PMU. The CTA will ensure that the project produces the results specified in the project document, to the required standard of quality. The UNDP will recruit the CTA. Specific responsibilities include:
- Provide technical to project team(s)/ responsible party (ies);
  - Ensure that the project is implemented as per the PRODOC, letter of agreements and associated national implementation manuals.
  - Ensure that the project activities and resources are all geared towards achievement of the whole set of results hierarchies, as reflected in the log frame/results framework;
  - Ensure that the rules, regulations and national implementation guidance of UNDP are fully respected and adhered to throughout the implementation of the project;
  - Provide substantive support and advice required for the management, planning, monitoring and financial management;
  - Monitor financial resources and accounting to ensure the accuracy and reliability of financial reports;
  - Contribute and take lead in reporting of results, including documentation of best practices and lesson learnt;

- Be responsible for reviewing and ensuring the correctness of the financial reports before submission to UNDP on a quarterly basis;
- Initiate and manage the process of the mid-term evaluation, including preparing TOR and managing the whole process as per the UNDP guidance, identify follow-on actions for consideration to the Project Board;
- Ensure that the final report and any other reports are prepared to the highest standard and quality and submitted to UNDP and donor on time; and
- Ensure that resources of the terminal evaluation are allocated, and TOR is prepared as per the UNDP guidance.

**Conflict of interest mitigation plan**

73. For Sudan, having the HCENR serve as both NDA focal point and EE is the most efficient and cost-effective approach to ensuring the successful execution of all activities. At present, the GCF's Policies on Ethics and Conflicts of Interest neither reject nor endorse such an arrangement. However, to avoid any potential organizational conflict of interest that may arise when the strategic responsibilities of the HCENR may be at odds with the demands of its implementation responsibilities, an Organizational Conflict of Interest Mitigation Plan (OCIMP) has been developed, as described below.
74. A system will be put in place to identify and mitigate any organizational conflicts of interest (OCI) for the HCENR relative to its dual role as the project's EE and its ongoing role as Sudan's NDA focal point. Sudan recognizes that OCI is a significant issue for the GCF and is therefore committed to a systematic approach to identify, avoid and/or mitigate organizational conflict of interest issues, whether actual or perceived, while implementing activities for the project. Two types of potential OCI are envisaged:
- Impaired Objectivity: This type of OCI issue arises in cases when the HCENR's work under one proposal/contract arrangement could require evaluating itself under another contract or an evaluation of proposals as part of another contract. In such a case, the concern is that the HCENR's ability to render impartial advice to the Government as its NDA focal point could appear to be undermined by its function as the EE whose work is under review; and
  - Contractor judgment: This type of OCI arises in cases where the HCENR's dual roles might bias a contractor's judgment in carrying out its activities. In such a case, the concern is that the existence of potentially conflicting roles, as EE and NDA, could adversely influence a contractor's judgment in offering advice, providing a response to bid solicitations, among others.
75. The OCI Management Plan aims to ensure an organizational firewall between the HCENR's dual responsibilities as EE and NDA focal point. This will establish an environment where, as the NDA focal point, the HCENR can provide unbiased, impartial, and objective engagement with the GCF while, as the EE, the HCENR can provide efficient oversight and management of grant funds. The major role of the HCENR is facilitation, coordination and oversight of the project implementation. The Ministry of Agriculture will implement the project activities in the State Level. This OCI Management Plan may be subsequently augmented to provide additional processes and procedures for the specific mitigation approach in response to future unanticipated circumstances. This OIC Management Plan and subsequent additions (if and as needed) will govern the conduct of all affected personnel associated with the implementation of project activities.
76. The underlying approach of the OIC Management Plan is to avoid, neutralize, or mitigate conflict of interest issues that could potentially arise during the implementation of project activities through the organizational and physical isolation of Project Management Offices (PMOs). That is, as described above, day-to-day operations at the state level will be managed by PMOs that are; a) institutionally affiliated within the Ministry of Agriculture and Forestry (MoAF); and b) physically located within the state-level MoAF offices within the nine (9) states where project activities will be undertaken (i.e., West Darfur, Central Darfur, East Darfur, West Kordofan, South Kordofan, Kassala, Red Sea, Northern, and Khartoum).
77. Within this framework, the HCENR will serve primarily in the capacity of funds manager, with technical oversight responsibilities managed by the UNDP country office. Relying on state-level governmental agencies for project management represents a flexible and compliant process for the HCENR to achieve its strategic objectives as NDA focal point while achieving its implementation objectives as EE. Obtaining technical expertise from the UNDP country office ensures that monitoring and evaluation protocols and indicators are duly tracked.
78. In addition, the Project Board will ensure oversight and continuous monitoring of OCI provisions, reviews, and will be available to consult on specific OCI concerns that may arise. The Board shall be responsible for the identification, reporting, and handling of OCI concerns and for overall definition, identification, management, and control of OCI sensitive information. The Board shall investigate and analyze potential OCI issues or concerns and recommend appropriate mitigation measures. The Board shall also be responsible for amending this OICMP

as necessary to sufficiently address any new OCI issues. Specifically, the Board's principal responsibilities with regard to OCI are to:

- Identify any OCI issues for each sub-activity of the project;
- Develop an appropriate OCI mitigation approach in accordance with this OICMP;
- Coordinate the proposed OCI mitigation requirements with the HCENR and UNDP;
- On a regular basis, monitor effectiveness of OCI controls in use;
- Proactively investigate any OCI issues or concerns;
- Recommend any additional OCI mitigation measures to resolve specific OCI issues, as needed; and
- Ensure documentation is sufficient to notify HCENR and UNDP upon discovery of any real or potential OCI conflict.

79. Early identification of potential OCI issues is necessary in order to minimize disruption to project activities and accomplish the mitigation or avoidance of any actual and perceived OCI. This process begins immediately when a conflict of interest issue is raised by a member of the OCI Board. The actions proposed to avoid, mitigate, or neutralize the actual or perceived OCI will be provided in writing by the PM prior to participating in potentially conflicting work.

**B.5. Justification for GCF funding request (max. 1000 words, approximately 2 pages)**

80. Absent GCF funding, vulnerable small-holder farmer and pastoralist communities throughout Sudan will continue to experience a worsening livelihood situation as the adverse impacts of climate change become increasingly evident. Deepening poverty, increased food insecurity, more resource-based conflicts, and uncontrolled urban migration- specifically among the youth- are some of the projected consequences, with women-headed households in rural areas likely at the forefront of these impacts. With GCF funding, the GoS will be able to couple GCF grant resources with co-financing from its own internal budgets, to ensure effective mainstreaming of the successful practices and lessons learned into ongoing development efforts to build resilience among rural drought-prone communities.

81. The project is a strategic intervention designed to build climate resilience among the most vulnerable populations in Sudan. It aims to implement value-added activities relative to traditional practices in Sudan and is fully consistent with GCF programming objectives. The GCF contribution is critical for the project, in as much that the successful implementation of these activities would be impossible without the financial assistance inherent in the GCF contribution. With GCF financing, the resilience and adaptive capacity of rural communities will be built relative to their agricultural and water resource management practices, and relative to current and future climate risks. Moreover, by its simultaneous focus on enhancing food security, improving rural household livelihoods, lowering climate risks, and scaling up of appropriate pilot technologies, the project brings together the crucial elements needed for both targeted effectiveness and replication potential in other rural communities. There are two major reasons justifying GCF involvement.

- Financial limitations of the GoS. As a Least Developed Country, the GoS has limited funds for investing in climate change adaptation measures. Given other development priorities that exist in rural areas, current investments of US\$ 4.08 billion in projects for agriculture, water resources, and rangelands are overwhelmingly directed toward conventional technologies and practices that have shown promise under historical and stable climate conditions. Those adaptation-focused investments that have been introduced in recent years totaling US\$ 185.8 million - while constructive in shaping policymaker attention on the urgency of crafting effective adaptation responses - have yet to alter the trajectory of planned investments for supporting subsistence agro-pastoralists and nomadic pastoralists faced with the prospects of rain deficits, more extreme temperatures, and crippling poverty. Absent more evidence from actual field-based project activities that climate-resilient development pathways – typified by the very interventions that have been incorporated into the project - are in fact a paradigm-shifting necessity, it is unlikely that adaptation consideration will ever be fully operationalized into policymaker dialogues and decision-making.
- Incremental costs. Largely through own meager resources, Sudan's subsistence agro-pastoralists and nomadic pastoralists have devised and maintained effective resource management systems for centuries under climatic conditions that have always been vulnerable to droughts. These systems have endured despite desert encroachment, rangeland degradation, nomadic/farmer tensions, and intensifying cultivation. However, climate change as evidenced by higher recurrence frequency of droughts and extreme events over the past twenty years has adversely impacted these traditional management systems, leaving agro-pastoralists with fewer and fewer options to maintain even basic subsistence levels. Such households clearly have insufficient financial resources to supply the incremental costs of sustainable practices and technologies. As climate change deepens, the GoS acknowledges the need to better understand development pathways that account

for climate change risks facing its subsistence agro-pastoralists and nomadic pastoralists. GCF resources are critical to address the costs of the range of climate-resilient agriculture, water resource, and rangeland management interventions proposed, which themselves build on baseline GoS investments.

**B.6. Exit strategy and sustainability (max. 500 words, approximately 1 page)**

82. All operations and maintenance needs for sand water-storage dams and sustainable measures beyond the project implementation period will be fully borne by the Government through state-level ministries of Agriculture and Forestry. O&M costs associated with hafirs and water yards are primarily the responsibility of local Water Management Committees through revenue generated by water tariffs, together with government co-financing support. Capacity building activities will be instrumental in ensuring that the project's hafir and water yard interventions are sustained in the long term in all of the project target sites. In addition to training workshops for extension workers, capacity building initiatives include the development of technical manuals and handbooks that will be integrated into the technical guidance toolkits.
83. The project's sustainability will be ensured in the long run on the basis of three key factors. First, the government has committed to finance the operations and management of all water storage infrastructure to be constructed for the duration of their serviceable life (see Annex 4). Second, the project will address key technical capacity and management barriers to enhance long-term resilience of agro-pastoralists and nomadic pastoralists throughout semi-arid areas. Notably, the strengthening of technical capacity will be targeted at state-level agricultural extension services – with each state burdened with its own unique set of institutional and technical challenges – for the assessment of new seed variety yields, monitoring effectiveness of new small-scale irrigation practices, and evaluation of assorted sustainable practices. Third, the project strengthens networking among agro-pastoralists through participatory approaches in the implementation of project activities that will contribute to longer term sustainability/upscaling of the adaptation measures introduced at village locality level. Specifically, this includes:
- Local ownership. The activities under Output 1 leverage investments to promote local ownership and maintenance of communal rangelands, multi-purpose tree nurseries, and shelterbelts to shield cultivatable plots from dust storms. Activities under Output 1 also leverage investments by empowering women in the cultivation and care of home gardens and integrated women-led sustainable farms. The activities will help to catalyze further public sector funding to sustain these activities beyond the project lifetime.
  - Local management. The activities under Output 2 will access community water councils to operate and maintain installed water infrastructure. These water council are connected to existing village leadership mechanisms and as part of O&M activities will establish fair water use charges. This type of local management arrangement will promote longer term and sustainable management of installed water infrastructure, through its participatory involvement of local communities. In addition, government co-financing will be applied to meet O&M expenses of water-related infrastructure over the serviceable life of these investments.
  - Local governance. The activities under Output 3 build the capacity of village communities to ensure that they have the knowledge and skills to maintain project investments in food and water security and ensure their longer term quality and effectiveness. Activities focus on building on and further strengthening existing village leadership and governance structures, namely village councils, village development committees, and popular committees. This will enhance linkages between local leadership and villagers implementing and maintaining the various new agricultural production, pastoral management, and water harvesting measures. Importantly, these activities will build upon traditional governance systems, thereby ensuring continuity with traditional knowledge of use and management of agro-pastoral resources, and accounting for future threats associated with climate change.
  - Local microfinancing. The sustainability of the sandug micro-financing system is premised on two major factors. First, women's groups that comprise rural sandugs will have access to rural microfinance institutions that have been operating successfully in Sudan since 2008 with the aim of serving small producers and the economically active poor in rural Sudan. Today, there is a strong and sustainable microfinance sector in rural Sudan that not only provides financial support but seeks to spread a culture of rural credit/microfinance through introducing best regional/ international practices and linking/networking among microfinance service providers. Second, the experience of sandugs in other projects has demonstrated the robustness of this practice in improving rural livelihoods. The prerequisite for an effective and dynamic sandug system is the presence of a cohesive community group, a prerequisite that is satisfied for the target communities. In addition, experience with sandugs have shown an empowerment of women due to training and provision of additional sources of income. These latter elements are embedded in project design and will promote a sustainable participation in sandug initiatives.
84. Given the focus on subsistence livelihood systems, no revenue generation is anticipated by the introduction of project activities. However, should any incremental revenue be generated from project interventions, they will be

informal and negligible (e.g., local barter/sales of drought-resistant crop yields, indirect revenue generation from reductions in time spent in wood fuel foraging by women) and will revert to the direct (and indirect) beneficiaries of the proposed activities. Such incremental revenues are projected to be very small and limited to improved incomes from the introduction of more suitable crops and pastoral systems/practices. The project will monitor on a quarterly basis that no revenues will flow back to the government or others different than the beneficiaries through reviewing crop yield data provided by participating agro-pastoralists and checking against past crop production trends.

C. FINANCING INFORMATION							
C.1. Total financing							
(a) Requested GCF funding (i + ii + iii + iv + v + vi + vii)		Total amount			Currency		
		25.645.114			million USD (\$)		
GCF financial instrument	Amount	Tenor	Grace period	Pricing			
(i) Senior loans	Enter amount	Enter years	Enter years	Enter %			
(ii) Subordinated loans	Enter amount	Enter years	Enter years	Enter %			
(iii) Equity	Enter amount			Enter % equity return			
(iv) Guarantees	Enter amount	Enter years					
(v) Reimbursable grants	Enter amount						
(vi) Grants	25.645.114						
(vii) Results-based payments	Enter amount						
(b) Co-financing information		Total amount			Currency		
		15.540000			million USD (\$)		
Name of institution	Financial instrument	Amount	Currency	Tenor & grace	Pricing	Seniority	
Federal Ministry of Agriculture and Forestry	Grant	15.000.000	million USD (\$)	5 years 5 years	Enter%	Options	
UNDP	Grant	0.540,000	million USD (\$)	5 years 5 years	Enter%	Options	
Click here to enter text.	Options	Enter amount	Options	Enter years Enter years	Enter%	Options	
Click here to enter text.	Options	Enter amount	Options	Enter years Enter years	Enter%	Options	
(c) Total financing (c) = (a)+(b)		Amount			Currency		
		41.185.114			million USD (\$)		
(d) Other financing arrangements and contributions (max. 250 words, approximately 0.5 page)		85. Co-financing does not cover the direct capital expenditure costs and it only includes payment for technical staff and other expenses. In addition, the GoS through state-level Ministries of Agriculture and Forestry is fully committed to bear the costs for subsequent operations and maintenance needs for water harvesting structures and sustainable measures beyond the project implementation.					
C.2. Financing by component							
Output	Activity	Indicative cost USD (\$)	GCF financing		Co-financing		Name of Institutions
			Amount USD (\$)	Financial Instrument	Amount USD (\$)	Financial Instrument	
Output 1: Resilience of food production systems and food insecure communities improved in the face of climate change in Sudan,	Activity 1.1: Introduce drought-resilient seed varieties of sorghum, millet groundnut and wheat that have demonstrated greater yields in the face of climatic changes through village procurement systems	3,908,212	2,960,212	Grants	948,000	Grants	Federal Ministry of Agriculture and Forestry
	Activity 1.2: Introduce sustainable practices in agricultural production at the community level. This involves the introduction of greater irrigation efficiency in the	4,689,000	3,451,000	Grants	1,238,000	Grants	Federal Ministry of Agriculture and Forestry



benefiting at least 200,000 households and farmer and pastoralist with 35% women	management of water resources through the introduction of integrated women's farms, home gardens, and demonstration plots.						
	Activity 1.3: Introduce rangeland management practices that reduce pastoral stress on communal lands through demonstration farms and rangeland rehabilitation techniques	1,738,000	790,000	Grants	948,000	Grants	Federal Ministry of Agriculture and Forestry
	Activity 1.4: Establish shelterbelts/agroforestry to improve productivity and reduce land and environmental degradation. This involves the plantation of trees to absorb energy from dust storms and protection of cultivatable areas	3,163,000	1,925,000	Grants	1,238,000	Grants	Federal Ministry of Agriculture and Forestry
<b>Output 1 Total</b>		<b>13,498,212</b>	<b>9,126,212</b>		<b>4,372,000</b>		
Output 2: Improved access of water for human, livestock and irrigation to sustain livelihoods in the face of climatic risks in the nine targeted states benefiting at least 200,000 households	Activity 2.1: Construct/rehabilitate water yards and drilling of shallow/borehole for drinking water for human and livestock and small-scale irrigation in targeted locations. This involves increasing the access to water by installing communal water infrastructure	9,715,847	5,460,847	Grants	4,255,000	Grants	Federal Ministry of Agriculture and Forestry
	Activity 2.2: Establish sand water-storage dams in support of small-scale irrigation in targeted localities and villages. This involves the blocking seasonal wadis for groundwater storage and exploitation	8,769,000	4,514,000	Grants	4,255,000	Grants	Federal Ministry of Agriculture and Forestry
	Activity 2.3: Construct improved Hafirs and upgrade existing ones, excavating natural pond and cistern to increase availability of drinking water. This involves the construction of water storage infrastructure	5,414,500	4,346,500	Grants	1,068,000	Grants	Federal Ministry of Agriculture and Forestry
<b>Output 2 Total</b>		<b>23,899,347</b>	<b>14,321,347</b>		<b>9,578,000</b>		
Output 3: Strengthened capacities and knowledge of institutions and communities on climate change resilience and adaptation	Activity 3.1: Train extension officers and other government stakeholders on climate change resilience and adaptation related issues. This involves the development of training materials tailored to local circumstances and delivered through a series of workshops	1,426,610	901,610	Grants	525,000	Grants	Federal Ministry of Agriculture and Forestry
	Activity 3.2: Build capacity of beneficiaries for coping with climate change risks and local operation & maintenance of project interventions. This involves a series of seminars and workshops to raise awareness among village leaderships councils about climate change coping strategies	947,500	422,500	Grants	525,000	Grants	Federal Ministry of Agriculture and Forestry
<b>Output 3 Total</b>		<b>2,374,110</b>	<b>1,324,110</b>		<b>1,050,000</b>		
<b>Project management</b>		<b>1,413,445</b>	<b>873,445</b>	Grants	<b>540,000</b>	Grants	UNDP
<b>Indicative total cost (USD)</b>		<b>41,185,114</b>	<b>25,645,114</b>		<b>15,540,000</b>		

**C.3 Capacity building and technology development/transfer (max. 250 words, approximately 0.5 page)**

C.3.1 Does GCF funding finance capacity building activities?

Yes  No

C.3.2. Does GCF funding finance technology development/transfer?

Yes  No

86. The project incorporates capacity building initiatives in order to directly address key technical capacity and management barriers to long-term resilience of agro-pastoralists and nomadic pastoralists in dryland areas. Capacity building activities are focused on two distinct sets of stakeholders. First, the strengthening of technical capacity will be targeted at state-level agricultural extension services – with each state burdened with its own unique set of institutional and technical challenges – to address the range of project services and desired outcomes (e.g., assessment of new seed variety yields, monitoring effectiveness of new small-scale irrigation practices, evaluation of assorted sustainable practices). Capacity building activities will involve the development of technical manuals and handbooks that will be integrated into technical guidance toolkits, as well as training workshops on operations and maintenance of the project’s interventions. Second, capacity strengthening, and awareness-raising activities will be targeted to both village leadership groups and individual participating households at the project sites to promote villager understanding of expected benefits. Training will focus on the range of changes implied by the introduction of new practices, technology, and infrastructure. Specifically, training activities will address village coordination issues to ensure equitable and timely access to shared communal resources (e.g., grazing of livestock herds, water gathering, firewood collection) as well as technology demonstration issues (e.g., drought-tolerant seeds, nurseries; micro-dose fertilization). These are also elements of sustainability that have been built into the project design. Total requested GCF funding amount for all capacity building activities is US\$ 1.32 million.

## D. EXPECTED PERFORMANCE AGAINST INVESTMENT CRITERIA

*This section refers to the performance of the project/programme against the investment criteria as set out in the GCF's [Initial Investment Framework](#).*

### D.1. Impact potential (max. 500 words, approximately 1 page)

87. The project builds on successes of past adaptation-focused interventions in Sudan that have had a transformative impact on enhancing the resilience of small holder farmers and pastoralists to climatic variability. These interventions have focused on improving crop and livestock productivity, enhancing water resource management practices amidst the threat of recurrent drought, managing competition for scarce natural resources, and building capacities of rural communities against the adverse effect of climate change on food security and sustainable livelihoods.
88. The project will implement climate-resilient sustainable development of Sudan by promoting adaptation responses by its subsistence agro-pastoralists and nomadic pastoralists in targeted rural communities to climatic risks and adverse impacts. It responds to Fund Level Impact 1.0 (Increased resilience and enhanced livelihoods of the most vulnerable people, communities, and regions) and Fund Level Impact 2.0 (Increased resilience of health and well-being, and food and water security). The adaptation impact potential derives from the fact that GCF funding will support a sustainable livelihoods approach to strengthening the resilience of subsistence agro-pastoralists and nomadic pastoralists in targeted communities through a set of linked outputs contributing to climate resilient crop production, rangeland management, water resource management, and capacity strengthening. Much of the vulnerable population that will benefit from the interventions are women-headed households, as summarized below (Please refer to the project logical framework below and Economic Analysis (Annexes 12a and 12b) for the assumptions and estimates of the impact potential).
89. The project will result in strengthened small-scale village water supply infrastructure (i.e., boreholes, storage cisterns, and water ponds, sand water-storage reservoirs, chisel and contour bund & in-situ moisture conservation, and small-scale irrigation schemes) and capacities of subsistence agro-pastoralists and nomadic pastoralists for adaptive water management under climate change. While none of this infrastructure is long-lived infrastructure that could be vulnerable to accelerating climate change, these physical assets generated will require operations and maintenance (O&M) post-project. An O&M plan that describes how the assets will be operated and maintained after project implementation and which organization(s) will fund this maintenance is described in Annex 13b.
90. The project will also advance new practices in crop production under recurrent drought threats including drought-resistant seed varieties for the primary subsistence crops cultivated in the communities (i.e., sorghum, millet, groundnut, sesame and cow peas) and a variety of sustainable practices, including sustainably managed shelterbelts that protect crop production areas. The project will also benefit about 138,000 women-headed households through implementation of small-scale irrigated household vegetable gardens as well as a range of climate resilient crop production practices and technologies. For pastoralists, the project will enhance the productivity of rangelands through sand dune fixation, vegetable cover development, and other forms of rangeland rehabilitation while seeking also to enhanced livestock productivity through targeted veterinary practices and livestock feed alternatives.

### **Impact potential on beneficiaries**

91. The project will directly benefit 211,773 subsistence agro-pastoralist and nomadic pastoralist households distributed among 138 villages across 9 states. These households correspond to a population of about 1,181,538 people (or roughly 10% of the total population in the targeted localities) of whom about 413,538 are female. The direct beneficiaries are a combination of direct beneficiaries of the water supply investments, crop production investments, rangeland management investments, and capacity strengthening investments, after accounting for any overlapping populations. The project will indirectly benefit a further 2,499,712 people (or roughly 22% of the total population in the targeted localities) of whom about 874,900 are female, with advisory extension services accompanying the outreach and awareness-raising campaigns. Together, the total beneficiaries of about 3.8 million people account for 32% of the total population across the nine targeted localities. This is about 9.2% of the total population of the country. Of the total direct beneficiary population of 1,181,538 people in the 138 villages across 9 states, 945,230 subsistence agro-pastoralists pastoralists (614,400 males and 330,830 females) and 236,308 nomadic pastoralists (153,600 males and 82,707 females) will benefit from project interventions related to the three outputs spanning crop production, water management, and capacity building. Beneficiaries were selected on the basis of climate risk assessments that identified small holder farmer and pastoralist households throughout Sudan represent as the most vulnerable communities in Sudan to climate change. The selection criteria for villages and beneficiaries are discussed in Annex 2, Section 1.2 and in Section E.6 below.
92. The total number of direct beneficiaries (in targeted localities) has been calculated as an aggregate of the estimate of the direct beneficiaries from the small holder farmer and pastoralist populations in targeted communities that

benefit from the improved water resource management, crop production, and capacity strengthening activities. The total number of direct beneficiaries is determined by combining the direct beneficiaries in the 138 villages under the three outputs, while eliminating any overlaps. The estimates of village populations, beneficiary estimates from the three outputs, and the total direct beneficiary calculation is provided below.

93. Location of project activities: Project activities will be implemented in 138 villages throughout 23 localities, across nine states in Sudan. These targeted localities are all rural in character and represent 37% of the total number of localities within the nine states. Details regarding the villages and localities are presented in Annex 2.
94. Population estimates and sources: The current population of Sudan is estimated at 41,176,000 (United Nations, 2016). The total population of the nine states in which project activities will be implemented is 13,969,212 persons (Sudan Central Bureau of Statistics (SCBS)). The total population of the targeted 138 villages is 12,268,258 persons (SCSS), of which roughly 20% are nomadic pastoralists and the remaining 80% are agro-pastoralists.
95. Total direct beneficiaries: The distribution of project activities across the directly benefitting households in the 138 villages was established per their climate risk profile, with some villages associated with predominantly crop production packages (e.g., drought-resistant seeds) while other villages were incorporated into enhanced water resource management strategies (e.g., sand water-storage reservoirs, small-scale irrigation schemes). A breakdown by major project output is summarized below.
  - Output 1 (enhanced food production) direct beneficiaries: This number is calculated based on the assumption that 152,477 households across the 138 villages will be included in the project's agricultural-based activities, with an average of 5.6 members per household. Therefore, the total number of people benefitting from climate resilient crop production packages implemented by the project will be 850,710.
  - Output 2 (improved water access) direct beneficiaries: This number is calculated based on the assumption that 59,296 households across the 138 villages will be included in the project's water resource development activities, with an average of 5.6 members per family. Therefore, the total number of people benefitting from water resource development packages implemented by the project will be 330,828.
  - Output 3 (capacity strengthening) direct beneficiaries: This number is calculated based on the assumption that all households across the 138 villages will be included in the project's capacity building activities. Therefore, the total number of people benefitting from project activities are already included in the estimates for Outputs 1 and 2.
96. The total number of direct beneficiaries combines the direct beneficiaries across the 138 villages under the three outputs above, while eliminating any double counting. This was calculated by adding the total number of beneficiaries reached under Output 1 (i.e., 850,710 people, a figure which subsumes the overlapping beneficiaries under Output 3) to the total number of beneficiaries reached under Output 2 (i.e., 330,828 people, a figure which also accounts for the overlapping beneficiaries under Output 3). The total number of direct beneficiaries is, therefore 1,181,538 (850,710 from Output 1 and 330,828 from Output 2).
97. All 59,296 households that benefit from water-related interventions of Output 2 are also beneficiaries as part of Output 1 interventions. The incremental 93,191 households benefitting from Output 1 over Outputs 2 are associated with project interventions that are not water-related such as afforestation and rangeland management which benefit pastoralists. Specifically, the incremental 93,191 households will directly benefit from the following interventions using rain-fed cultivation practices (i.e., no irrigation envisioned from newly installed water infrastructure):
  - Drought-tolerant and early maturing certified seed distribution
  - Establish climate adapted seed multiplication farms
  - Community-based drought tolerant and early mature seed procurement
  - Training on facilitation of access to micro-financing scheme
  - Integrated women sustainable agriculture farms
  - Sustainable women-centered home gardens
  - Climate adaptation-oriented Farmers' Field Schools
  - Communal rangeland reserves
  - Rangeland rehabilitation
  - Multi-purpose tree nurseries to be run by women groups
  - Climate-adaptive community-based afforestation

98. **Total indirect beneficiaries:** The distribution of project activities across the indirectly benefitting households in the 138 villages was established per an overriding assumption that villagers outside of the areas of project activities will become aware of successful instances of project implementation and volunteer to become active in testing practices and technologies and/or will implement selected practices autonomously. Factors influencing the extent of this dynamic were assumed to be the spatial proximity of their villages to the target villages, socioeconomic circumstances, and networking potential. A breakdown by state is summarized below.
- **Darfur states:** The number of indirect beneficiaries is calculated based on the assumption that 2.22 times the number of directly benefitting households would yield a set of indirect benefits. The factor of 2.22 is based on the population density in the State and nature of the clustering of the villages in the State (Central Bureau of Statistic, Sudan, 2015). Therefore, the total number of people indirectly benefitting from project activities will be 675,311 (i.e., 304,194 direct beneficiaries x 2.22).
  - **Kordofan states:** The number of indirect beneficiaries is calculated based on the assumption that 8.02 times the number of directly benefitting households would yield a set of indirect benefits. The factor of 8.02 is based on the population density in the State and nature of the clustering of the villages in the State (Central Bureau of Statistic, Sudan, 2015). Therefore, the total number of people indirectly benefitting from project activities will be 723,532 (i.e., 90,216 direct beneficiaries x 8.02).
  - **Kassala state:** The number of indirect beneficiaries is calculated based on the assumption that 0.65 times the number of directly benefitting households would yield a set of indirect benefits. The factor of 0.65 is based on the population density in the State and nature of the clustering of the villages in the State (Central Bureau of Statistic, Sudan, 2015). Therefore, the total number of people indirectly benefitting from project activities will be 272,186 (i.e., 418,748 direct beneficiaries x 0.65).
  - **Red Sea state:** The number of indirect beneficiaries is calculated based on the assumption that 0.97 times the number of directly benefitting households would yield a set of indirect benefits. The factor of 0.97 is based on the population density in the State and nature of the clustering of the villages in the State (Central Bureau of Statistic, Sudan, 2015). Therefore, the total number of people indirectly benefitting from project activities will be 302,640 (i.e., 312,000 direct beneficiaries x 0.97).
  - **Northern state:** The number of indirect beneficiaries is calculated based on the assumption that 9.22 times the number of directly benefitting households would yield a set of indirect benefits. The factor of 9.22 is based on the population density in the State and nature of the clustering of the villages in the State (Central Bureau of Statistic, Sudan, 2015). Therefore, the total number of people indirectly benefitting from project activities will be 411,625 (i.e., 44,645 direct beneficiaries x 9.22).
  - **Khartoum state:** The number of indirect beneficiaries is calculated based on the assumption that 9.75 times the number of directly benefitting households would yield a set of indirect benefits. The factor of 9.75 is based on the population density in the State and nature of the clustering of the villages in the State (Central Bureau of Statistic, Sudan, 2015). Therefore, the total number of people indirectly benefitting from project activities will be 114,416 (i.e., 11,735 direct beneficiaries x 9.75).
99. The total number of indirect beneficiaries combines the indirect beneficiaries across the nine states (any double counting is avoided though the application of the methodology outlined above). The total number of indirect beneficiaries is therefore 2,499,712.

## D.2. Paradigm shift potential (max. 500 words, approximately 1 page)

100. Current national efforts to improve food/water security do not systematically integrate the additional risks of increased climate variability or climate change. The project will, with financial assistance from the GCF, address these additional risks and raise the adaptive capacity of rural communities, rendering them less vulnerable to climatically induced food insecurity. Many of the priority measures that have emerged from the various baseline activities for improving resilience in traditional rain-fed agricultural systems food security will be included as part of the project. By its emphasis on climate-resilient development, the project will contribute to a needed paradigm shift in rural development planning in Sudan. Given its high vulnerability, adaptation needs to become a top priority in Sudan. Progress toward this goal is underway as evidenced by its active participation in climate negotiations and completed NAPA and NAP processes.
101. Stakeholder-driven adaptation plans and projects have largely not been implemented in Sudan due to a significant lack of resources. Nevertheless, there have been a number of successful small-scale adaptation pilot project experiences which represent a departure from traditional subsistence farming and pastoralism practices in rural Sudan. Their contributions to increased climate resilience emphasize the need to scale up and build on these efforts. Without GCF involvement to complement such adaptation efforts, the GoS is constrained from taking adequate near-term steps to help vulnerable subsistence agro-pastoralists and nomadic pastoralists adapt to climate-related risks and impacts to food security.

102. In the near-term, the paradigm shift potential for the project is rooted in how the project addresses various systemic barriers that thwart building climate resilience at the local level. While the exposure of farmer/pastoralist households to climate change will continue to intensify, project activities will directly reduce their sensitivity to drought while increasing their capacity to cope with future drought episodes and other climatic shocks. This dual approach to building climate resilience – undertaken within a framework that accounts for household decision-making integrated across water, land, and livestock resources - represents the essential paradigm-shifting nature of the project. Over the longer-term, the paradigm-shifting nature of the project is rooted in the plausibility of prospects for the GoS to alter its trajectory of simply maintaining the status quo or making future investments in maladaptive measures and toward the kinds of climate-resilient practices and technologies associated with the project. Conditions of full paradigm shift will be evident when large-scale mobilization of project activities across the country become the basis for future development planning for agriculture, water, and rangelands.

103. Some of the key factors underlying the paradigm shift potential of the project are summarized below.

- **Integrated nature of interventions:** Water management, agricultural production, and livestock-raising in drylands are highly integrated within risk management strategies of small-holder agro-pastoralists. Household decision-making under changing climatic conditions reflects this attribute, with coping strategies characterized by holistic responses across water, land, and livestock resources. For example, households balance crop cultivation choices against water availability/access constraints, fodder requirements, and natural fertilizer supplies from livestock. Household cultivation decisions can change from year to year, depending on climatic and other factors, but never with one resource considered in isolation of its implications on the others. The project has been designed to mirror this local approach to risk management by addressing water management, agricultural production, and livestock-raising in an integrated and cross-cutting manner at the village level.
- **Potential for scale-up:** is high in the near vicinity of the communities where project activities will take place due to several factors First, small farmer communities have shown great receptivity to local pilot interventions that enhance their livelihoods through changes in practices and modest investments in new technologies. This receptivity has translated in adoption in neighboring communities through community-driven word-of-mouth extension. Second, the project will make use of lessons learned from previous pilot adaptation projects (demonstrated real tangible impact at limited scale) to enhance the changes for autonomous replication beyond the project's lifetime. Third, scaling up and replication of adaptation measures face several bottlenecks. These bottlenecks include, for example, financial resources, capacities of staff and local communities, and quality of agriculture extension services. It is estimated that scale-up potential is highest for activities associated with the introduction of drought-resistant seed varieties. For every household directly benefitting from the introduction of these seeds it is expected that roughly 2.2 households in surrounding communities will autonomously invest in this adaptation measure. Finally, as part of the training component, the capacity of state-level extension workers will be strengthened. As these agents serve and engage with communities beyond the directly benefitting communities, they will have a mandate to raise awareness about the adaptation benefits of project interventions.
- **Knowledge generation:** The potential for knowledge generation is high due to several factors. First, stakeholder engagement and network building is a central feature of the project. Real-time results from the project will be disseminated within and beyond the intervention zones through several existing information sharing networks and forums. Second, the project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to the broader adaptation community in the country and region. Third, the project will identify, analyze, and share lessons learned that might be beneficial in the design and implementation of similar future projects. This will involve a dynamic, iterative process of integrating successful adaptation actions within development planning. Over the mid- to long-term, effective incorporation of knowledge-developed experiences, success stories, lesson learned, technical and institutional capacities, etc. will help to reduce vulnerability and build resilience.
- **Synergies with ongoing efforts:** The interventions exploit key synergies with state-level disaster risk management strategies. In particular, the 52 villages across West and South Kordofan states are places where state-level extension services have been active in introducing various pilot initiatives in disaster risk management. These synergies will help to amplify the ongoing governmental actions to enhance increased understanding by small holder farmers and pastoralists of climate change coping strategies. The seven villages of Dongola locality and four villages of Al Dabaha locality in the Northern State will particularly benefit as these communities have already experienced modest interventions of practices that build resilience to climate change. The 26 project villages across East, West, and Central Darfur states will also benefit from synergies that lessen competition for scarce resources which has been particularly intensive in the past. The documentation of the effect of the project's synergistic activities will contribute to a knowledge bank which can spur future governmental investments toward specific investments in other rural areas of Sudan on the combination of new practices and technologies that have proven effective on both cost and cultural grounds.

- **Benefits to women:** There will also be key learning opportunities and project activities that directly benefit women and women-headed households. Specifically, the project promotes knowledge-building and sharing concerning home vegetable gardens that are financially sustained through local micro credit systems (see Section 2.3.3 in Annex 2). Home gardens can enhance food security and wellbeing of resources-poor households in vulnerable areas, particularly women-headed households. Household gardens can be planted with vegetables and fruits and as well as extra-early maturing crops that can serve as a supplementary and urgent source of food during periods of food scarcity. Gaining experience with the cultivation and maintenance of home garden will lead to women-based learning of the specific ways to improve nutritional status of their households, particularly children.

#### **Contribution to the creation of an enabling environment**

104. The potential for enabling environments is high due to several factors. First, the project targets institutional capacity strengthening at the state level. Specifically, the project invests in improved technical capacity and knowledge of government agencies on integrated responses to recurring drought and enhances networks with village-level stakeholders. The focus on training of extension workers to support new water harvesting systems enables viable community development models and sustained ownership of the local communities in long-term water security. Furthermore, the strengthened environment through enhanced institutional coordination (training of state-level extension agencies on planning and implementation of sustainable practices) and information sharing (including lessons learned) will enable and incentivize future private sector investments.
105. Second, the project targets capacity strengthening at the local level. Specifically, the project builds on past successful project interventions that strengthens local village development committees and village extension networks to improve community-level drought preparedness and access to information. Ongoing participation and coordination of various stakeholders is ensured through training and inputs for carrying out sustainable agricultural and pastoralism activities. The project also proposes innovative community-level partnerships to build consensus around alternative rangeland management practices that promote sustainable use, as well as remove community-specific barriers to climate change adaptation. The focus on water management systems will enable viable community cooperation models to continue operations and maintenance by local communities of water harvesting infrastructure beyond the project lifetime.
106. Third, the project aims to develop well-functioning links between state- and national-level institutions to evaluate the role of adaptation to climate change within national and local development strategies and budgeting framework. Specifically, the project promotes an enabling environment for mainstreaming of climate change adaptation across state and federal levels within the ministry of Agriculture and Forestry. At the state level, the project builds capacities to support integration of irrigation, drinking water, agriculture, and rangelands in a holistic manner to address resilience of dry zone agro-pastoralists. At the federal level, the project promotes the linking of community-level climate resilient development lessons learned with national level sectoral planning. State-level agencies will enable coordination between local experience and national action so that results are integrated into national policy dialogues.
107. Taken together, the above factors suggest that dryland management policy, planning and budgeting at national and state levels will be directly enhanced by project activities. Institutional capacity strengthening at the community level integrates climate resilience aims at the grass roots level and forms a basis for injecting bottom-up strategic lessons to state level planning, with the ultimate aim of influencing the reform of federal policies to better tackle sustainable dryland management under climate change. Moreover, through its emphasis on community-based drought preparedness-related activities, project activities have been deliberately aligned with ongoing state-level extension/development work in mutually reinforcing ways. Capacity strengthening activities at the local level are premised upon the widely accepted principle that building community capacity to plan, manage and monitor activities is an essential element of sustainable livelihoods. Hence, by designing local training activities within the multi-faceted and interlinked needs of dryland pastoralist and farmer livelihoods, the project builds upon participatory management techniques that are essential in validating appropriate drought management interventions; identifying effective contingency planning practices/options; and yielding important evidence-based, adaptive drought cycle lessons. Given the project's emphasis on documenting such outcomes into planning handbooks and other local planning materials, the prospects are high for translating community experience into formal state-level policy and planning guidance and to the subsequent mainstreaming of this information within emerging federal-level adaptation planning protocols in Sudan's drylands.

#### **Contribution to the regulatory framework and policies**

108. The GoS is committed to the Sustainable Development Goals, including a reduction in the burden of poverty. To this end, it has prioritized achieving food security, promoting sustainable agriculture, and reducing inequality. The project contributes towards these goals at the local level through the introduction of sustainable technologies and practices among poor and highly vulnerable communities that will increase agricultural/rangeland productivity and

food security, improve the availability of and access to water, and reduce the burden of labor for women and girls. Furthermore, the project's design empowers local communities, particularly women, with the means for improved decision-making against the backdrop of climate-risks and impacts. The project complements the rural development vision of the GoS which recognizes the vital place of traditional subsistence agriculture and pastoralism within rural economies, and the looming threat posed by recurring drought episodes to its contributions to the national economy. Through its INDC, it has committed to minimizing climate change impacts on crop and rangeland productivity, with a focus on water resources as a cross-cutting issue.

109. The integrated approach to building climate resilience from the perspective of water management, sustainable agriculture, and alternative rangeland management practices is a model for partnership and collaboration between and among local, state, and national stakeholders. This approach ensures the development of a framework that ensure government engagement (through state-level extension services, inter-ministerial committee) with civil society (through village development committees and village extension networks) to deliver essential public services to remote populations in arid and semi-arid drylands. The project responds to a number of government policies and strategies as outlined in the Agricultural Revival Program (ARP) of 2008 –2011, the five-year economic reform programme 2015- 2019, the Forest Policy (2006), and the Natural Resource Management policy. The project is tightly aligned with the objectives of these national strategies and make an important contribute to operationalizing climate resilient development at the local, grass roots level. Furthermore, the various knowledge and technical products (lessons learned, operations and maintenance guidelines, training on climate-resilient technologies and practices) will support and advance the implementation of the National Adaptation Plan.

**Overall contribution to climate-resilient development pathways**

110. The project is closely aligned with sustainable land management and water governance at the state level in Sudan. In addition, there are several anticipated co-benefits from project activities that are associated with environmental, demographic, and gender-based national development priorities.

**D.3. Sustainable development (max. 500 words, approximately 1 page)**

**Environmental co-benefits**

111. Project activities will deliver a number of specific environmental benefits that include: a) improved soil quality as crop and pastoral rotation measures will serve to increase the capacity of local soils to better function in support of plants, animals, and humans under future climate change; b) soil conservation and reduction of wind-driven erosion; b) improved tree cover in household vegetable gardens that will improve micro-climates; c) rehabilitation of rangeland integrity and ecosystem services; and d) enhanced carbon sequestration through afforestation; and e) reduced pollutant loadings through reductions in chemical fertilizer inputs through sustainable agriculture. Environmental benefits also include positive impacts on biodiversity and agro-biodiversity of the village irrigation systems and in household vegetable gardens, thereby enhancing the ecological connectivity across dryland landscapes.
112. Some project activities will lead to a carbon sequestration co-benefit. Using the IPCC's 2006 GHG inventory methodology and applying assumptions from the GHG inventory in Sudan's 3rd National Communication, a total of 8.24 Gg C are estimated to be sequestered annually (0.476 Gg C ha-1 yr-1 for rangeland rehabilitation; 2.381 Gg C ha-1 yr-1 for shelterbelts, and 2.381 Gg C ha-1 yr-1 for community reforestation. Over the 25-year period of project benefits, total carbon sequestered is projected to reach 205.96 Gg C. Nevertheless, the project is not proposed on the basis of its carbon sequestration merits.

**Social co-benefits including health impacts**

113. The targeted smallholder agro-pastoralist and nomadic pastoralist communities have been marginalized and isolated and have not benefitted from rural development initiatives. The project will introduce much needed water harvesting infrastructure development, dissemination of new improved seed varieties, and exposure to sustainable technologies and practices. The project proposes to enhance household decision-making through an active stakeholder engagement process that will promote social cohesiveness while the interventions, designed to be harmonized with local practices, will serve to confirm and reinforce the cultural heritage of agro-pastoralist and nomadic pastoralist communities. Moreover, by promoting collective decision making through the village development committees and village extension networks, the project advances social and inter-community harmony while preventing conflict that may arise from competition for scarce resources by ensuring equitable access to water and rangeland resources among social classes.

**Economic co-benefits**

114. The project will lead to direct and indirect economic benefits. There will be direct economic benefits to subsistence agro-pastoralists and nomadic pastoralists through the enhancement of agricultural production; increased household incomes through improved access to groundwater and surface water irrigation; adoption of climate resilient seeds; and greater feed availability for livestock. In addition, the community-based development model

will create employment opportunities in the targeted village in managing water harvesting systems, developing market linkages for exporting sustainable techniques to neighboring communities, and increased employment of women as some of the activities targeted at household income diversification are directed toward women's opportunities for generating income within the cultural framework of village-level economies. There will be broader set of indirect economic to village communities associated with enhanced food security relative to sorghum and millet staples, and production of local fruits and vegetables in household gardens.

**Gender-sensitive development impact**

115. A significant portion of all households in Sudan's drylands are headed by women. The project will yield positive co-benefits related to nutrition for this group through direct access to vegetable gardens, as well as co-benefits related to health through avoidance of extended time-consuming trips to fetch water. Women will also benefit from training activities related to household decision-making in the context of climate change, thereby enabling empowerment and involvement of women in climate change adaptation planning and investments.

**D.4. Needs of recipient (max. 500 words, approximately 1 page)**

**Vulnerability of Sudan and specific vulnerable groups, including gender aspects**

116. Consultative workshops held in West and South Kordofan (EL-Fula/West Kordofan); Kassala and Red Sea (Port Sudan/Red Sea); Northern State (Dongola); and West, Central and East Darfur (Khartoum) brought together key village leaders, including women, as well as extension agents from the agricultural, livestock and water sectors, individual from farmers' associations, and other individuals to discuss climate change vulnerability of communities in rural areas, especially specific groups that may be particularly exposed to climate hazards (See Annex 2 for a list of participants). The consistent message from communities across all consultation sites strongly expressed that exposure and sensitivity to climate risks is unacceptably high. This is largely because a) agricultural practices are dependent on increasingly erratic rainfall patterns b) pastoral and farming activities are exclusively focused on marginal lands, and c) there is very limited adaptive capacity among vulnerable groups, particularly among women. This feedback is confirmed by government statistics that reveal that rainfall is already showing evidence of decreasing levels and greater inter-annual variability leading to shorter growing seasons. As discussed earlier, average annual rainfall has been steadily declining in recent decades and by 2030, annual rainfall levels are projected to decline even further, accompanied by increasing variability in amount, distribution and frequency. With about 75% of the country classified as desert or semi-desert, projected changes in rainfall are likely to lead to increasing desertification in some regions which are likely to adversely impact the productive capacity of already fragile rainfed agriculture, and thus, in the security of Sudan's food supply.

117. The consultation further confirmed the widespread view among agro-pastoralists that productivity levels will remain consistently quite or decline over time as climate impacts continue to aggravate their already low development levels. That is, small-scale subsistence farming/pastoral communities in Sudan cannot continue to be viable unless needed action is taken, especially in those rural areas that are being the hardest hit by undependable rainfall and inadequate water infrastructure. The combination of deep poverty and the highly sensitive nature of rainfed crop production systems to climatic conditions highlight an urgent need to promote new practices and coping mechanisms for climate-smart agriculture and water harvesting. This has led to a realization that risks from climatic variability are exceeding community capacity to cope and requiring households to make choice under increasingly desperate conditions. There was a strong consensus across the consultation sites that their traditional practices regarding crop selection, water resource management, communal rangeland management, drought preparedness, and household income generation are becoming steadily incompatible with the growing risks from a changing climate.

**Economic and social development level of the country and the affected population**

118. GoS has limited financial resources that prevent it from adequately addressing climate change adaptation needs. Classified as a Least Developed Country by the UN System, roughly 47% of its population lives below the national poverty line. When combined with high population growth, erratic GDP growth, and comparatively low primary school enrolment ratios, adaptation to climate change poses just one more urgent national development priority to address with limited financial resources. Nevertheless, Sudan has been active in mobilizing internal and external funding resources to improve local food production and food security under in the face of climate change. It has been engaging with donors to implement the recommendations of its Poverty Reduction Strategy Paper (PRSP) and promote the achievement of its Sustainable Development Goals (SDG). While necessary for building resilience among small-scale farming/pastoralist communities to climate change, these interventions need to be augmented by additional measures at state-level scales to ensure resilience of agricultural productivity and water resource management to future climate risks.

**Absence of alternative sources of financing**

119. The GCF's involvement in this project is essential, given Sudan's strained economic circumstances and the transformation the fund offers by potentially triggering further investments. Currently, domestic budgets for building resilience among agro-pastoralists and introducing sustainable management practices are not near the levels required. The Government of Sudan is in a state of debt distress as shown in the most recent World Bank debt sustainability assessment, At the end of 2018, it had \$15.7 billion in external public and publicly guaranteed debt, equivalent to roughly 40 percent of the country's gross domestic product, Therefore, there is limited ability to increase climate proofing investments and any ongoing efforts to help agro-pastoralists cope with recurrent drought. GCF financial support will ensure that the limited co-financing provided by the GoS will be leveraged to maximum advantage.

**Need for strengthening institutions and implementation capacity**

120. Institutional and implementation capacities to address some of the urgent adaptation needs have been strengthened by recent policies and projects as they relate to food security and climate change issues. Nevertheless, there remains an urgent need in Sudan for improving the link between adaptation and national policymaking, as well as for policies to be supportive of cooperation and participation in environmental activities that account for the special needs of small-scale farming/pastoralist communities in rural areas. Thus far, some progress has been achieved that consists of a fairly well-developed adaptation action plan, substantial efforts to sensitive policymakers to the threat of climate change, and region-focused adaptation initiatives. However, there remains a general weakness of capacity in areas including strategic development planning and coordination across state/federal ministries. This underscores the critical importance of further mobilizing institutional capacity to address effective pro-poor, pro-adaptation expenditures at local levels of government through the implementation of targeted adaptation interventions.

121. At the national level, governmental actions relative to climate change adaptation are characterized by inappropriate agricultural practices, weak support services, and inefficient credit systems. Financial service providers (banks, microfinance institutions, and insurance companies) are discouraged from lending to farmers and livestock owners. As a result, smallholder rain-fed farmers and pastoralists have very limited access to finance and better opportunities to improve their production. This has prevented investments in land preparation, the ability to have climate-resilient production practices (e.g., rainwater harvesting) and has kept many families (especially single female headed households) in continuous cycles of poverty and food insecurity (<http://www.cgap.org/blog/innovations-islamic-microfinance-small-farmers-sudan>). Consequently, farmers and pastoralists have had trouble entering markets, have poor access to inputs and lack critical agricultural/livestock advisory- and extension services. In addition, there are several needs for strengthening institutions and implementation capacity, namely enhancing community capacity to design and implement adaptation measures, strengthening local drought contingency planning frameworks, and improving local-federal institutional coordination on food and water security issues.

**D.5. Country ownership (max. 500 words, approximately 1 page)**

**Existing national climate strategy**

122. There is full country-ownership through the operational modalities as outlined in the Technical Feasibility Report, Section 4 (Project design response), as well as a strong national commitment to build the required country capacity as evidenced by the substantial level of co-financing. Operationally, these features will be characterized by a focus on Information and knowledge sharing across three levels; at the community level, it will involve community mobilization, field-based demonstration and improving skills and knowledge for implementation and adoption of climate change adaptation practices of high social and economic values; at the institutional level, it will involve building capacities of local ministries and institutions on climate risk assessment methods and integrated water management and agriculture and livestock sustainable practices; at the policy level, it will involve integration and mainstreaming of proven climate change adaptation measures in strategic and annual plans.

123. The project builds on a range of adaptation activities that have been endorsed at the national and state levels. Through its direct links to climate, the project has been designed to yield additional benefits over and above the typical development projects in baseline investments in agriculture, water, and rangelands. In addition, there are two key adaptation initiatives from which lessons learned have been incorporated into the project at the direction of national stakeholders. First, the Sudan National Adaptation Plan, completed in 2014, sought to mainstream adaptation strategies into the national planning process. Through a series of state-level assessments, climate risks have been integrated into all national and state development planning processes. Second, Sudan's Intended Nationally Determined Contributions (INDC), submitted in 2016, identifies adaptation policies and measures, including prioritizing interventions for implementation and integrating adaptation into development planning for agricultural development, water resources, and rangelands/livestock.

124. Moreover, the project is informed by the government's overall strategy to achieve climate change adaptation objectives on the basis of specific measures identified in its National Adaptation Programme of Action (NAPA) and National Adaptation Plan (NAP) processes. Recent efforts to improve resilience to current climate variability and future climate change have lowered vulnerability in certain areas. For example, two main types of approaches were developed across the four target states. In the River Nile State, targeted households received technical input and support to improve their individual home gardens. In North Kordofan and Gedarif, where water access is a cause for concern, the focus was on providing water access to collective land for vegetable cultivation. These collective plots, traditionally referred to as Jubraka, which means 'home garden', are managed by groups typically made up of ten to twelve women, and one man. The Jubraka have greatly contributed to diversifying food crops, particularly in the dry season. In addition, women received technical assistance to increase goat milk production, plant trees on the edge of cultivated land, and grow seedlings for different crops. Hence, there is need for implementing similar cost-effective adaptation strategies to improve yields, promote livelihood safety and reduce income volatility in the face of climate change. Such interventions are needed in vulnerable communities in the most vulnerable states. They should build on the lessons learned from already completed and/or ongoing adaptation activities and aim to contribute towards overcoming local food deficits.

#### **Existing GCF country programme**

125. Sudan has been engaged with the GCF since submission in 2016 of the Concept Note preceding this project proposal. Subsequently, the Ministry of Environment, Natural Resources and Physical Development (MENRPD) as the country's NDA acting through the HCENR as focal point has been active in pursuing readiness activities involving stakeholder engagement and awareness-raising around GCF's policies and plans. In December 2017, Sudan's Readiness and Preparatory Support proposal was approved in which it outlines a country programme to Sudan seeks to strengthen capacity to access GCF resources in the short, medium, and long-term in order to enhance climate resilient and low-carbon development in line with its country climate change obligations, development priorities and objectives, and the Fund's Initial Investment Framework. Specifically, the country programme is being developed within this effort by a focus on the 5 key outcomes described in the bullets below.

- Country Capacity strengthened, including NDA/focal point lead effective coordination mechanism established; no objection procedure established and implemented; and monitoring; oversight and streamlining of climate finance;
- Stakeholders engaged in consultative processes, including country programmes, including adaptation priorities, developed and continuously updated, stakeholder consultations conducted with the equal representation of women; annual participatory review of GCF portfolio in the country organized
- Direct access modalities established, including candidate entities identified and nominated for accreditation; and direct access entity accredited;
- Improved access to finance, including a structured dialogue between the NDA/Accredited Entities and the GCF Secretariat organized; country programmes, concept notes, developed that implement high-impact priorities identified in NDCs and other national strategies or plans; and
- Private sector mobilization, including private sector engaged in country consultative processes and implementation of Sudan's obligations to Paris Agreement; and enabling environment established for facilitating private sector investments at national, regional and international levels.

#### **Alignment with existing policies such as NDCs, NAMAs, and NAPs**

126. The project is highly aligned with Sudan's climate change adaptation commitments and priorities. The Government of Sudan ratified the UNFCCC on November 1993 and fulfilled its commitments under the UNFCCC by submitting its Initial and Second National Communications in 2003 and 2013, respectively. These processes led to an understanding that effective adaptation to climate will be critical for protecting the country's most vulnerable populations and for ensuring long-term sustainable national development. To this end, a wide-ranging stakeholder engagement process around adaptation priorities resulted in the submission in July 2007 of Sudan's National Adaptation Programme of Action in which 32 priority adaptation initiatives were identified across the agriculture, water and health sectors to build the resilience of rural communities to current and future climatic risks. Today, the continued emphasis on adapting to climate change is evidenced by the completion in 2014 of Sudan's National Adaptation Plan and the implementation of a series of pilot adaptation initiatives across the rural communities to explore the technical and socioeconomic viability of specific adaptation initiatives while putting in place enabling environment for implementing NDC. The costs associated with the implementation of project activities are in line with experience gained in previous project interventions for water, agriculture, and rangelands in recent years.

#### **Capacity of Accredited Entities or Executing Entities to deliver**

127. At the planning level, there are several entities that will work collaboratively in the implementation of the project. The DNA is MENRPD, an entity responsible for overseeing policy development, legislative initiatives, and strategic planning in relation to environmental and natural resources conservation and management. The Executing Entity is the HCENR, the focal point of the DNA. The HCENR is the technical arm of Ministry of Agriculture and Natural Resources for climate change and other strategic environmental themes. HCENR works in close collaboration with all government institutions at both the federal and State level. The HCENR has demonstrated capacity to oversee the smooth implementation of the project having overseen previous resilience-building projects in rural areas and the coordinating agency for the preparation of the NAPA and NAP. The Accredited Entity is the United Nations Development Programme (UNDP). The UNDP has a long and respected history in promoting sustainable development in Sudan and has been closely involved in nearly all climate change activities since 1993.

#### **Role of National Designated Authority**

128. As the NDA focal point agency, the HCENR engages directly with the GCF. It is responsible to convene national stakeholders, provide no-objection letters for projects/programmes, offer strategic oversight of climate change-related priorities, and to authorize and approve participation in projects under the climate convention. As the EE, the HCENR is the entity through which GCF funds are channeled to Sudan to implement all activities of the project. Its specific roles in the implementation of the project have been described previously in Section B.4 Implementation Arrangements.

#### **Engagement with civil society organizations and other relevant stakeholders**

129. The project has been designed in close consultation with relevant state/federal government agencies, NGO's, professional/trade organizations as well as local stakeholders near the target communities. These consultations and discussions are described in detail in Annex B of the Technical Feasibility Report (state level stakeholder consultations) as well as in Annex 13d. During implementation of project activities, there will be several types of stakeholders that will be engaged. Stakeholder committees will be assembled in each of the implementation sites to inform and respond to project activities. Members of the stakeholder committees will be representatives of key stakeholders including the state Ministry of the Urban Planning and Physical Development, the Ministry of Agriculture and Forestry, and Animal Resources, Ministry of Irrigation, the Sudanese Environment Conservation Society, the Ministry of Health, the Planning Administration within the Ministry of Finance, Range and Pasture Administration and representatives of the Farmers and Pastoralists Unions. The stakeholder committees will meet regularly at the discretion of the Regional Project Coordinators. Cross-visits for the stakeholder committee members will take place in order to promote sharing of lessons learned.

### **D.6. Efficiency and effectiveness (max. 500 words, approximately 1 page)**

#### **Economic soundness of the project**

130. Grant financing is requested from the GCF to implement urgent risk-reducing activities for traditional farmer and pastoralist communities throughout Sudan that are highly vulnerable to impacts from climate variability and climate change. Financing for the project consists of grants from GCF and parallel cash co-financing from the GOS. The proposed grant is responsive to the climate change adaptation driven and public good nature of the project. In other words, the grant will be used to meet the additional cost of a public good that is urgent to adapt to a changing climate in rural areas of Sudan, and which in the absence of climate change, would not be required. Specifically, it will reduce the risks associated with increased frequency of drought which is aggravating already persistent food insecurity. Secondly, this investment will not lead to creation of distorting subsidies given the general lack of private sector financing for the proposed interventions. Thirdly, the project has been structured in a way to catalyze strategic planning and knowledge generation. Fourthly, the proposed interventions to do foresee sufficient income generation to service loans.

#### **Cost-effectiveness and efficiency**

131. Many of the proposed interventions aim to enhance public goods – communal rangelands for livestock grazing, village-level water supply, and decentralized irrigation systems – while other interventions aim to increase the adaptive capacity of households that are most vulnerable to climate change by introducing sustainable agriculture practices such as drought-resistant seed varieties and vegetable gardens for women-headed households. These interventions are highly linked to the three strategic components of the project, namely improved resilience of food production systems, improved access to water, and strengthened capacity. The project targets the very vulnerable and poor, for whom there is little scope to pay for the interventions (beyond the operation and maintenance costs for minor repairs that are partly borne by the community-based organizations). There is no short or medium-term prospect of private sector investment in the infrastructure for such public goods through community-managed models. As a low-income country where public and external debt ratios remain high, and where most of the external debt is in arrears, Sudan

is projected to remain in debt distress for the foreseeable future, rendering prohibitive the required Government of Sudan (GoS) investments to build resilience to climate change in these rural communities.

132. The effectiveness of the proposed interventions has been tested in several adaptation-related projects at in other rural communities in Sudan, as discussed previously in the baseline situation. The project builds on those lessons learned relative to cost-effectiveness and the efficiency of benefits delivery. Moreover, the project's twin characteristics of strong complementarity with ongoing government programmes/initiatives (i.e., enhancing food security, improving rural household livelihoods, providing access to suitable technologies) and its focus on high priority adaptation options implemented among the most vulnerable communities in 9 states ensures that project activities on a critical toward effectively building resilience.
133. The multi-state focus of the project, as opposed to a focus on any single region in the country, was the strategic aspect of the project design that was instrumental in catalyzing a co-financing ratio of 31%. The costs of implementing the project are co-financed by existing systems and staff of government agencies. The project will build synergies with other projects in the same geographical location focused on issues like water resource development and management, disaster management and climate resilience to maximize effectiveness. For instance, the project will synergize with NCPCP interventions such as water augmentation, which increases the productivity in the farms. It will also use local materials such as excavated silt for catchment protection and dam strengthening.
134. Costs of the various components of the investments have been estimated utilizing accepted benchmarks from other projects undertaken in rural Sudan. A comparison of average unit costs associated with major interventions across the water resource management and crop/rangeland productivity outputs is summarized in the bullets below:
- Installation costs for rehabilitating underground reservoirs designed for storing rainwater (“hafirs”) are US\$ 50,000 per hafir. This provides water in water deficient area at very reasonable cost which is estimated US\$ 2.5 per cubic meter of water for the entire summer period. The cost of water is about USD 12.5 per cubic meter from mobile water tank during water shortage period. Whereas the cost of supplying drinking water to same community reaches 12.5 \$ per m3 of purchasing water from mobile water tanker when short live (3-4 months) traditional hafir is depleted. The improved hafir will sustain its service to 5-6 months i.e. it covers the entire dry summer period.
  - Installation costs for rehabilitating existing water yards are US\$ 50,000 per water yard. Installation costs for constructing new water yards are US\$ 70,000 per water yard. These structures are proposed for water scarce areas where farmers practice traditional flood basin and furrow irrigation methods. Water yards provide irrigation at around 80% to 90% efficiency compared to 40% to 50% under the traditional methods. Although the initial cost of rehabilitating/installing the system is relatively high, cost benefit analysis from Sudan, Yemen and Morocco indicates that water, energy and labor savings would return the cost of investment in 2 years of operation (Agriculture Research Center, Sudan, 2015).
  - Installation costs for the introduction of integrated women’s farms are US\$ 20,000 per scheme. Integrated agricultural farms – managed by women – aim to sustainably increase agricultural productivity and enhance climate resilience. These schemes will be undertaken in the context of links to customers, suppliers, information, markets and finance to help build an entrepreneurial identify among women’s groups.
  - Installation costs for constructing sand water-storage dams are US\$ 70,000 per dam. Due to relatively extensive cross-sectional area of the seasonal water courses in project sites the cost of building such dams is relatively high compared to similar structures for example in north Africa and Somalia. However, the benefits generated (volume of water stored in the subsurface) are high, achieving 100,000 m3 of water stored per km in length.
  - Installation costs for drilling and installing new shallow wells/boreholes and associated solar pumping systems in the vicinity of sand dams are US\$ 48,130 per well/borehole. Costs depend on the depth to the groundwater table and aquifer capacity. Well development would provide 20-30 liter per second (72-108 m3/hr) with over 75% increase in water delivery to sustain both domestic and irrigation needs. The estimated development cost is about 50 % in Sahelian Africa due to relatively shallow aquifer in project sites and use of solar powered pumps.
135. A strong level of community participation is integrated in project design and will be facilitated through the convening of village leadership committees. Community participation will focus on construction and operational stages, thereby helping to ensure cost-effectiveness of the investments. Past experience will similar projects in rural communities shows a high degree of volunteered labor. The various types of installed water infrastructure will be subsequently directly managed by the community, made possible by capacity

strengthening activities. In the long term. This will help reduce operation and maintenance costs that would otherwise be borne by the GoS.

#### **Financial viability**

136. Due to the subsistence nature of this project's objectives, revenue generation or cost recovery from the project is de minimis. Nevertheless, financial viability will be promoted through a) the implementation of micro credit systems to support the ongoing cultivation of women's gardens and b) the implementation of micro financing systems to support the operations and maintenance costs associated with water yards, hafirs, and sand water-storage dams. Where income generation opportunities do exist, they revert directly to the direct beneficiaries (e.g., value from agricultural produce harvested from women's vegetable gardens) primarily as household incomes or contributions to defray operational costs.
137. The project design ensures the financial viability of the investment through the country-driven nature of the project combined with the commitment of state governments and local communities to derive maximum economic, social, and environmental benefits from project activities. At this proposal stage, this is evidenced by the co-investment by government institutions in the amount of US\$ 15.00 million in new cash contributions. The project will leverage additional financing (US\$ 0.54 million cash) from the UNDP. It will also leverage considerable community co-investment for the proposed activities through contributions in the construction, operation, and maintenance of new water supply infrastructure; field testing of crop production practices and technologies; and engagement in field trials of pastoral rotation schemes. Such buy-in represents a significant level of local ownership that will help to catalyze future public sector financing to sustain investments beyond the project lifetime

#### **Application of best available technology**

138. The project will apply best practices that have been compiled from the implementation of adaptation measures in rural Sudan. These best practices have focused on improving smallholder farmer and pastoralist livelihoods, with a particular focus on rainfed agricultural production systems in the context of increasingly erratic rainfall patterns. The project design approach builds upon local traditional knowledge and practices through the incorporation of modern elements focused on water storage and end-use efficiency measures; seed varieties better adapted to emerging climatic conditions; and community-based management practices for maintaining rangeland and forest biodiversity. In addition, the project design incorporates lessons learned and best practices from recent adaptation projects that have focused on enhancing water, agricultural and rangeland management systems under changing climatic conditions in vulnerable regions of Sudan.
139. These lessons reflect the vital roles of village-level leadership committees, communal rangeland management systems; community engagement in the installation and co-management of enhanced water supply and crop production measures; and effective state-federal coordination arrangements. A detailed review of the data supporting the effectiveness of best practices regarding drought tolerant seeds, engagement of women's groups, enhanced livestock production, rangeland management and other adaptation measures were tested and the results are discussed in the Technical Feasibility Report, Section 2.3 (Technical feasibility of proposed measures). For adaptive practices such as intercropping, agroforestry, improved livestock diets, women's home gardens, micro-fertilization, drought-resistant seeds to succeed in risky environments like Sudan where crop failure due to erratic rainfall and pest and disease attack is frequent, the incorporation of community knowledge and engagement through a participatory approach is essential.

#### **Economic analysis**

140. Economic analysis of the project was carried out consistent with the Guidelines for the Economic Analysis of Projects of United Nations Development Program. Annex 12a provides a methodological overview of the approach used to assess the economic viability of the project; Annex 12b provides an analysis of the economic viability of the project.
141. The economic feasibility of the GCF investment was determined by computing the economic internal rate of return (EIRR) and economic net present value (NPV) for a planning period of 25 years. In the absence of specific guidance, a 10% discount rate was assumed, as recommended in the above UNDP document, and as per the existing practice of multilateral development banks. The economic viability of the project was evaluated by comparing the IRR with the assumed 10% discount rate.
142. There are several additional assumptions underlying the economic analysis. First, the economic benefits valued for this analysis are limited to the following: 1) improved irrigation access for farmers that increases agricultural productivity through efficient water distribution; 2) reduced time spent by women and girls on fetching water through the introduction of alternative water supply sources; and 3) improved crop productivity using drought-resistant seeds. Second, where supporting published information was unavailable, reliance was made on judgment by local experts familiar with the regions where project activities will be implemented. Third, it was assumed that there are no benefits generated in the first year of the project. Fourth, benefits are calculated relative to the share

of the project that is implemented each year to up to the 5th and final year of the project by which time all activities will have been implemented.

143. The net present value of the proposed investment project was estimated to be USD 27.8 million, delivering an economic internal rate of return of 21.9%, indicating that project investments are economically viable. A sensitivity analysis has been conducted and shows the economic viability of the proposed investment project to be robust to a simultaneous increase in project of 10% up to 30% and decrease in benefits of 10% to up 30%. The only scenario when the IRR falls slightly below 10% is when costs were to increase by 30% and benefits were simultaneously to decrease by 30%. The sensitivity analysis shows that as long as the gain in agricultural productivity as a result of the project intervention reaches at least 3.2% (above the projected yield without project), then the project delivers a positive NPV and an internal rate of return above 10%.

Benefit scenarios	Cost scenarios							
	Base Case		+10%		+20%		+30%	
	NPV (million 2017 US\$)	IRR (%)						
Base case	\$27.86	21.95%	\$24.34	19.59%	\$20.81	17.60%	\$17.29	15.89%
-10%	\$21.55	19.35%	\$18.03	17.20%	\$14.50	15.38%	\$10.98	13.80%
-20%	\$15.24	16.72%	\$11.71	14.76%	\$8.19	13.09%	\$4.66	11.65%
-30%	\$8.93	14.01%	\$5.40	12.24%	\$1.88	10.73%	(\$1.65)	9.40%

## E. LOGICAL FRAMEWORK

This section refers to the project/programme's logical framework in accordance with the GCF's [Performance Measurement Frameworks](#) under the [Results Management Framework](#) to which the project/programme contributes as a whole, including in respect of any co-financing.

### E.1. Paradigm shift objectives

Please select the appropriated expected result. For cross-cutting proposals, tick both.

- Shift to low-emission sustainable development pathways  
 Increased climate resilient sustainable development

### E.2. Core indicator targets

Provide specific numerical values for the GCF core indicators to be achieved by the project/programme. Methodologies for the calculations should be provided. This should be consistent with the information provided in section A.

E.2.1. Expected tonnes of carbon dioxide equivalent (t CO <sub>2</sub> eq) to be reduced or avoided (mitigation and cross-cutting only)	Annual	Click here to enter text. t CO <sub>2</sub> eq
	Lifetime	Click here to enter text. t CO <sub>2</sub> eq
E.2.2. Estimated cost per t CO <sub>2</sub> eq, defined as total investment cost / expected lifetime emission reductions (mitigation and cross-cutting only)	(a) Total project financing	_____ Choose an item.
	(b) Requested GCF amount	_____ Choose an item.
	(c) Expected lifetime emission reductions	_____ t CO <sub>2</sub> eq
	<b>(d) Estimated cost per t CO<sub>2</sub>eq (d = a / c)</b>	_____ Choose an item. / t CO <sub>2</sub> eq
	<b>(e) Estimated GCF cost per t CO<sub>2</sub>eq removed (e = b / c)</b>	_____ Choose an item. / t CO <sub>2</sub> eq
E.2.3. Expected volume of finance to be leveraged by the proposed project/programme as a result of the Fund's financing, disaggregated by public and private sources (mitigation and cross-cutting only)	(f) Total finance leveraged	_____ Choose an item.
	(g) Public source co-financed	_____ Choose an item.
	(h) Private source finance leveraged	_____ Choose an item.
	<b>(i) Total Leverage ratio (i = f / b)</b>	_____
	(j) Public source co-financing ratio (j = g / b)	_____
	(k) Private source leverage ratio (k = h / b)	_____
E.2.4. Expected total number of direct and indirect beneficiaries, (disaggregated by sex)	Direct	1,181,538 35% female
	Indirect	2,499,712 35% female
	<i>For a multi-country proposal, indicate the aggregate amount here and provide the data per country in annex 17.</i>	
E.2.5. Number of beneficiaries relative to total population (disaggregated by sex)	Direct	10% (Expressed as %) of country(ies)
	Indirect	22% (Expressed as %) of country(ies)
	<i>For a multi-country proposal, leave blank and provide the data per country in annex 17.</i>	

**E.3. Fund-level impacts**

144. The project contributes to climate-resilient rural development in rural Sudan through the sustained impact of project measures that have high potential for replicability and scale. The main outputs of the project are (i) improved resilience of food production systems and food insecure communities in the face of climate change; (ii) Improved access of water for human, livestock and irrigation to sustain livelihoods in the face of climatic risks; and (iii) Strengthened capacities and knowledge of institutions and communities on climate change resilience and adaptation. This integrated approach contributes to strengthened adaptive capacities and improved water security among small holder farmers and pastoralists, a key priority under the Intended National Development Contribution of the GoS to climate change adaptation.

Expected Results	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term	Final	
A1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions	A1.1 Change in expected losses of lives and economic assets (US\$) due to the impact of extreme climate-related disasters	<ul style="list-style-type: none"> <li>Counterfactual impact analysis before and after project activities</li> </ul>	0	NA	<ul style="list-style-type: none"> <li>Loss of lives directly due to extreme climatic events is zero</li> <li>Economic assets are 10% to 25% greater than counterfactual case</li> </ul>	<ul style="list-style-type: none"> <li>An accurate definition of the counterfactual case (i.e., without project interventions under climatic extremes) is possible</li> <li>Contractor to be recruited to carry out independent impact analysis (before and after)</li> <li>Mid-term target not available due to timing of impact analysis (i.e., before and after project activities)</li> </ul>
	A1.2 Number of males and females benefiting from the adoption of diversified, climate resilient livelihood options (including fisheries, agriculture, tourism, etc.)	<ul style="list-style-type: none"> <li>Agricultural extension services databases and surveys on rainfed agriculture patterns</li> </ul>	0	<ul style="list-style-type: none"> <li>450,000 subsistence agro-pastoralists (292,500 males and 157,500 females),</li> <li>112,500 nomadic pastoralists (73,125 males and 39,375 females)</li> </ul>	<ul style="list-style-type: none"> <li>945,230 subsistence agro-pastoralists (614,400 males and 330,830 females)</li> <li>236,308 nomadic pastoralists (153,600 males and 82,707 females)</li> </ul>	<ul style="list-style-type: none"> <li>Local communities are willing to fundamentally alter their current farming and pastoralist practices to cope with climate change, hence ushering in paradigm shift</li> </ul>
A2.0 Increased resilience of health and well-being, and food and water security	A2.3 Number of males and females with year-round access to reliable and safe water supply despite climate shocks and stresses	<ul style="list-style-type: none"> <li>Gender-sensitive surveys undertaken within targeted communities</li> <li>Quarterly field/laboratory testing and measurements to establish water quality</li> <li>Quarterly field-based measurements to ensure water supply matches design specifications</li> </ul>	0	<ul style="list-style-type: none"> <li>450,000 subsistence agro-pastoralists (292,500 males and 157,500 females),</li> <li>112,500 nomadic pastoralists (73,125 males and 39,375 females)</li> </ul>	<ul style="list-style-type: none"> <li>945,230 subsistence agro-pastoralists (614,400 males and 330,830 females)</li> <li>236,308 nomadic pastoralists (153,600 males and 82,707 females)</li> </ul>	<ul style="list-style-type: none"> <li>Local communities are willing to fundamentally alter their current farming and pastoralist practices to cope with climate change, hence ushering in paradigm shift</li> <li>Sudan's national standards as defined under the Sudanese Standards and Metrology Organization (SSMO) will be the governing standard for safe and reliable water supply</li> </ul>

E.4. Fund-level outcomes						
Expected Outcomes	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term)	Final	
A5.0 Strengthened institutional and regulatory systems for climate-responsive planning and development	<i>A5.1 Institutional and regulatory systems that improve incentives for climate resilience and their effective implementation</i>	<ul style="list-style-type: none"> <li>National register of regulations</li> <li>Guidelines for local resilience-building incentives</li> </ul>	<ul style="list-style-type: none"> <li>Number of mechanisms: 0</li> <li>Outdated codes for water infrastructure and agricultural development that lack climate risk considerations</li> </ul>	<ul style="list-style-type: none"> <li>Number of mechanisms: 1</li> <li>National policies and regulations proposed and finalized for improving climate resilience incentives in water and agriculture</li> </ul>	<ul style="list-style-type: none"> <li>Number of mechanisms: 2</li> <li>Effective implementation of finalized national policies and regulations for improving climate resilience incentives in water and agriculture</li> </ul>	<ul style="list-style-type: none"> <li>Federal authorities maintain commitment to overcome implement legal-regulatory-coordination barriers to establish formal climate resilience incentive regulatory regime</li> <li>A scorecard approach to measuring effective implementation of national policies and regulations is adequate</li> </ul>
	<i>A5.2 Number and level of effective coordination mechanisms</i>	<ul style="list-style-type: none"> <li>Institutional capacity assessment as part of initial surveys</li> <li>Reports and minutes from state-federal coordination meetings</li> </ul>	<ul style="list-style-type: none"> <li>No institutional mechanism in place to facilitate coordination of resilience-building measures between federal and state agencies</li> </ul>	<ul style="list-style-type: none"> <li>Institutional framework to facilitate coordination of resilience-building measures between federal and state agencies, proposed and finalized</li> </ul>	<ul style="list-style-type: none"> <li>The total number of coordination mechanisms between federal and state agencies established within formal regulations</li> </ul>	<ul style="list-style-type: none"> <li>Institutional coordination between federal authorities (HCENR, water/agriculture-related ministries) and state authorities (state water councils, state agricultural extension agencies) made effective</li> <li>A scorecard approach to measuring effective implementation of state-federal institutional coordination framework is adequate</li> </ul>
A6.0 Increased generation and use of climate information in decision-making	<i>A6.2 Use of climate information products/services in decision-making in climate-sensitive sectors</i>	<ul style="list-style-type: none"> <li>Household surveys conducted annually</li> </ul>	<ul style="list-style-type: none"> <li>No agro-pastoralist households in the targeted localities use climate information products or services in livelihood decisions</li> </ul>	<ul style="list-style-type: none"> <li>35% of the direct and indirect beneficiaries receive accurate and actionable information to respond to climate change and variability as a result of which all 35% report an improvement in crop yields of at least 20% relative to historical averages.</li> </ul>	<ul style="list-style-type: none"> <li>At least 75% of the direct and indirect beneficiaries receive accurate and actionable information to respond to climate change and variability as a result of which all 75% report an improvement in crop yields of at least 25% relative to historical averages</li> </ul>	<ul style="list-style-type: none"> <li>State-level extension services integrate climate information products/services into portfolio of services offered to agro-pastoralists</li> </ul>
A7.0 Strengthened adaptive capacity and reduced exposure to climate risks	<i>A7.1 Use by vulnerable households, communities, businesses and public-sector services of Fund-supported tools instruments, strategies and activities to respond to climate change and variability</i>	<ul style="list-style-type: none"> <li>Household surveys conducted bi-annually</li> </ul>	<ul style="list-style-type: none"> <li>No vulnerable agro-pastoralist households in the targeted localities use any fund-supported strategies to respond to climate change and variability</li> </ul>	<ul style="list-style-type: none"> <li>Farmer direct beneficiaries experience an increase in crop yields of at least 10% relative to average historical yields from agricultural interventions.</li> </ul>	<ul style="list-style-type: none"> <li>Farmer direct beneficiaries experience an increase in crop yields of at least 30% relative to average historical yields from agricultural interventions</li> </ul>	<ul style="list-style-type: none"> <li>Local communities are willing to undertake adaptation measures and modify their current farming and pastoralist practices;</li> <li>Local governments are supportive and engaged in implementation process;</li> <li>Extension workers, farmers, pastoralists for integrating and addressing climate risks into livelihood activities are willing to participate in the training workshops and recognize the benefits in engaging in adaptation processes to ensure food security.</li> <li>Extreme drought events do not disrupt the implementation of</li> </ul>

						the proposed adaptation measures
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**E.5. Project/programme performance indicators**

Expected Results	Indicator	Means of Verification (MoV)	Baseline	Target		Assumptions
				Mid-term	Final	
<b>Output 1:</b> Resilience of food production systems and food insecure communities improved in the face of climate change in Sudan, benefiting at least 200,000 households and farmer and pastoralist with 35% women.	<ul style="list-style-type: none"> <li>Percentage increase in average annual crop yields</li> </ul>	<ul style="list-style-type: none"> <li>Agricultural surveys within targeted communities</li> </ul>	<ul style="list-style-type: none"> <li>Annual crop yields or sorghum and millet in decline</li> </ul>	<ul style="list-style-type: none"> <li>20% increase in sorghum and millet crop yields</li> </ul>	<ul style="list-style-type: none"> <li>40% increase in sorghum and millet crop yields</li> </ul>	<ul style="list-style-type: none"> <li>Households are willing to undertake adaptation measures and modify their current farming practices;</li> </ul>
	<ul style="list-style-type: none"> <li>Perception of effectiveness of climate resilience measures in agriculture and water</li> </ul>	<ul style="list-style-type: none"> <li>Qualitative surveys of village leaders through structured interviews</li> </ul>	<ul style="list-style-type: none"> <li>Poor perception among agro-pastoralists of the effectiveness of climate resilience measures that improve food/water security</li> </ul>	<ul style="list-style-type: none"> <li>A simple majority of people interviewed have favorable perception of resiliency benefits of project interventions</li> </ul>	<ul style="list-style-type: none"> <li>A two-thirds majority of people interviewed have favorable perception of project interventions</li> </ul>	<ul style="list-style-type: none"> <li>Village leaders are willing to participate in consultations;</li> </ul>
	<ul style="list-style-type: none"> <li>Percentage of early adopters among indirect beneficiaries</li> </ul>	<ul style="list-style-type: none"> <li>Household surveys in vicinity but outside targeted communities to assess level of early adoption</li> </ul>	<ul style="list-style-type: none"> <li>Local populations unaware of potential benefits of interventions</li> <li>No early adopters of climate resilient farming methods</li> </ul>	<ul style="list-style-type: none"> <li>A simple majority of non-participating population has positive perception of project benefits</li> <li>10% non-participating population are early adopters of sustainable practices</li> </ul>	<ul style="list-style-type: none"> <li>A two-thirds majority of non-participating population has positive perception of project benefits</li> <li>20% non-participating population are early adopters of sustainable practices</li> </ul>	<ul style="list-style-type: none"> <li>Local governments are supportive and engaged in implementation process</li> </ul>
	<ul style="list-style-type: none"> <li>Number of women participating in sandug microfinance arrangements for agricultural inputs</li> </ul>	<ul style="list-style-type: none"> <li>Qualitative gender-sensitive surveys within targeted communities</li> </ul>	<ul style="list-style-type: none"> <li>None to few women participating in microfinance arrangements for agricultural inputs</li> </ul>	<ul style="list-style-type: none"> <li>Microfinance arrangements in place being actively accessed by at least 20% of women beneficiaries</li> </ul>	<ul style="list-style-type: none"> <li>Robust microfinance arrangements in place being actively accessed by at least 50% of women beneficiaries</li> </ul>	<ul style="list-style-type: none"> <li>Sandug microfinancing management enjoys the trust of participants</li> </ul>
	<ul style="list-style-type: none"> <li>GHG sequestration as a result of improved land and forest management</li> </ul>	<ul style="list-style-type: none"> <li>Calculated estimates of annual carbon storage in rehabilitated rangelands, afforested areas, and shelterbelts</li> </ul>	<ul style="list-style-type: none"> <li>Annual carbon storage in rangelands and afforested areas is in decline</li> <li>No irrigated shelterbelts in project areas</li> </ul>	<ul style="list-style-type: none"> <li>Up to an incremental 30,000 tCO<sub>2</sub>e sequestered by the middle of the project in rehabilitated rangelands, afforested areas and shelterbelts</li> </ul>	<ul style="list-style-type: none"> <li>Up to an incremental 90,000 tCO<sub>2</sub>e sequestered by the end of the project in rehabilitated rangelands, afforested areas and shelterbelts</li> </ul>	<ul style="list-style-type: none"> <li>Carbon sequestration benefits begin to accrue during year #2 of project implementation</li> <li>Quantitative carbon storage calculation methods are adequate to quantify and justify carbon sequestration co-benefits</li> <li>Lifetime carbon sequestration over 30 years is 0.91 million tCO<sub>2</sub>e</li> </ul>

						<ul style="list-style-type: none"> <li>The timing of the final target is aligned with the end of the project (i.e., 5 years from the start of the project) which is within 2-3 months of the final evaluation. Hence, the timing of the final target is closely aligned with the timing of the final evaluation.</li> </ul>
<p><b>Output 2:</b> Improved access of water for human, livestock and irrigation to sustain livelihoods in the face of climatic risks in the nine targeted states benefiting at least 200,000 households</p>	<ul style="list-style-type: none"> <li>Water fetching time savings for women and girls (% reduction in monthly time spent)</li> </ul>	<ul style="list-style-type: none"> <li>Qualitative gender-sensitive surveys within targeted communities</li> </ul>	<ul style="list-style-type: none"> <li>Local communities with sharply constrained access to sustainable water supply</li> <li>Large monthly time allotment for water fetching (i.e., 2 hours per day; roughly 60 hours per month)</li> </ul>	<ul style="list-style-type: none"> <li>25% reduction in the time spent in fetching water by women and young girls</li> </ul>	<ul style="list-style-type: none"> <li>50% reduction in the time spent in fetching water by women and young girls</li> </ul>	<ul style="list-style-type: none"> <li>Local communities are supportive and engaged in the implementation of water supply infrastructure;</li> </ul>
	<ul style="list-style-type: none"> <li>Hectares of irrigated crops</li> </ul>	<ul style="list-style-type: none"> <li>Agricultural surveys within targeted communities</li> </ul>	<ul style="list-style-type: none"> <li>No irrigated crop areas</li> </ul>	<ul style="list-style-type: none"> <li>5,500 arable hectares benefitting from small-scale irrigation</li> <li>180,000 people directly benefitting from new and affordable access to water</li> </ul>	<ul style="list-style-type: none"> <li>11,390 arable hectares benefitting from small-scale irrigation</li> <li>330,828 people directly benefitting from new and affordable access to water</li> </ul>	<ul style="list-style-type: none"> <li>Extreme drought events do not disrupt the implementation of the proposed irrigation measures</li> </ul>
	<ul style="list-style-type: none"> <li>Perception of women participants of effectiveness of sandug microfinance arrangements for meeting O&amp;M expenses of water infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Qualitative gender-sensitive surveys within targeted communities</li> </ul>	<ul style="list-style-type: none"> <li>None to few women participating in microfinance arrangements for meeting O&amp;M expenses of water infrastructure have a favorable impression</li> </ul>	<ul style="list-style-type: none"> <li>A simple majority of women surveyed have favorable perception of sandug microfinance arrangements for meeting O&amp;M expenses of water infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>A two-thirds majority of women surveyed have favorable perception of sandug microfinance arrangements for meeting O&amp;M expenses of water infrastructure</li> </ul>	<ul style="list-style-type: none"> <li>Sandug microfinancing management enjoys the trust of all participants</li> </ul>
<p><b>Output 3:</b> Strengthened capacities and knowledge of institutions and communities on climate change resilience and adaptation</p>	<ul style="list-style-type: none"> <li>Number of extension workers trained</li> </ul>	<ul style="list-style-type: none"> <li>Pre- and post-training assessment of extension workers participating in project trainings</li> </ul>	<ul style="list-style-type: none"> <li>No extension workers equipped with knowledge of climate resilient practices</li> </ul>	<ul style="list-style-type: none"> <li>Up to 800 extension workers trained</li> </ul>	<ul style="list-style-type: none"> <li>Up to 1,750 extension workers trained</li> </ul>	<ul style="list-style-type: none"> <li>Local governments are supportive and engaged in training activities;</li> <li>Extreme climatic events do not disrupt the implementation of training activities</li> </ul>
	<ul style="list-style-type: none"> <li>Number of farmers and pastoralists trained</li> </ul>	<ul style="list-style-type: none"> <li>Pre- and post-training assessment</li> </ul>	<ul style="list-style-type: none"> <li>No farmers or pastoralists equipped with knowledge of</li> </ul>	<ul style="list-style-type: none"> <li>2,500 farmers and pastoralists in</li> </ul>	<ul style="list-style-type: none"> <li>5,500 farmers and pastoralists in</li> </ul>	<ul style="list-style-type: none"> <li>Local communities are willing to</li> </ul>

# E

		of farmers and pastoralists participating in project trainings	climate resilient practices	village extension networks and development committees trained	networks and development committees trained	<p>participate in training activities that aim to modify their current farming and pastoralist practices</p> <ul style="list-style-type: none"> <li>• Extreme climatic events do not disrupt the implementation of training activities</li> </ul>
	<ul style="list-style-type: none"> <li>• Number of training workshops held</li> </ul>	<ul style="list-style-type: none"> <li>• Workshop completion and evaluation surveys</li> </ul>	<ul style="list-style-type: none"> <li>• No resilience-building training activities in place</li> </ul>	<ul style="list-style-type: none"> <li>• At least 10 training workshops held</li> </ul>	<ul style="list-style-type: none"> <li>• At least 25 training workshops held</li> </ul>	<ul style="list-style-type: none"> <li>• Extension workers, farmers, pastoralists for integrating and addressing climate risks into livelihood activities are willing to participate in the training workshops and recognize the benefits in engaging in adaptation processes to ensure food and water security.</li> </ul>

E.6. Activities			
Activity	Description	Sub-activities	Deliverables
<p><b>Activity 1.1:</b> Introduction of drought-resilient seed varieties of sorghum, millet, groundnut and wheat that have demonstrated greater yields in the face of climatic changes through village procurement systems</p>	<p>Activity will promote adoption of certified drought-resistant and early maturing seeds among target villages, introduce drought-resistant seed multiplication farms for sustaining long-term productivity, facilitate replication of improved seeds to neighboring communities, and provide coordination and administrative support to facilitate the development of and access to sandugs micro-financing systems</p>	<p>1.1.1 Develop and implement programme for drought tolerant and early maturing certified seed distribution</p> <p>1.1.2 Replicate successful implementation of drought tolerant and early maturing seed varieties of sorghum, millet, groundnut and wheat to neighboring communities through participatory process</p> <p>1.1.3 Establish climate adapted seed multiplication farms</p> <p>1.1.4 Conduct community-based drought tolerant and early mature seed procurement by ensuring farmer knowledge of technical aspects of seed production, handling and exchange, including establishment of seed multiplication farm at village level 1.1.5 Facilitation of access to micro-financing schemes</p>	<p>Sub-activities are designed to improve the capacities of small holder farmers in the procurement, cultivation, maintenance, and replication of drought-resistant and early maturing seed varieties. Key deliverables are:</p> <ul style="list-style-type: none"> <li>• Designing adequate distribution/adoption programme, subsequently implemented (1.1.1)</li> <li>• Sorghum and millet drought-resistant seeds introduced (1.1.2);</li> <li>• A total of 130,000 small holder farmer households in the target villages to participate (about 86% of directly benefitting households) (1.1.4);</li> <li>• 100 hectares of climate adapted seed multiplication farms (1.1.3)</li> <li>• Programmes for seed procurement for up to 7,500 hectares and implemented in collaboration with village-level leadership committees (1.1.4);</li> <li>• Programmes to facilitate development of and access to up to 138 sandugs and implemented in collaboration with women and village-level leadership committees (1.1.5)</li> </ul>
<p><b>Activity 1.2:</b> Introduce sustainable practices in agricultural production at the community level. This involves the introduction of greater irrigation efficiency in the management of water resources through the introduction of integrated women's farms, home gardens, and demonstration plots</p>	<p>Activity will promote sustainable agricultural practices suitable for subsistence farmer households in arid and semi-arid localities to increase crop yields. Sustainable practices include seed priming, fertilizer micro-dosing, soil and water conservation practices, agroforestry, climate adaptation farmer field schools, and integrated women-tended household vegetable garden plots.</p>	<p>1.2.1 Establish integrated women sustainable agriculture farms (i.e. seed priming; fertilizer micro-dosing; intercropping, etc)</p> <p>1.2.2 Establish sustainable women-centered home gardens</p> <p>1.2.3 Train farmers on sustainable wadi cultivated practices and subsequent cultivation in at least 5 specific wadi/depression zones</p> <p>1.2.4 Prepare technical manual and provide trainings to farmer groups on water management under climate change (for integrated farmland; home garden and Wadi)</p> <p>1.2.5 Set up climate adaptation-oriented Farmers' Field Schools</p>	<p>Sub-activities are designed to improve the capacities of small holder farmers, especially women, in adoption of sustainable technologies and practices that are central to increasing climate resilience. Key deliverables are:</p> <ul style="list-style-type: none"> <li>• A range of sustainable practices that aim to strengthen small holder farmer resilience to recurrent drought conditions introduced (1.2.4);</li> <li>• Integrated women sustainable farms per village (total of 100) showcasing the new technologies and practices established (1.2.1);</li> <li>• 5,000 hectares of climate adapted home gardens for women (1.2.2)</li> <li>• Small scale irrigation of 2,500 hectares near wadis (1.2.3)</li> <li>• Farmer training programmes for up to 750 persons, developed and implemented to ensure long-term adoption of sustainable practices (1.2.4);</li> <li>• 1 farmer field school located in each of the 23 localities, capable of training up to 500 persons, to communicate emerging coping strategies and options to confront climate change threat to rural agricultural production (1.2.5).</li> </ul>
<p><b>Activity 1.3:</b> Introduction of rangeland management practices that reduce pastoral stress on communal lands through demonstration farms and rangeland rehabilitation techniques</p>	<p>Activity will promote climate-smart rangeland practices suitable for subsistence pastoralists in arid and semi-arid localities to conserve soil and improve forage production. Sustainable practices include adaptive management, establishment of communal reserves, and rehabilitation of degraded rangelands</p>	<p>1.3.1 Develop technical guideline for climate adaptive rangeland management</p> <p>1.3.2 Establish communal rangeland reserves for drought resistant rangeland seed production</p> <p>1.3.3 Rangeland rehabilitation of 2,000 hectares of degraded rangelands and an additional 2,500 hectares of strategic rangelands by using site-suitable types of soil conservation and water harvesting techniques</p>	<p>Sub-activities are designed to improve the capacities of pastoralists in adoption of sustainable practices that are central to increasing forage productivity in arid and semi-arid areas. Key deliverables are:</p> <ul style="list-style-type: none"> <li>• A working handbook of practices for rangeland management that have proven effective under recurrent drought conditions developed (1.3.1);</li> <li>• A total of 2,000 hectares of communal rangeland reserves established for drought resistant rangeland seed production (1.3.2)</li> <li>• A total of 2,000 hectares of degraded rangelands rehabilitated (1.3.3);</li> </ul>

			<ul style="list-style-type: none"> <li>• A total of 2,500 hectares of rangelands rehabilitated (1.3.3);</li> </ul>
<p><b>Activity 1.4:</b> Establish shelterbelts/agroforestry to improve productivity and reduce land and environmental degradation. This involves the plantation of trees to absorb energy from dust storms and protection of cultivatable areas</p>	<p>Activity will promote the introduction of suitable tree species to selected areas to reduce adverse impacts on agricultural production from hot winds and wind loaded with dust, as well as building community capacity on forest management to maintain tree plantings post-project.</p>	<p>1.4.1 Develop and implement programme for a total of 30 multi-purpose tree nurseries to be run by women groups</p> <p>1.4.2 Establish shelterbelts with drip irrigation system</p> <p>1.4.3 Establish climate adaptive community-based afforestation</p>	<p>Sub-activities are designed to protect project interventions in cultivatable areas by mitigating erosion impacts from strong winds through afforestation. Key deliverables are:</p> <ul style="list-style-type: none"> <li>• Village women's groups established to manage 30 small-scale tree nurseries totaling 500,000 multipurpose seedlings (1.4.1);</li> <li>• A total of 15 shelterbelts planted to protect 2,250 hectares of arable land with drip irrigation linked to the project's water interventions (1.4.2);</li> <li>• A total of 2,500 hectares of communal lands set aside, per community-based arrangements (i.e., no purchase of land; community-led management and protection only), for afforestation (1.4.3).</li> </ul>
<p><b>Activity 2.1:</b> Construct/rehabilitate water yards and drilling of shallow/borehole for drinking water for human and livestock and small-scale irrigation in targeted locations. This involves increasing the access to water by installing communal water infrastructure</p>	<p>Activity will install new and rehabilitate existing water yards, which are groundwater extraction systems consisting of shallow boreholes, solar-powered pumps and above-ground storage tanks for human and livestock use.</p>	<p>2.1.1 Rehabilitation work for existing water yards to repair/replace components as needed (e.g., borehole, storage tank, animal watering basins, tap stands, solar pumps)</p> <p>2.1.2 Drilling of new water yards, including boreholes, solar pumps, storage tanks and small-scale irrigated plots in vicinity of water yards</p> <p>2.1.3 Conduct community training for maintenance in water yards</p>	<p>Sub-activities are designed to increase water availability by exploiting renewable groundwater aquifers. Key deliverables are:</p> <ul style="list-style-type: none"> <li>• Rehabilitation of boreholes, storage tanks, and irrigation systems for 30 existing water yards (2.1.1);</li> <li>• Construction of 50 new water yards, comprising boreholes, solar pumps, storage tanks, and irrigation (2.1.2);</li> <li>• Community training programmes for up to 250 persons, developed and implemented to ensure effective long-term maintenance of the water yards (2.1.3);</li> </ul>
<p><b>Activity 2.2:</b> Establish sand water-storage dams in support of small-scale irrigation in targeted localities and villages. This involves the blocking seasonal wadis for groundwater storage and exploitation</p>	<p>Activity will install new sand water-storage dams, which is an impermeable barrier built 1–5 meters high across a seasonal sand river. They represent a low-maintenance rainwater harvesting technology suitable for domestic and agricultural use in semi-arid areas.</p>	<p>2.2.1 Construct sand water-storage dams in drought-prone areas</p> <p>2.2.2 Install small pumping units around sand water-storage dam for sustainable agriculture</p> <p>2.2.3 Provide training for operation and maintenance of sand water-storage dam and solar pumps for water management scheme</p>	<p>Sub-activities are designed to increase water availability by capturing and storing rainwater. Key deliverables are:</p> <ul style="list-style-type: none"> <li>• Construction of 30 new sand water-storage dams (2.2.1);</li> <li>• Installation of 50 solar pumps, and small-scale irrigation systems in vicinity of the sand dams in support of interventions (2.2.2);</li> <li>• Community training programmes for up to 150 persons, developed and implemented to ensure effective long-term maintenance of the sand water-storage dam systems (2.2.3)</li> </ul>
<p><b>Activity 2.3:</b> Construct improved Hafirs and upgrade of existing ones, excavating natural pond and cistern to increase availability of drinking water. This involves the construction of water storage infrastructure</p>	<p>Activity will install new and rehabilitate existing hafirs, which are underground water reservoirs for storing runoff water during the rainy season and for domestic and agricultural use during the dry season.</p>	<p>2.3.1 Carry out rehabilitation of existing hafirs, including by repair of earthen embankments and thorny wire fencing, as well as construction of new hafirs</p> <p>2.3.2 Develop manual and technical guidelines for Hafir construction and maintenance</p> <p>2.3.3 Provide training for Hafir maintenance</p>	<p>Sub-activities are designed to increase drinking water availability during periods of low rainfall through enhanced water harvesting. Key deliverables are:</p> <ul style="list-style-type: none"> <li>• Construction of 75 new hafirs with a total daily water storage capacity of 50,000 m<sup>3</sup> (2.3.1);</li> <li>• Training manual for hafir construction and maintenance (2.3.2);</li> <li>• Community training programmes for up to 1,200 persons, developed and implemented to ensure effective long-term maintenance of hafir structures (2.3.3)</li> </ul>
<p><b>Activity 3.1:</b> Train extension officers and other government stakeholders on climate change resilience and adaptation related issues. This</p>	<p>Activity will improve institutional capacity to address climate change risks and adaptation strategies in arid and semi-arid zones. Extension officers will be trained on measures to improve agricultural</p>	<p>3.1.1 Conduct training needs assessment for executing and concerned government agencies</p> <p>3.1.2 Develop manuals and technical guidelines for strengthening technical capacity for expanding climate-resilient practices throughout other communities</p>	<p>Sub-activities are designed to increase capacity of state-level agricultural extension agencies to integrate climate change into agricultural, water, and livestock/rangeland development priorities in communities that are not directly benefitting from project activities. Key deliverables are:</p>

<p>involves the development of training materials tailored to local circumstances and delivered through a series of workshops</p>	<p>yields, harvest rainwater, protect rangelands</p>	<p>3.1.3 Train extension staff from Ministry of Agriculture and concerned government agencies</p> <p>3.1.4 Develop a guideline on adaptation measures for up-scaling to other localities</p> <p>3.1.5 Develop a manual of best practices on climate change adaptation measures</p>	<ul style="list-style-type: none"> <li>• Assessment of current level of institutional understanding of climate change threats to drylands (3.1.1);</li> <li>• Development of handbook materials regarding effective adaptation strategies to mitigate climate risks (3.1.2);</li> <li>• Training of up to 1,750 extension workers and other government stakeholders (3.1.3);</li> <li>• Introduction of a mandate for extension workers to raise awareness and apply lessons learned to communities outside of target communities (3.1.4);</li> <li>• Development of training materials regarding effective adaptation strategies to mitigate climate risks in arid and semi-arid areas for use by local extension officers (3.1.5)</li> </ul>
<p><b>Activity 3.2:</b> Build capacity of beneficiaries for coping with climate change risks and local operation &amp; maintenance of project interventions. This involves a series of seminars and workshops to raise awareness among village leaderships councils about climate change coping strategies</p>	<p>Activity will improve capacity of beneficiaries to address climate change risks and ensure adequate maintenance of project interventions. Village groups will be trained on sustainable practices. Climate change threats, and maintenance of project equipment and structures.</p>	<p>3.2.1 Conduct climate resilience training of village extension networks</p> <p>3.2.2 Conduct training of village development committees</p> <p>3.2.3 Carry out awareness-raising campaigns on building resilience to climate change</p> <p>3.2.4 Facilitate exchange visits of communities and extension staff across localities</p>	<p>Sub-activities are designed to increase capacity of village-level groups to integrate climate change coping strategies into routine agricultural, water management, and livestock-raising activities. Key deliverables are:</p> <ul style="list-style-type: none"> <li>• Establishment of village extension networks in each of the 23 targeted localities prior to undertaking training activities for these village extension networks (3.2.1);</li> <li>• Development of training materials regarding effective adaptation strategies to mitigate climate risks in arid and semi-arid areas for use by village development committees as well as other community beneficiaries (3.2.2);</li> <li>• Development of climate change awareness-raising programmes (3.2.3)</li> <li>• Promotion of exchange of lessons learned across villages and neighboring localities (3.2.4)</li> <li>• Training of up to 5,000 stakeholders in village extensions networks (3.2.2);</li> <li>• Training of up to 500 stakeholders in village development committees (3.2.2);</li> <li>• Facilitation of exchange visits for up to 2,500 persons (3.2.4)</li> <li>• Farmer training programmes for up to 500 persons, developed and implemented to ensure long-term adoption of drought-resistant seed packages (3.2.2)</li> </ul>

**Direct beneficiary selection criteria and methodology**

145. The above project activities and sub-activities are aimed to benefit state agricultural extension agencies and village households. Regarding state agricultural extension agencies, households in each of the project 23 project localities are served by state-level government agricultural extension offices. Regarding village households, the overwhelming share of the total number of households in the 23 target localities and 138 target villages is classified as outlined in the bullets below (Note: poor women throughout the project localities belong to each of these categories):

- Small farmer/agro-pastoralists and nomadic people who live at or below subsistence levels;
- Dedicated to full-time to agricultural and livestock raising activities as their main source of income;
- Having family members as the principal sources of labor; and
- Deriving minimal income from cottage industries and/or related occupations.

146. There are four types of direct beneficiaries of project sub-activities for state agricultural extension agencies and the above household types. These are described in the bullets below and summarized in the table the follows.

- *All households in project villages:* Some project sub-activities are intended to benefit all households in the project villages. For example, a rehabilitated water yard will provide increased water supply to any resident in the locality.

- *All leadership committees in project villages:* Some project training sub-activities are intended to benefit all leadership entities in the project villages. For example, training village committees in the role of micro-financing schemes and community procurement processes.
- *Selected beneficiaries:* Some project sub-activities are intended to directly benefit a subset of individuals, households, and communities in the project localities. For example, demonstration of drought tolerant seed varieties to neighboring communities will be aimed at a subset of the surrounding communities.
- *All concerned agencies in project states:* Some project training sub-activities are intended to benefit all government agricultural extension offices across the 23 localities in the 9 project states. For example, a training needs assessment will be conducted for all executing and concerned government agencies at the concerned agencies.

Activity	Sub-activity	All households in project villages	All leadership committees in project villages	Selected beneficiaries	All concerned agencies in project states
		16	2	11	5
<b>Activity 1.1:</b> Introduce drought-resilient seed varieties of sorghum, millet groundnut and wheat that have demonstrated greater yields in the face of climatic changes through village procurement systems	1.1.1 Develop and implement programme for drought tolerant and early maturing certified seed distribution	✓			
	1.1.2 Replicate successful implementation of drought tolerant and early maturing seed varieties of sorghum, millet, groundnut and wheat to neighboring communities through participatory process			✓	
	1.1.3 Establish climate adapted seed multiplication farms			✓	
	1.1.4 Conduct community-based drought tolerant and early mature seed procurement by ensuring farmer knowledge of technical aspects of seed production, handling and exchange, including establishment of seed multiplication farm at village level	✓			
	1.1.5 Facilitation of access to micro-financing schemes			✓	
<b>Activity 1.2:</b> Introduce sustainable practices in agricultural production at the community level. This involves the introduction of greater irrigation efficiency in the management of water resources through the introduction of integrated women's farms, home gardens, and demonstration plots	1.2.1 Establish integrated women sustainable agriculture farms (i.e. seed priming; fertilizer micro-dosing; intercropping, etc)			✓	
	1.2.2 Establish sustainable women-centered home gardens			✓	
	1.2.3 Train farmers on sustainable wadi cultivated practices and subsequent cultivation in at least 5 specific wadi/depression zones			✓	
	1.2.4 Prepare technical manual and provide trainings to farmer groups on water management under climate change (for integrated farmland; home garden and Wadi)	✓			
	1.2.5 Set up climate adaptation-oriented Farmers' Field Schools	✓			
<b>Activity 1.3:</b> Introduce rangeland management practices that reduce pastoral stress on communal lands through demonstration farms and rangeland rehabilitation techniques	1.3.1 Develop technical guideline for climate adaptive rangeland management	✓			
	1.3.2 Establish communal rangeland reserves for drought resistant ranged seed production	✓			
	1.3.3 Rangeland rehabilitation of 2,000 hectares of degraded rangelands and an additional 2,500 hectares of strategic rangelands by using site-suitable types of soil conservation and water harvesting techniques	✓			
<b>Activity 1.4:</b> Establish shelterbelts/agroforestry to improve productivity and reduce land and environmental degradation. This involves the plantation of trees to absorb energy from dust storms and protection of cultivatable areas	1.4.1 Develop and implement programme for a total of 30 multi-purpose tree nurseries to be run by women groups			✓	
	1.4.2 Establish shelterbelts with drip irrigation system	✓			
	1.4.3 Establish climate adaptive community-based afforestation	✓			
<b>Activity 2.1:</b> Construct/rehabilitate water yards and drilling of shallow/borehole for drinking water for human and livestock and small-scale irrigation in targeted locations. This involves increasing the access to water by installing communal water infrastructure	2.1.1 Rehabilitation work for existing water yards to repair/replace components as needed (e.g., borehole, storage tank, animal watering basins, tap stands, solar pumps)	✓			
	2.1.2 Drilling of new water yards, including boreholes, solar pumps, storage tanks and small-scale irrigated plots in vicinity of water yards	✓			
	2.1.3 Conduct community training for maintenance in water yards			✓	
<b>Activity 2.2:</b> Establish sand water-storage dams in support of small-scale irrigation in targeted localities and villages. This	2.2.1 Construct sand water-storage dams in drought-prone areas	✓			
	2.2.2 Install small pumping units around sand water-storage dam for sustainable agriculture	✓			

involves the blocking seasonal wadis for groundwater storage and exploitation	2.2.3 Provide training for operation and maintenance of sand water-storage dam and solar pumps for water management scheme			✓	
<b>Activity 2.3:</b> Construct improved Hafirs and upgrade existing ones, excavating natural pond and cistern to increase availability of drinking water. This involves the construction of water storage infrastructure.	2.3.1 Carry out rehabilitation of existing hafirs, including by repair of earthen embankments and thorny wire fencing, as well as construction of new hafirs	✓			
	2.3.2 Develop manual and technical guidelines for Hafir construction and maintenance	✓			
	2.3.3 Provide training for Hafir maintenance			✓	
<b>Activity 3.1:</b> Train extension officers and other government stakeholders on climate change resilience and adaptation related issues. This involves the development of training materials tailored to local circumstances and delivered through a series of workshops.	3.1.1 Conduct training needs assessment for executing and concerned government agencies				✓
	3.1.2 Develop manuals and technical guidelines for strengthening technical capacity for expanding climate-resilient practices throughout other communities				✓
	3.1.3 Train extension staff from Ministry of Agriculture and concerned government agencies				✓
	3.1.4 Develop a guideline on adaptation measures for up-scaling to other localities				✓
	3.1.5 Develop a manual of best practices on climate change adaptation measures				✓
<b>Activity 3.2:</b> Build capacity of beneficiaries for coping with climate change risks and local operation & maintenance of project interventions. This involves a series of seminars and workshops to raise awareness among village leaderships councils about climate change coping strategies	3.2.1 Conduct climate resilience training of village extension networks		✓		
	3.2.2 Conduct training of village development committees		✓		
	3.2.3 Carry out awareness-raising campaigns on building resilience to climate change	✓			
	3.2.4 Facilitate exchange visits of communities and extension staff across localities			✓	

147. As shown in the above table, most project sub-activities (i.e., 23 out of 34) will directly benefit the total number of entities (i.e., households, village committees, extension agencies). Eleven sub-activities are aimed at directly benefitting a subset of the total village population. At an aggregate level, given the gradation of poverty even within a prominently poor total population, the project will benefit two major sub-groups as follows:

- The most-needy households: These are the very poor and destitute among village households and will bear the greatest burden from climate change impacts. They are typically highly risk-averse and prone to readily welcome any project interventions that bring food/water security benefits. They represent typically between 15 and 20% of households.
- Impoverished households: These are a portion of the remaining subsistence-level households whose livelihood capitals are at the relatively lower end of prevailing household poverty conditions of the target villages and localities.

148. Operationally, all households in the most-needy households' sub-group will be invited to be project direct beneficiaries. Depending on the number of these households who commit to engage as needed over the life of the project, the remaining number of directly benefitting households will be selected according to the following criteria for the 11 sub-activities identified in the table above in which a selection process is needed:

- Criterion 1 – Assets: Small-holder agro-pastoralists operating plots of land and managing livestock herds considerably below the project locality average.
- Criterion 2 – Engagement: Small-holder agro-pastoralists who are willing to commit to participating in project training activities, providing in-kind labor to the implementation of project interventions, and sharing lessons learned with non-participating households
- Criterion 3 – Acute vulnerability: Women-headed households with minimal on- and off-farm income, presence of handicapped dependents, higher than average incidence of diseases, and other health-related issues.

149. To apply the above criteria, available socioeconomic data on the population in the project areas will be gathered and augmented as needed by village-level informants. This includes information on demographics, land tenure, economic activities, income, employment, housing, nutrition, etc. Some of these data have already been assembled as part of the consultative process in the feasibility assessment. With this information, an initial screening of households will be carried by scoring potential beneficiaries relative to the above selection criteria on a scale of 1 to 10. The information developed to screen households will be compiled and stored in state-level databases. For the 11 sub-activities for which direct beneficiaries will need to be selected from among total village populations, the selection of direct beneficiaries will proceed consistent with the methodology outlined in the steps described in the bullets below. The HCENR will ensure that the project's direct beneficiary selection process complies with the eligibility criteria and be subject to the HCENR's final approval.

- Step 1 - Formation of Village Selection Committees (VSC): Village Leadership Committees within each of the 138 villages will be recruited to take part in the direct beneficiary selection process. These committees consist

of members of the village including elders, women’s representatives, agro-pastoralists, persons with disabilities, and others). This step will help ensure that communities are adequately represented and needs of most vulnerable are accounted for.

- Step 2 – Development of the direct beneficiary list by the VSCs: Consultations will be carried out between state-level PMU staff and the VSCs in which the results of the initial beneficiary screening will be discussed. Using a collaborative approach, a provisional direct beneficiary list will be developed based on feedback from members of the VSCs and the project’s pre-determined selection criteria. The total number of direct beneficiaries identified in this process will be consistent with the number indicated in Section D.1. This step will help to ensure that there is a balanced and transparent process for beneficiary selection.
- Step 3 – Posting the direct beneficiary list: VSCs will circulate the provisional direct beneficiary list among the locality villages through traditional means (e.g. word of mouth, household visits, etc). This process will also include a description of the process to establish the list as well as a mechanism to collect feedback from villagers, including any complaints or requests for reassessment of the list. This step will help to ensure public awareness of the overall process.
- Step 4 – Validation of the direct beneficiary list: State-level PMU staff will review any feedback collected by the VSCs and assess the need for any changes that may be required. An internal cross-checking exercise will be carried out on up to 5% the validated list to explore consistency between the project’s pre-determined selection criteria and VSC perspectives. On this basis, a final direct beneficiary list will be established. This will help to ensure that the final list is as fair and transparent as possible.
- Step 5 – Revalidation of the direct beneficiary list: In the case where objections are raised by members of the VSCs or villagers regarding the final direct beneficiary list, PMU staff will work with the VSCs to revalidate the beneficiary list by carrying out meetings with any who wish to appeal its composition. This will help to ensure that villagers understand that there is a mechanism in place in which their voices will be heard and accounted for.

**E.7. Monitoring, reporting and evaluation arrangements (max. 500 words, approximately 1 page)**

150. The project results as outlined in the project results framework above will be monitored and reported annually and evaluated periodically during project implementation to ensure the project effectively achieves these results.
151. Project-level monitoring and evaluation will be undertaken in compliance with UNDP requirements as outlined in the UNDP POPP and UNDP Evaluation Policy. While these UNDP requirements are not outlined in this project document, the UNDP Country Office will work with the relevant project stakeholders to ensure UNDP M&E requirements are met in a timely fashion and to high quality standards. Additional mandatory GCF-specific M&E requirements will be undertaken in accordance with relevant GCF policies.
152. In addition to these mandatory UNDP and GCF M&E requirements, other M&E activities deemed necessary to support project-level adaptive management will be agreed during the Project Inception Workshop and will be detailed in the Inception Workshop Report. This will include the exact role of project target groups and other stakeholders in project M&E activities including national/regional institutes assigned to undertake project monitoring.
153. M&E oversight and monitoring responsibilities
154. National Project Manager: The NPM is responsible for day-to-day project management and regular monitoring of project results and risks, including social and environmental risks. The NPM will ensure that all project staff maintain a high level of transparency, responsibility and accountability in M&E and reporting of project results. The Project Manager will inform the Project Board, the UNDP Country Office and the UNDP-GEF Regional Technical Advisor of any delays or difficulties as they arise during implementation so that appropriate support and corrective measures can be adopted. The NPM will develop annual work plans to support the efficient implementation of the project. The NPM will ensure that the standard UNDP and GCF M&E requirements are fulfilled to the highest quality. This includes, but is not limited to, ensuring the results framework indicators are monitored annually in time for evidence-based reporting in the Annual Project Report, and that the monitoring of risks and the various plans/strategies developed to support project implementation (e.g. Environmental and social management plan, gender action plan etc.) occur on a regular basis.
155. Project Board: The Project Board will take corrective action as needed to ensure the project achieves the desired results. The Project Board will hold project reviews to assess the performance of the project and appraise the Annual Work Plan for the following year. In the project’s final year, the Project Board will hold an end-of-project review to capture lessons learned and discuss opportunities for scaling up and to highlight project results and lessons learned with relevant audiences. This final review meeting will also discuss the findings outlined in the project final evaluation report and the management response.

156. Project Executing Entity: The Executing Entity is responsible for providing any and all required information and data necessary for timely, comprehensive and evidence-based project reporting, including results and financial data, as necessary and appropriate. The Executing Entity will strive to ensure project-level M&E is undertaken by national institutes and is aligned with national systems so that the data used by and generated by the project supports national systems.
157. UNDP Country Office: The UNDP Country Office will support the NPM as needed, including through annual supervision missions. The annual supervision missions will take place according to the schedule outlined in the annual work plan. Supervision mission reports will be circulated to the project team and Project Board within one month of the mission. The UNDP Country Office will initiate and organize key M&E activities including the Annual Project Report, the independent mid-term evaluation and the independent final evaluation. The UNDP Country Office will also ensure that the standard UNDP and GCF M&E requirements are fulfilled to the highest quality.
158. The UNDP Country Office is responsible for complying with all UNDP project-level M&E requirements as outlined in the UNDP POPP. This includes ensuring the UNDP Quality Assurance Assessment during implementation is undertaken annually; the regular updating of the ATLAS risk log; and, the updating of the UNDP gender marker on an annual basis based on gender mainstreaming progress reported in the Annual Project Report and the UNDP ROAR. Any quality concerns flagged during these M&E activities (e.g. Annual Project Report quality assessment ratings) must be addressed by the UNDP Country Office and the Project Manager.
159. The UNDP Country Office will support GCF staff (or their designate) during any missions undertaken in the country and support any ad-hoc checks or ex post evaluations that may be required by the GCF. The UNDP Country Office will retain all project records for this project for up to seven years after project financial closure in order to support any ex-post reviews and evaluations undertaken by the UNDP Independent Evaluation Office (IEO) and/or the GCF.
160. UNDP-Global Environmental Finance Unit (UNDP-GEF): Additional M&E and implementation oversight, quality assurance and troubleshooting support will be provided by the UNDP-GEF Regional Technical Advisor and the UNDP-GEF Directorate as outlined in the management arrangement section above.
161. Audit arrangements
162. The project will be audited according to UNDP Financial Regulations and Rules and applicable audit policies on NIM implemented projects. Additional audits may be undertaken at the request of the GCF.
163. Additional monitoring and reporting requirements
164. Inception Workshop and Report: A project inception workshop will be held within two months after the project document has been signed by all relevant parties to, amongst others:
165. Re-orient project stakeholders to the project strategy and discuss any changes in the overall context that influence project strategy and implementation;
166. Discuss the roles and responsibilities of the project team, including reporting and communication lines and conflict resolution mechanisms;
167. Review the results framework and finalize the indicators, means of verification and monitoring plan;
168. Discuss reporting, monitoring and evaluation roles and responsibilities and finalize the M&E budget; identify national/regional institutes to be involved in project-level M&E;
169. Identify how project M&E can support national monitoring of SDG indicators as relevant;
170. Update and review responsibilities for monitoring the various project plans and strategies, including the risk log; Environmental and Social Management Plan and other safeguard requirements; the gender action plan; and other relevant strategies;
171. Review financial reporting procedures and mandatory requirements, and agree on the arrangements for the annual audit; and
172. Plan and schedule Project Board meetings and finalize the first-year annual work plan.
173. The NPM will prepare the inception workshop report no later than one month after the inception workshop. The inception workshop report will be cleared by the UNDP Country Office as well as the UNDP-GEF Regional Technical Adviser and will be approved by the Project Board.
174. Annual Project Report: The NPM, the UNDP Country Office, and the UNDP-GEF Regional Technical Advisor will provide objective input to the annual project report covering the calendar year for each year of project implementation. The NPM will ensure that the APR will be aligned with the GCF requirements for preparation of APRs. Moreover, the NPM will ensure that the indicators included in the project results framework are monitored

annually in advance so that progress can be included in the report. Any environmental and social risks and related management plans will be monitored regularly, and progress will be included in the report.

175. The Annual Project Report will be shared with the Project Board. The UNDP Country Office will coordinate the input of other stakeholders to the report as appropriate. The quality rating of the previous year's report will be used to inform the preparation of the subsequent report.
176. Lessons learned and knowledge generation: Results from the project will be disseminated within and beyond the project intervention area through existing information sharing networks and forums. The project will identify and participate, as relevant and appropriate, in scientific, policy-based and/or any other networks, which may be of benefit to the project. The project will identify, analyze and share lessons learned that might be beneficial to the design and implementation of similar projects and disseminate these lessons widely. There will be continuous information exchange between this project and other projects of similar focus in the same country, region and globally.
177. Independent Mid-term evaluation (MTE): An independent mid-term evaluation process will begin after the second Annual Project Report has been submitted to the GCF. This is expected to be sometime between the 2nd and 3rd year of project activities.
178. The MTE findings and responses outlined in the management response will be incorporated as recommendations for enhanced implementation during the final half of the project's duration. The terms of reference, the review process and the MTE report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the UNDP Evaluation Resource Center (ERC). As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. Other stakeholders will be involved and consulted during the final evaluation process. Additional quality assurance support is available from the UNDP-GEF Directorate. The final MTE report will be available in English and will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser and approved by the Project Board.
179. Final Evaluation (FE): An independent final evaluation (FE) will take place upon completion of all major project outputs and activities. The final evaluation process will begin at least three months before operational closure of the project, allowing the evaluation mission to proceed while the project team is still in place, yet ensuring the project is close enough to completion for the evaluation team to reach conclusions on key aspects such as project sustainability.
180. The NPM will remain on contract until the FE report and management response have been finalized. The terms of reference, the evaluation process and the final FE report will follow the standard templates and guidance prepared by the UNDP IEO for GEF-financed projects available on the UNDP Evaluation Resource Center. As noted in this guidance, the evaluation will be 'independent, impartial and rigorous'. The consultants that will be hired to undertake the assignment will be independent from organizations that were involved in designing, executing or advising on the project to be evaluated. Additional quality assurance support is available from the UNDP-GEF Directorate. The final FE report will be cleared by the UNDP Country Office and the UNDP-GEF Regional Technical Adviser and will be approved by the Project Board. The FE report will be publicly available in English on the UNDP ERC.
181. The UNDP Country Office will include the planned project final evaluation in the UNDP Country Office evaluation plan and will upload the final evaluation report in English and the corresponding management response to the UNDP Evaluation Resource Centre (ERC).
182. Final Report: The project's final Annual Project Report along with the final evaluation report and corresponding management response will serve as the final project report package. The final project report package shall be discussed with the Project Board during an end-of-project review meeting to discuss lesson learned and opportunities for scaling up.

**Mandatory GCF M&E Requirements and M&E Budget:**

GCF M&E requirements	Primary responsibility	Indicative costs to be charged to the Project Budget <sup>3</sup> (US\$)		Time frame
		GCF grant	Co-financing	
Inception Workshop	UNDP Country Office	USD 11,000	None	
Inception Workshop Report and baseline assessments	Project Manager	None	None	
Standard UNDP monitoring and reporting requirements as outlined in the UNDP POPP	UNDP Country Office	None	None	Quarterly, annually

<sup>3</sup> Excluding project team staff time and UNDP staff time and travel expenses.

Monitoring of indicators in project results framework (including hiring of external experts, project surveys, data analysis etc.)	M&E officer	Project lifetime: USD 90,000	None	Annually
Annual Project Report	Project Manager and UNDP Country Office and UNDP-GEF team	None	None	Annually
NIM Audit as per UNDP audit policies	UNDP Country Office	Per year: USD 10,000	None	Annually or other frequency as per UNDP Audit policies
Lessons learned, case studies, and knowledge generation	International consultant	Project lifetime: USD: 100,000	None	Two times per project life
Monitoring of environmental and social risks, and corresponding management plans and monitoring of quality on drought tolerant seeds including travel as relevant	Project Manager UNDP CO	Project lifetime: USD 49,580	None	On-going
Monitoring of gender action plan	Project Manager UNDP CO	Project lifetime: USD 8,040	None	On-going
Monitoring of stakeholder engagement plan	Project Manager UNDP CO	Project lifetime: USD 76,380	None	On-going
Addressing environmental and social grievances	Project Manager UNDP Country Office BPPS as needed	None	None	
Project Board meetings	Project Board UNDP Country Office Project Manager	Per year: USD: 2,300	None	At minimum annually
Supervision missions	UNDP Country Office	None <sup>4</sup>	None	Two per year
Oversight missions	UNDP-GEF team	None <sup>4</sup>	None	Troubleshooting as needed
GCF learning missions/site visits	UNDP Country Office and Project Manager and UNDP-GEF team	None	None	To be determined.
Independent Mid-term evaluation (MTE) and management response	UNDP Country Office and Project team and UNDP-GEF team	USD 50,000	None	
Independent Final Evaluation included in UNDP evaluation plan, and management response	UNDP Country Office and Project team and UNDP-GEF team	USD 50,000	None	At least three months before operational closure
<b>TOTAL indicative COST</b> Excluding project team staff time, and UNDP staff and travel expenses		USD 496,500	None	

<sup>4</sup> The costs of UNDP Country Office and UNDP-GEF Unit's participation and time are charged to the GCF Agency Fee.

**F. RISK ASSESSMENT AND MANAGEMENT**

**F.1. Risk factors and mitigations measures (max. 3 pages)**

183. The overall risk rating for this project is low. As per standard UNDP requirements, the Project Manager will monitor risks quarterly and report on the status of risks to the UNDP Country Office. The UNDP Country Office will record progress in the UNDP ATLAS risk log. Risks will be reported as critical when the impact and probability are high (i.e. when impact is rated as 5 and probability is 1,2,3,4, 5 or when impact is rated as 4 and probability is rated at 3 or higher). Management responses to critical risks will also be reported in the Annual Project report.

184. The Accredited Entity, by virtue of being an organ of the United Nations and therefore being part of the same entity, is beholden to the United Nations Security Council Sanctions List and the UN General Assembly Resolutions. As such, the sanctions regime is embedded in all aspects of UNDP's operations and UNDP screens against the list for any entities being considered to be contracted by or partner with UNDP (including even donors). Reference is made to the partner capacity assessments carried out in relation to this Project, which have confirmed that the proposed partners are not listed on the Consolidated United Nations Security Council Sanctions List, the UNDP Vendor Sanctions List or the UN Global Marketplace Ineligibility List.

**Selected Risk Factor 1**

Category	Probability	Impact
Technical and operational	Low	High
Description		
Ineffectiveness of adaptation interventions to build resilience to climate change impacts		
Mitigation Measure(s)		
The project will adjust practices to better complement local conditions, implementing technology alternatives where appropriate within the overall design framework of the project. Flexibility in certain modalities of project implementation will help to ensure sustainability project activities. The mitigation measure should keep the risk level at low.		

**Selected Risk Factor 2**

Category	Probability	Impact
Technical and operational	Low	High
Description		
Households and communities become unwilling to remain engaged in project activities		
Mitigation Measure(s)		
The project will invest in local level awareness-raising, capacity strengthening and leadership mobilization for communities to ensure adequate buy-in for project activities. Activities will build on traditional systems and local knowledge and emphasize a participatory approach to ensure sustained commitment to project activities. The mitigation measure should keep the risk level at low.		

**Selected Risk Factor 3**

Category	Probability	Impact
Technical and operational	Low	Medium
Description		
Local government office extension agents become unsupportive and/or unwilling to remain engaged in project activities		
Mitigation Measure(s)		
The project will invest in local level awareness-raising, capacity strengthening and leadership mobilization for state-level officials to ensure adequate understanding of project objectives. Activities will emphasize exploiting		

synergies with ongoing extension services and promoting state/federal coordination on adaptation. The mitigation measure should keep the risk level at low.

**Selected Risk Factor 4**

Category	Probability	Impact
Technical and operational	Low	Low

Description

Personnel implicated by project activities are unwilling to participate in local training and leadership workshops

Mitigation Measure(s)

Local level awareness-raising, capacity strengthening and leadership mobilization for communities is central to ensure adequate buy-in for project activities. The project will seek to maintain regular and substantive communication channels with local community leaders to understand and address any emerging social or other barriers to project implementation. The mitigation measure should keep the risk level at low.

**Selected Risk Factor 5**

Category	Probability	Impact
Technical and operational	Low	High

Description

Extreme weather events disrupt the implementation of adaptation measures

Mitigation Measure(s)

The project will emphasize non-climatic dependent activities (e.g., efficiency irrigation, shelterbelts, well-drilling) during periods of extreme weather events, as conditions permit. Flexibility in certain modalities of project implementation will help to ensure the full implementation of project activities. The mitigation measure should keep the risk level at low.

## G. GCF POLICIES AND STANDARDS

### G.1. Environmental and social risk assessment (max. 750 words, approximately 1.5 pages)

185. This project has completed the Social and Environmental Screening Procedure (Annex 6a) and the Environmental and Social Management Framework (Annex 6b). These assessments were undertaken to ensure that the project complies with UNDP's Social and Environmental Standards. UNDP's Social and Environmental Standards were reviewed by the GCF accreditation panel and deemed sufficient to accredit UNDP to submit low and medium risk projects. Based on the ESIA, the overall social and environmental risk category for this project is Moderate. It is unlikely that the project will have medium to long term adverse and/or irreversible impacts, and potentially moderate risks associated with the proposed construction of water catchment structures can be sufficiently managed. Specific project risks are listed in Section G below, together with appropriate mitigation measures. There are several key factors that determine that this project is classified as a Category B (or Moderate Risk) project, as outlined below.

#### Environmental considerations

186. The project is not expected to have any long term or substantive environmental impacts relative to the rehabilitation of existing water infrastructure or the construction of water supply facilities. In fact, the conservation of water resources in the natural environment emphasized by project activities is expected to lead to significant environmental co-benefits associated with improved agricultural-pastoral practices and land use under climate change conditions. Any adverse environmental impacts are expected to short-term and limited to the construction of hydraulic works such as cisterns, hafirs, sand water-storage systems, reservoirs, rock dams and others.

187. Environmental complaints by communities and people affected by the project can be submitted to UNDP's Social and Environmental Compliance Unit (SECU). SECU will respond to claims that UNDP is not in compliance with applicable environmental and social policies. Complaints can be submitted by e-mail to [project.concerns@undp.org](mailto:project.concerns@undp.org) or the UNDP website. Project-affected stakeholders can also request the UNDP Country Office for access to appropriate grievance resolution procedures for hearing and addressing project-related social and environmental complaints and disputes. Environmental and social grievances will be monitored and reported in the Annual Project Report.

#### Social considerations

188. The project targets the very vulnerable and poor, for whom there is little scope to pay for the capital costs associated with the interventions. Taken together, the interventions will help to diversify household income, increase agricultural yields, reduce pressure on rangelands resources, and mitigate the potential for future conflicts over dwindling resources. This will contribute towards improving the socioeconomic conditions of vulnerable households through reducing livelihood pressures. By its simultaneous focus on enhancing food security, improving rural household livelihoods, lowering climate risks, and implementing appropriate location-specific, adaptation measures, the project brings together the crucial elements needed for improving social circumstances in the targeted areas.

### G.2. Gender assessment and action plan (max. 500 words, approximately 1 page)

189. The project is designed to integrate gender sensitive planning and implementation, particularly for women farmers and women-headed households. A gender analysis and action plan were prepared (see Annex 13c) that identified five strategic components for mainstreaming gender into project activities, as outlined below.

- Gender strategic component #1 – Support women-headed households: Recurrent droughts, budget cuts, declining developmental investment in rural areas, as well as civil conflicts in some targeted areas in the Darfur and Kordofan area as well as migration of men to cities in search of better employment opportunities has resulted into a relatively large number of women-headed households across the nine states. The project will emphasize a role for women-headed households by ensuring direct access to resources, production inputs, financing opportunities as well as improved agricultural technologies.
- Gender strategic component #2 – Promote household food security: In rural Sudan, women contribute significantly to the household economy and food security. For instance, they participate in household farming by contributing to crops cultivation in back yard vegetable gardens which provide households with early income and food prior to the harvest of field crops. The project will emphasize a role for women-headed households by promoting food and nutritional security at the household level by enhancing food production options.
- Gender strategic component #3 – Decrease burdensome workloads: In rural areas, water and firewood fetching are the responsibility of women and girls. With the impacts of climate change further

exacerbating already erratic rainfall, drought and desertification, the amount of time women and girls spend collecting water and firewood is likely to increase. The project will emphasize activities that can reduce the time and energy spent in firewood and water retrieval.

- Gender strategic component #4 – Introduce income-earning activities: Rural women can be economically empowered by increasing the asset base of rural communities and developing strategies for diversifying their livelihood opportunities. Project interventions targeted at diversifying the sources of communities' incomes increases their resilience to the adverse effects of climate change and contributes to women's economic empowerment. The project will introduce small-scale non-farm activities like traditional food processing, petty trading, and poultry rearing where most of the earnings are dedicated to family well-being.
- Gender strategic component #5 – Promote a role in decision making: By treating women as contributors to the development and implementation of the project rather than as mere beneficiaries, participation will be incentivized, and leadership will be promoted. The project will emphasize trying to find a balanced representation in decision-making positions, technical and advisory committee membership and in village-level project management.

190. Within each of the above gender mainstreaming strategic components, specific adaptation options have been identified that are expected to reduce household vulnerability to climate change while ensuring a key role for women in the implementation process. These are briefly outlined below.

- Horticulture Gardens: These are small-sale, community-managed horticulture gardens that provide high potential for economic empowerment of women. The project will provide communities with vegetable seeds, agricultural hand tools, and training on climate-resilient horticulture farming. The project benefits include improved nutritional status of households; increased income by selling produce in local markets; enhanced access to water for human and livestock consumption; and increased women's participation in income-generating activities. (*Gender strategic components #1, #2*)
- Livelihood Diversification Strategies: The project will introduce a set of livelihood diversification strategies to be managed by women-headed households. These include integrated farms and climate adapted household vegetable gardens. These strategies will be linked to dedicated trainings of women's groups. (*Gender strategic components #1, #4*)
- Rainwater Harvesting: Rainwater harvesting technologies reduces environmental degradation and eases the workload associated with water fetching. Moreover, rainwater harvesting, together with agricultural production, enhances food security and provides income-generating opportunities for women. (*Gender strategic components #1, #3, #4*)
- Capacity-building: The project's local training programs will help to ensure balanced political participation and decision-making of women and men. In addition, the project will seek to ensure that women are well represented within state-level committees and task forces as well as within the local project management team. This will contribute to the integration of gender-considerations in all parts of the project management, including in the monitoring and evaluation. (*Gender strategic components #1, #5*)

### G.3. Financial management and procurement (max. 500 words, approximately 1 page)

191. A detailed procurement plan is provided in Annex 13a. The financial management and procurement of this project will be guided by UNDP financial rules and regulations available here: [https://info.undp.org/global/documents/frm/Financial-Rules-and-Regulations\\_E.pdf](https://info.undp.org/global/documents/frm/Financial-Rules-and-Regulations_E.pdf). Further guidance is outlined in the financial resources management section of the UNDP Programme and Operations Policies and Procedures available at <https://info.undp.org/global/popp/frm/Pages/introduction.aspx>. UNDP has comprehensive procurement policies in place as outlined in the 'Contracts and Procurement' section of UNDP's Programme and Operations Policies and Procedures (POPP). The policies outline formal procurement standards and guidelines across each phase of the procurement process, and they apply to all procurements in UNDP. See here: <https://info.undp.org/global/popp/frm/Pages/introduction.aspx>.

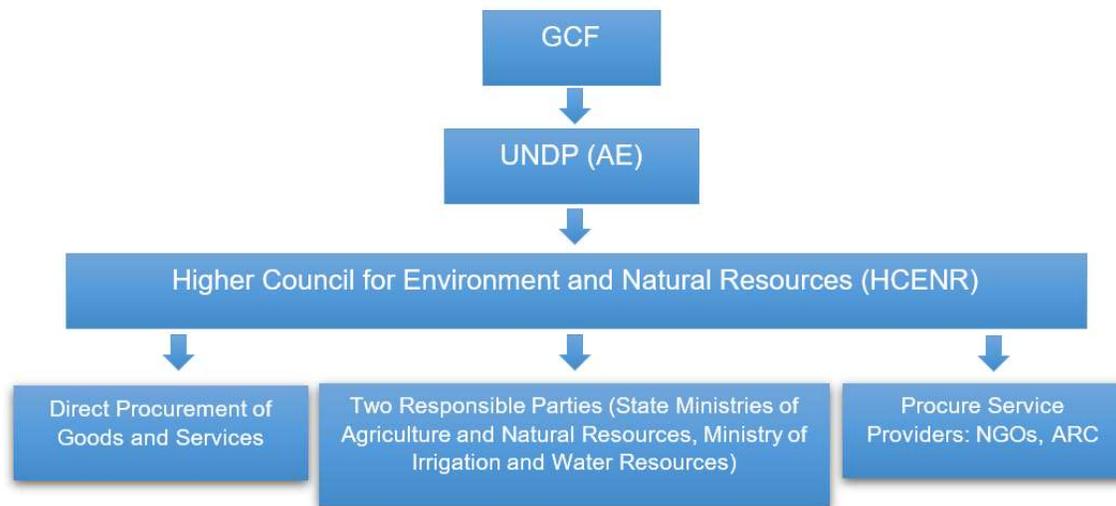
192. The project will be implemented following the National Implementation Modality (NIM) following NIM guidelines available here: <https://info.undp.org/global/documents/layouts/WopiFrame.aspx?sourcedoc=/global/documents/frm/National%20Implementation%20by%20the%20Government%20of%20UNDP%20Projects.docx&action=default&DefaultItemOpen=1>. UNDP will ascertain the national capacities of the Executing Entity by undertaking an evaluation of capacity following the Framework for Cash Transfers to Implementing Partners (part of the Harmonized Approach to Cash Transfers – HACT). All projects will be audited following the UNDP financial rules and regulations noted above and applicable audit guidelines and policies.

193. The NIM Guidelines are a formal part of UNDP's policies and procedures, as set out in the UNDP Programme and Operations Policies and Procedures (POPP) which are available here: <https://info.undp.org/global/popp/Pages/default.aspx>. The NIM Guidelines were corporately developed and adopted by UNDP, and are fully compliant with UNDP's procurement and financial management rules and regulations.
194. The project will be audited in accordance with UNDP policies and procedures on audits, informed by and together with any specific requirements agreed in the AMA. According to the current audit policies, UNDP will be appointing the auditors. In UNDP scheduled audits are performed during the programme cycle as per UNDP assurance/audit plans, based on the Executing Entity's risk rating and UNDP's guidelines. A scheduled audit is used to determine whether the funds transferred to the implementing partner were used for the appropriate purpose and in accordance with the work plan. A scheduled audit can consist of a financial audit or an internal control audit.
195. All GCF resources will be provided to the Executing Entity, less any agreed cost recovery amount. Under UNDP's national implementation modality, UNDP advances cash funds on a quarterly basis to the implementing partner (executing entity) for the implementation of agreed and approved programme activities, in accordance with UNDP standard policies and the NIM Guidelines. The Executing Entity reports back expenditure via a financial report on quarterly basis to UNDP. Any additional requirements will be as in accordance with the AMA as and when it is agreed.
196. The national executing entity HCENR is required to implement the project in compliance with UNDP rules and regulations, policies and procedures, including the NIM Guidelines. These include relevant requirements on fiduciary, procurement, environmental and social safeguards, and other performance standards. In legal terms, this is ensured through the national government's signature of the UNDP Standard Basic Assistance Agreement (SBAA), together with a UNDP project document which will be signed by the Implementing Partner to govern the use of the funds. The (national) Executing Entity for this project will be the Higher Council for Environment and Natural Resources (HCENR), accountable to UNDP for managing the project, including monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP resources.
197. The Harmonized Approach to Cash Transfer (HACT) framework consists of four processes: (1) macro assessments; (2) micro assessments; (3) cash transfers and disbursements; and (4) assurance activities. Assurance activities include planning, periodic on-site reviews (spot checks), programmatic monitoring, scheduled audits and special audits. During micro-assessment, there can weaknesses identified for which actions are required to addresses the gaps. When a spot check finds that the gaps are not addressed it will mean that the level of assurance activities will have to remain higher and modalities of engaging with that implementing partner will have to be reviewed if necessary. All details are available here: <https://undg.org/wp-content/uploads/2015/02/2014-UNDG-HACT-Framework-English-FINAL.pdf>.

#### **Contracts and flow of funds**

198. HCENR, as NDA of the GCF, will undertake national level coordination. The Federal and State Ministry of Agriculture and Natural Resources, responsible for output 1 and 3; and Ministry of Irrigation and Water Resources (MIWR), responsible for output 2, and both ministries will responsible for output 3, will take the roles of Responsible Parties under the respective project activities, following their mandates. When MoANR or MoIWR conducts any procurement or selection of the beneficiaries, they must present to the Project Board which will take place at least twice per year. All procurement activities will be done in accordance with UNDP rules. The HCENR as the Executing Entity will oversee the process, with all procurement decisions of MoANR and MoIWR subject to the HCENR's approval. The HCENR is the Chair of the Project Board and it has approval role.
199. Under the National Implementation Modality, and in terms of the Project Document to be signed between UNDP and Government of Sudan (Subsidiary Agreement under the FAA), UNDP will advance cash funds on a quarterly basis to the HCENR as the Executing Entity. The major agreements to be entered into the HCENR and the State Ministry of Agriculture and Natural Resources, and the Ministry of Irrigation and Water Resources. As the AE, UNDP will disburse funding (received from the GCF according to the FAA disbursement schedule), to the HCENR, as the Executing Entity, for the purposes of undertaking the project. The HCENR will conclude agreements with the two Ministries that will be made Responsible Parties (RPs), responsible for delivering particular projects activities following their institutional mandates.

200. A diagram of the financial flows from the GCF to the AE to the EE and to national/local service providers is shown in the chart below.



#### G.4. Disclosure of funding proposal

**No confidential information:** The accredited entity confirms that the funding proposal, including its annexes, may be disclosed in full by the GCF, as no information is being provided in confidence.

**With confidential information:** The accredited entity declares that the funding proposal, including its annexes, may not be disclosed in full by the GCF, as certain information is being provided in confidence. Accordingly, the accredited entity is providing to the Secretariat the following two copies of the funding proposal, including all annexes:

- full copy for internal use of the GCF in which the confidential portions are marked accordingly, together with an explanatory note regarding the said portions and the corresponding reason for confidentiality under the accredited entity's disclosure policy, and
- redacted copy for disclosure on the GCF website.

The funding proposal can only be processed upon receipt of the two copies above, if containing confidential information.

## H. ANNEXES

### H.1. Mandatory annexes

- Annex 1 NDA no-objection letter
- Annex 2 Feasibility study
- Annex 3 Financial appraisal
- Annex 4 Co-financing letter and letter of commitment letter for O&M
- Annex 5 Term Sheet
- Annex 6
  - a-Social and Environmental Screening Procedure (SESP)
  - b-Environmental and Social Management Framework (ESMF)
  - c-Environmental and Social Safeguards (ESS) Disclosure
- Annex 7 Appraisal report
- Annex 8 Evaluation report of baseline project
- Annex 9 Maps
- Annex 10 Timetable of project/programme implementation
- Annex 11 Project confirmation
- Annex 12
  - a-Economic Analysis (methodology)
  - b-Economic Analysis (analysis in spreadsheet format)
- Annex 13
  - a-Procurement Plan
  - b-O& M Plan
  - c-Gender Assessment and action plan
  - d-Stakeholder consultation and engagement plan
  - e-Detailed budget and budget notes
  - f- Partner Capacity Assessment Tool (PCAT) Assessment
  - g-Harmonized Approach to Cash Transfers (HACT) Assessment
  - h-Project activities and responsibilities
- Annex 14 Response to GCF comments
- Annex 15 UNDP Endorsement letter
- Annex 16 Monitoring and Evaluation plan
- Annex 17 Legal due diligence
- Annex 18 Accredited Entity Fee Request
- Annex 19 Additional background details:
  - a-Water supply and demand balance estimates
  - b-Carbon sequestration co-benefit quantification
  - c-Sub-activity description
  - d-Sandug implementation description
  - e-Sub-activity GCF budget breakdown
  - f-Climate rationale
  - g-Case study #1 on sandugs
  - h-Case study #2 on sandugs



i- LOA on DPC and CTA

*\* Please note that a funding proposal will be considered complete only upon receipt of all the applicable supporting documents.*



To: The Green Climate Fund ("GCF")

Khartoum, Sudan 25 November 2018

**Re: Funding proposal for the GCF by UNDP regarding "Building resilience in the face of climate change within traditional rain fed agriculture and pastoral systems in Sudan"**

Dear Madam, Sir,

We refer to the project "Building resilience in the face of climate change within traditional rain fed agriculture and pastoral systems in Sudan" as included in the funding proposal submitted by United Nations Development Programme, Sudan Country Office to us on 20<sup>th</sup> October 2016.

The undersigned is the duly authorized representative of Dr Noureldin Ahmed Abdalla, the National Designated Authority/focal point of Sudan.

Pursuant to GCF decision B.08/10, the content of which we acknowledge to have reviewed, we hereby communicate our no-objection to the project as included in the funding proposal.

By communicating our no-objection, it is implied that:

- The government of Sudan has no-objection to the project as included in the funding proposal;
- The project as included in the funding proposal is in conformity with Sudan's national priorities, strategies and plans;
- In accordance with the GCF's environmental and social safeguards, the project as included in the funding proposal is in conformity with relevant national laws and regulations.

We also confirm that our national process for ascertaining no-objection to the project as included in the funding proposal has been duly followed.

We acknowledge that this letter will be made publicly available on the GCF website.

We look forward to a positive decision of the GCF Board and thank you for your cooperation.

Kind regards,

\_\_\_\_\_  
Name: Dr. Noureldin Ahmed Abdalla  
Title: Secretary General of Higher Council for Environment and Natural Resources and Designated National Authority of the GCF in Sudan  
Khartoum, Sudan

## Environmental and social safeguards report form pursuant to para. 17 of the IDP

<b>Basic project or programme information</b>	
<b>Project or programme title</b>	Building resilience in the face of climate change within traditional rain fed agricultural and pastoral systems in Sudan
<b>Existence of subproject(s) to be identified after GCF Board approval</b>	No
<b>Sector (public or private)</b>	Public
<b>Accredited entity</b>	United Nations Development Programme (UNDP)
<b>Environmental and social safeguards (ESS) category</b>	Category B
<b>Location – specific location(s) of project or target country or location(s) of programme</b>	Sudan: West Darfur, Central Darfur, East Darfur, Western Kordofan, South Kordofan, Kassala, Red Sea, Northern and Khartoum State
<b>Environmental and Social Impact Assessment (ESIA) (if applicable)</b>	
Date of disclosure on accredited entity's website	Tuesday, May 19, 2020
Language(s) of disclosure	English and Arabic
Explanation on language	Arabic is the official language of Sudan and spoken by the beneficiary communities.
Link to disclosure	English: <a href="https://www.undp.org/content/dam/sudan/docs/2020/Sudan%20Environment%20and%20Social%20Management%20Plan_GCF.pdf#aem-asset-details-views">https://www.undp.org/content/dam/sudan/docs/2020/Sudan%20Environment%20and%20Social%20Management%20Plan_GCF.pdf#aem-asset-details-views</a>  Arabic: <a href="https://www.sd.undp.org//content/dam/sudan/docs/Sudan%20Environment%20and%20Social%20Management%20Plan_GCF-AR.pdf">https://www.sd.undp.org//content/dam/sudan/docs/Sudan Environment and Social Management Plan GCF-AR.pdf</a>
Other link(s)	UNDP Sudan website: <a href="https://www.sd.undp.org/content/sudan/en/home/sustainable-development/in-depth.html">https://www.sd.undp.org/content/sudan/en/home/sustainable-development/in-depth.html</a>  Higher Council for Environment and Natural Resources (HCENR) website: <a href="http://www.hcenr.gov.sd/invc/?page_id=168">http://www.hcenr.gov.sd/invc/?page_id=168</a> <a href="http://www.hcenr.gov.sd/invc_en/?page_id=299">http://www.hcenr.gov.sd/invc_en/?page_id=299</a>
Remarks	An ESIA consistent with the requirements of a Category B project is contained in the Environmental and Social Management Framework (ESMF).
<b>Environmental and Social Management Plan (ESMP) (if applicable)</b>	
Date of disclosure on accredited entity's website	Monday, May 18, 2020
Language(s) of disclosure	English and Arabic
Explanation on language	Arabic is the official language of Sudan and spoken by the beneficiary communities.
Link to disclosure	English: <a href="https://www.undp.org/content/dam/sudan/docs/2020/Sudan%20Environment%20and%20Social%20Management%20Plan_GCF.pdf#aem-asset-details-views">https://www.undp.org/content/dam/sudan/docs/2020/Sudan%20Environment%20and%20Social%20Management%20Plan_GCF.pdf#aem-asset-details-views</a>

	Arabic: <a href="https://www.sd.undp.org//content/dam/sudan/docs/Sudan%20Environment%20and%20Social%20Manangement%20Plan_GCF-AR.pdf">https://www.sd.undp.org//content/dam/sudan/docs/Sudan%20Environment%20and%20Social%20Manangement%20Plan_GCF-AR.pdf</a>
Other link(s)	UNDP Sudan website: <a href="https://www.sd.undp.org/content/sudan/en/home/sustainable-development/in-depth.html">https://www.sd.undp.org/content/sudan/en/home/sustainable-development/in-depth.html</a>  HCENR website: <a href="http://www.hcenr.gov.sd/invc/?page_id=168">http://www.hcenr.gov.sd/invc/?page_id=168</a> <a href="http://www.hcenr.gov.sd/invc_en/?page_id=299">http://www.hcenr.gov.sd/invc_en/?page_id=299</a>
Remarks	An ESMP consistent with the requirements for a Category B project is contained in the Environmental and Social Management Framework (ESMF).
<b>Environmental and Social Management (ESMS) (if applicable)</b>	
Date of disclosure on accredited entity's website	N/A
Language(s) of disclosure	N/A
Explanation on language	N/A
Link to disclosure	N/A
Other link(s)	N/A
Remarks	N/A
<b>Any other relevant ESS reports, e.g. Resettlement Action Plan (RAP), Resettlement Policy Framework (RPF), Indigenous Peoples Plan (IPP), IPP Framework (if applicable)</b>	
Description of report/disclosure on accredited entity's website	N/A
Language(s) of disclosure	N/A
Explanation on language	N/A
Link to disclosure	N/A
Other link(s)	N/A
Remarks	N/A
<b>Disclosure in locations convenient to affected peoples (stakeholders)</b>	
Date	Monday, May 18, 2020
Place	UNDP Sudan: Khartoum office: UNDP Sudan Gama'a Avenue, House 7, Block 5 P.O. Box 913 Postal Code 11111 Khartoum – Sudan  HCENR: Higher Council for Environment and Natural Resources (HCENR) Gama Street Khartoum, Khartoum - 10488 Sudan
<b>Date of Board meeting in which the FP is intended to be considered</b>	
Date of accredited entity's Board meeting	N/A
Date of GCF's Board meeting	Tuesday, June 23, 2020

**Note: This form was prepared by the accredited entity stated above.**

## Secretariat's assessment of FP139

Proposal name:	Building resilience in the face of climate change within traditional rain fed agricultural and pastoral systems in Sudan
Accredited entity:	United Nations Development Programme (UNDP)
Country/(ies):	Sudan
Project/programme size:	Small

### I. Overall assessment of the Secretariat

1. The funding proposal is presented to the Board for consideration with the following remarks:

Strengths	Points of caution
The project enhances climate resilience of nomadic and agro-pastoralist livelihoods in Sudan, facilitating continuation of these traditional livelihoods with more resilient and sustainable practices	No GCF funds will be used to increase access to finance for the beneficiaries. The project will provide training to enhance existing community-based microfinance systems. Seed funding for such systems, where needed, shall be provided from government co-financing
The project increases access to water, food, fodder, fuelwood and timber, as well as strengthening capacity of the beneficiaries to manage these resources in a sustainable manner	
If approved, this will be the first GCF project in Sudan. The project will address the needs of a highly climate-vulnerable and impoverished population in a fragile African least developed country	

2. The Board may wish to consider approving this funding proposal with the terms and conditions listed in the respective term sheet and addendum XVIII, titled "List of proposed conditions and recommendations".

### II. Summary of the Secretariat's assessment

#### 2.1 Project background

##### 2.1.1. Background/history of the project to inform assessment of the funding proposal.

3. The project supports climate change adaptation efforts among subsistence agro-pastoralist and nomadic pastoralist communities in dryland zones across nine states in Sudan. Its overall goal is to promote a paradigm shift in dryland pastoral and farming systems through

an integrated approach by increasing resilience of food production systems; improving availability/access to climate resilient water sources; and strengthening capacities of institutions/communities on climate resilience. Roughly 90 per cent of cultivated areas depend exclusively on rainfall, with fluctuations in crop yield attributed almost solely to fluctuations in rainfall patterns.

### 2.1.2. Climate objective

4. Increasing climate variability is leading to major changes in rainfall and temperatures across Sudan's arid and semi-arid drylands, exceeding the limited capacity of rural households to cope. Drylands are home to nearly 70 per cent of the population of Sudan and there are places where increasingly erratic rainfall has resulted in recurrent drought episodes, together with associated crop failures, livestock deaths, and deepening of the already profound poverty levels. Climatic shocks, particularly drought, are occurring in the absence of adequate social safety nets in rural areas, forcing subsistence agro-pastoralist and nomadic pastoralist households living under deep-rooted levels of poverty to continue with unsustainable livelihood practices.

5. There has been a steady decline in annual precipitation throughout Sudan. This is most pronounced in the Darfur states, where the data record from the sole meteorological station over the 40-year period from 1952–1992 indicates that rainfall has been declining by about 5.12 mm per year on average. These trends are reflected by mean annual normal rainfall isohyets. Moreover, a rainfall trend analysis for 21 meteorological stations across Sudan confirms that mean annual rainfall for the past two decades has been both decreasing and intensifying (i.e. the small amount of rainfall falls over a shorter period of time) relative to the 40-year period from 1960 to 2000.

6. There has also been a steady increase in temperature throughout Sudan over the period 1960–2010. During the March–June and June–September periods, temperatures have been increasing between 0.2°C and 0.4°C per decade, on average. The decadal trend of increasing temperature is more intense during the March–June period. When averaged across all seasons, temperatures in the 2000–2009 period are roughly 0.8°C to 1.6°C warmer than they were in the 1960–1969 period. Dynamic downscaling of an ensemble of General Circulation Modelling outputs suggests that over the next two decades, average annual surface temperatures across Sudan will increase significantly relative to the historical climatic baseline, with increasing levels of rainfall variability.

### 2.1.3. Financing information

Funding sources (USD)		Funding uses (USD)	
GCF	25,645,114	<b>Output 1:</b> Enhanced resilience of food production systems	13,498,212 (32.8%)
Government of Sudan	15,000,000	<b>Output 2:</b> Improved access to water in the face of climatic risks	23,899,347 (58.0%)
United Nations Development Programme	540,000	<b>Output 3:</b> Strengthened capacity of communities and institutions in climate resilience	2,374,110 (5.8%)
<b>Total</b>	<b>41,185,114</b>	Project management costs	1,413,445 (3.4%)

#### 2.1.4. Environmental and social safeguards (ESS) category

7. The ESS Category of the project is category B, and the AE has submitted relevant documentation (environmental and social management framework) as part of the funding proposal package.

## 2.2 Component-by-component analysis

*Component 1: Resilience of food production systems and food insecure communities improved in the face of climate change in Sudan, benefiting at least 200,000 households of farmers and pastoralists, 35 per cent of beneficiaries being women (total cost: USD 13,498,212; GCF cost: USD 9,126,212, or 68 per cent)*

8. Declining rainfall and rising temperatures in the project's target areas negatively impact food security. Establishment of seed multiplication farms to produce drought-resilient varieties of sorghum, millet groundnut and wheat will enable local communities to achieve increased yields of these crops. The design and implementation of a seed distribution and adoption system, incorporating a training programme for the beneficiary agro-pastoralists, will ensure that the beneficiaries have access both to the more suitable seeds and to the knowledge of how these should be cultivated in order to enhance yield. Strengthening of the community-based microfinance system through training and initial funding (where needed, from government co-financing) will enable farmers to procure the drought-resilient seed varieties.

9. Furthermore, introduction of sustainable practices in agricultural production at the community level, such as seed priming, fertilizer micro-dosing, soil and water conservation, will ensure that the drought-resilient seed varieties are cultivated in the most effective manner possible. Capacity will be built through farmer field schools focused on climate adaptation. Using demonstration farms on improved rangeland management, pastoralists will also be trained to reduce grazing stress on communal lands.

10. Complementing all the activities above, the establishment of shelterbelts will shield crops and fodder from harsh winds, solar intensity and dust storms, thereby improving productivity. Afforestation of communal areas will reduce land and environmental degradation, while potentially providing sustainable sources of fuelwood and timber.

11. This component comprehensively addresses food security challenges that are currently being exacerbated by climate change.

*Component 2: Improved access to water for humans, livestock and irrigation to sustain livelihoods in the face of climatic risks in the nine targeted states, benefiting at least 200,000 households (total cost: USD 23,899,347; GCF cost: USD 14,321,347, or 60 per cent)*

12. Under this component, water infrastructure will be constructed/rehabilitated to improve access to drinking water for the direct beneficiaries and their livestock, as well as for irrigation of their gardens, farms, shelterbelts and tree nurseries. The water infrastructure options include hafirs (underground reservoirs designed for water storage), water yards (borehole, pump, above-ground storage tank and small-scale water distribution system) and sand dams (reinforced concrete wall built across a seasonal sandy river in order to retain rainwater and recharge groundwater). The water balance analysis shows that the additional infrastructure will not exacerbate water stress in any of the catchments or aquifers. Community training programmes will be implemented to ensure effective operation and long-term maintenance of all the water infrastructure to be constructed/rehabilitated by the project. The national Ministry of Irrigation and Water Resources has committed to funding operation and maintenance of the water infrastructure during and after project implementation,

complementing the users' own funds generated from the community microfinance system ('sandug'). Thus, increased and ongoing access to water will be secured.

*Component 3: Strengthened capacities and knowledge of institutions and communities on climate change resilience and adaptation (total cost: USD 2,374,110; GCF cost: USD 1,324,110, or 56 per cent)*

13. Based on training needs assessments, staff of state-level agricultural extension agencies will be trained on measures to improve agricultural yields, harvest rainwater and protect rangelands and forests. This will build their capacity to train the agro- and nomadic pastoralists to achieve these objectives, thereby improving institutional and community capacity to address climate change risks and adaptation strategies in arid and semi-arid zones of Sudan. Manuals and technical guidelines developed through this training component will facilitate continuation of capacity-building after the project and extension of climate resilient practices to other communities not directly benefiting from the project.

14. At community level, village leadership councils and development committees will be trained to improve existing community micro-financing schemes and procurement processes, or to introduce these where they currently do not exist. The project will also facilitate exchange visits of communities and extension staff across localities, to promote knowledge exchange and replication of successful practices.

### **III. Assessment of performance against investment criteria**

#### **3.1 Impact potential**

*Scale: Medium-high*

15. With close to 1.2 million direct and 2.5 million indirect beneficiaries (of the 45.6 million<sup>1</sup> total population of Sudan), spread across 9 of Sudan's 18 states, the project has potential to deliver far-reaching impacts at local, state and national levels. The direct beneficiaries, selected because of their particularly high vulnerability and poverty, will attain enhanced water and food security, enabling them to perpetuate their traditional livelihoods in a more sustainable manner. The indirect beneficiaries, learning by interaction and observation, as well as from the state-level extension agencies trained by the project, will be empowered to adopt the same sustainable practices and thereby secure access to the resources needed to sustain their livelihoods.

16. Afforestation and rangeland rehabilitation will deliver an estimated 8.24 kilo tonnes of carbon sequestration potential annually. While this is marginal compared with Sudan's total annual emissions and therefore does not make this a cross-cutting project, the emissions reductions will be tracked and reported on.

#### **3.2 Paradigm shift potential**

*Scale: Medium*

17. The project will catalyse a paradigm shift in nomadic and agro-pastoralist farming in Sudan by introducing climate-resilient rangeland management and agricultural practices. The project increases the beneficiaries' access to the resources required to sustain themselves and their livelihoods – namely, water, food, fodder, firewood and timber – while enhancing the beneficiaries' capacity to sustain their own access to those resources. The project has clear potential for scale-up, as knowledge and practices learned can be transferred among communities by the agricultural extension agencies and through peer learning among the farmers and pastoralists themselves.

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<sup>1</sup> 2020 estimate, see <<https://www.cia.gov/library/publications/the-world-factbook>>.

18. Dryland management policy, planning and budgeting at national and state levels are likely to be positively influenced by project activities. Institutional capacity strengthening of the state-level agricultural extension agencies will facilitate integration of climate resilience into state-level planning, with the ultimate result of influencing the reform of federal policies towards sustainable dryland management under climate change.

19. The paradigm shift potential is medium rather than high because the project does not directly promote market development and transformation. The project is designed primarily to enable nomadic and agro-pastoralists to continue their traditional way of life under a changing climate. Thus, it is not intended to convert these subsistence livelihoods into commercial ones.

### 3.3 Sustainable development potential

*Scale: Medium*

20. **Social co-benefits.** The project will enhance social cohesion through community-based management of water infrastructure, rangelands and forests, thereby preventing conflict that may arise from competition for scarce resources. The interventions are all designed to be harmonious with existing local practices, continuing and reinforcing the cultural heritage of agro-pastoralist and nomadic pastoralist communities. The project will also improve public health and nutrition through increased access to water, food and fodder.

21. **Environmental co-benefits.** These include improved soil quality as crop and pastoral rotation measures will increase the capacity of local soils to function better in support of plant, animal, and human life under climate change; enhanced soil conservation and reduction of wind-driven erosion by shelterbelts; improved tree cover in household vegetable gardens to provide shade, thereby reducing evapotranspiration and improving yield. In addition, afforested areas will provide carbon sequestration benefits.

22. **Economic co-benefits.** These will accrue to the beneficiaries through enhancement of agricultural production, driven by improved access to water for irrigation, adoption of climate resilient seeds and greater feed availability for livestock. In addition, the community-based development model will create economic opportunities in the targeted villages, such as managing water infrastructure, exporting sustainable techniques to neighbouring communities, and potentially generating excess produce for sale.

23. The proposal scores “medium” on this investment criterion mostly due to lack of quantification of these co-benefits, with the exception of the sequestration potential, for which calculations have been provided.

### 3.4 Needs of the recipient

*Scale: High*

24. Around 70 per cent of Sudan’s population lives in rural areas, and 47 per cent lives below the national poverty line. 90 per cent of cultivated areas depend exclusively on rainfall, with fluctuations in crop yield attributed almost solely to fluctuations in rainfall patterns. Pastoral and farming activities are practised on marginal lands and there is limited adaptive capacity among vulnerable groups, particularly among women.

### 3.5 Country ownership

*Scale: Medium-high*

25. The executing entity (EE) of this project is the Higher Council for Environment and Natural Resources (HCENR), which is also Sudan’s national designated authority (NDA). HCENR has been active in pursuing and deploying readiness resources, developing a country programme and participating in project development. The HCENR has demonstrated capacity to oversee the smooth implementation of the project, having overseen previous resilience-building

projects in rural areas and having been the coordinating agency for preparation of the country's national adaptation programme of action (NAPA) and national adaptation plan (NAP). This project is directly linked to priorities identified during the NAPA and NAP processes.

### 3.6 Efficiency and effectiveness

*Scale: Medium-high*

26. Sudan has been classified as a least developed country since 1971. The country is currently in a state of debt distress and is thus not in a position to secure loans to provide much-needed infrastructure that would improve the livelihoods of its most vulnerable citizens. GCF grant funding will ensure that the co-financing provided by the Government of Sudan will be leveraged to maximum advantage of the beneficiaries and surrounding communities.

27. Most of the proposed interventions aim to enhance availability of public infrastructure and improve management of common pool resources – communal rangelands for livestock grazing, village-level water supply, and decentralised small-scale irrigation systems. The project targets the vulnerable and poor, for whom there is little scope to pay for the interventions, beyond the operation and maintenance costs for minor repairs that will be partly borne by the community-based organizations. There is no short- or medium-term prospect for private sector investment in infrastructure.

28. The project is cost effective, as evidenced by an economic internal rate of return of 21.9 per cent, and it is robust to increases in costs of 20 per cent and decreases in benefits of 20 per cent. The primary economic benefits are increased agricultural yields resulting from improved irrigation access and drought-resistant seeds and reduced time spent by women and girls on fetching water. These benefits accrue primarily to low-income households.

29. This project has a relatively high co-financing ratio, compared with other adaptation projects in the GCF pipeline and portfolio. The Government of Sudan is providing grant co-financing of USD 15 million, while the accredited entity (AE), the United Nations Development Programme (UNDP), is providing grant co-financing of USD 540,000, to supplement the requested GCF grant of USD 25,645,114. The GCF co-financing ratio is therefore 1:0.61.

## IV. Assessment of consistency with GCF safeguards and policies

### 4.1 Environmental and social safeguards

30. **Environmental and social risk category.** The AE has screened the project using its social and environmental screening procedure and has assessed the project to be of moderate risk equivalent to category B. The Secretariat confirms the classification, given that the project would only involve the introduction of new technologies and farming/pastoralist practices, including: the distribution of drought-resistant, early maturing seeds; establishment of integrated farms; rangeland rehabilitation; development of multi-purpose tree nurseries and shelterbelts/agroforestry; development of water supply and distribution infrastructure, such as the construction and/or rehabilitation of hafirs, water yards and sand dams; and capacity-building for local governance.

31. **Safeguards instruments and disclosure.** The AE has submitted a social and environmental screening form, an environmental and social management framework (ESMF) and a stakeholder engagement plan.

32. The following summarizes the assessment of the project's consistency with the GCF environmental and social safeguards (ESS) standards and requirements.

33. **ESS 1: Assessment and management of environmental and social risks and impacts.** The project has assessed the potential risks and impacts, including performance criteria, management measures, responsible entities, as well as the monitoring and reporting processes and procedures.
34. Some of the risk factors related to the project include: (i) the possibility that the project may change rules of access to resources (e.g. introduction of a new rangeland management system, communal water impounding/irrigation); (ii) the presence of cultural minorities in the area, migrants and refugees; and (iii) the presence of groups with competing uses for resources. Mitigating factors would include: (i) the fact that the project will not require land acquisition and involuntary resettlement; (ii) the project will not consider proposals that would have an adverse impact on cultural heritage; (iii) the project activities are small-scale and would be implemented in a participatory manner; and (iv) experiences in similar projects (previous and ongoing) did not result in or trigger conflict.
35. The ESMF also provides for a description of the procedure for screening, assessing and reviewing/approving individual project activity. Each proposal can be assessed against the provisions of the ESMF, particularly on the performance indicators and specific eligibility criteria such as no need for land acquisition, no involuntary resettlement, no adverse impacts on cultural heritage, among others aspects that require an initial check before a proposal is further developed.
36. **ESS 2: Labour and working conditions.** The project involves construction that would be small scale and would involve only a few workers. The project will apply the country's Labour Code, which contains regulations on working conditions and requirements, including exclusion of child labour.
37. **ESS 3: Resource efficiency and pollution prevention.** The ESMF contains adequate measures for the prevention of pollution during project construction and operation. It has assessed potential impacts and proposed mitigation measures on various environmental aspects including for climate, ecology, surface and groundwater, erosion, drainage and sediment control, waste management, air quality, noise and vibration and archaeological and cultural heritage. It also presents guidance on management of social issues and in cases of emergencies. The ESMF identified key potential project risks and impacts and outlined possible management measures.
38. **ESS 4: Community health, safety and security.** The ESMF provided for measures to manage community health and safety and to avoid the risks related to the potential spread of diseases from non-resident workers/contractors to the community and vice versa; the potential cultural conflict between community and project workers; and security issues, especially in areas considered former hotbeds of sociopolitical conflicts by proposing that outside labour forces are not engaged.
39. **ESS 5: Land acquisition and involuntary resettlement.** Project activities that would require land acquisition and involuntary resettlement have been ruled out in the ESMF. There may be an impact on land during construction activities, but this will be temporary in nature. The project has likewise included a screening procedure to screen individual project activity against land acquisition and involuntary resettlement.
40. **ESS 6: Biodiversity conservation and sustainable management of living natural resources.** Impacts on biodiversity are not expected to be adverse. Nevertheless, the increased availability of water in areas where it is not normally available could result in changes in the ecology, and the introduction of non-native varieties/species of plants in the project areas could lead to the emergence of new weeds, pests and diseases. However, the ground interventions are expected to be micro to small-scale and would be scattered over large areas. Hence, this potential impact is deemed to be of low magnitude and the risk is considered to be non-

significant and adequately addressed in the ESMF. Moreover, the project will monitor potential for such impacts and provide for appropriate management during the project life cycle.

41. **ESS 7: Indigenous peoples.** The UNDP screening and the ESMF noted the presence of ethnic minority groups and that the country is home to hundreds of ethnic and sub-ethnic groups; a multitude of languages is spoken, and Arabs represent the mainstream majority. Prominent non-Arab groups include the Nubians, who live along the Nile River in northern Sudan; the Beja who reside in eastern Sudan; the Fellat, located mainly in Gezira; the Nuba in South Kordofan; and the Fur, Massalit and Zaghawa, located in the Darfur region. Each subproject/subactivity will be screened against a checklist provided to identify whether there are previously unidentified adverse impacts, and if free, prior and informed consent is required. Where such circumstances arise, an indigenous peoples planning framework is provided to enable preparation of an indigenous peoples plan.

42. **ESS 8: Cultural heritage.** The ESMF ruled out any project activities that would impact cultural heritage. The project made provisions to ensure that individual project activities are screened to exclude those that would have an adverse effect on cultural heritage.

43. **Institutional arrangements and capacity-building.** The HCENR representing the government will be responsible for the supervision of the EMSF and environment and social issues. A budget estimate has also been prepared for the implementation of the ESMF. A site supervisor will be engaged to be responsible for daily environmental inspections, particularly during construction. Monthly audits are projected to be undertaken to crosscheck the inspections. The project intends to provide capacity-building among state-level organizations and village councils, village development committees and popular committees to increase their technical capacity on best practices and sustainable technologies, including on aspects related to environmental and social governance.

44. **Stakeholder engagement.** The stakeholder engagement plan describes the consultations conducted during the preparation of the proposal as well as the opportunities for engagements with communities during project implementation. A stakeholder analysis has also been prepared and appended to the ESMF, which identified various stakeholders that need to be engaged during project implementation.

45. **Grievance redress mechanism.** The AE included its entity-level provisions for a grievance redress mechanism, which includes eligibility requirements to lodge grievances in good faith and achieve mutually acceptable resolutions for all parties. An activity level grievance redress mechanism will be operationalized and a Safeguard Officer from the Project Management Unit (PMU) will coordinate concerns as regards environmental and social complaints about the project.

## 4.2 Gender policy

46. The AE has provided a gender assessment and gender action plan and therefore complies with the requirements of the GCF Gender Policy.

47. In the gender assessment the AE demonstrated the existence of some level of enabling environment to promote gender equality and women's empowerment. The assessment indicates the commitment of the Government of Sudan to gender equality through its National Policy for the Empowerment of Women, which focuses on the areas of health and environment; education policies; economic empowerment; human rights and legal knowledge; political participation and decision-making; and peace and conflict resolutions. There are legal frameworks and bills that promote representation of women at different levels and aim to protect women and girls from harmful practices. However, the policies are facing challenges as there is no specific recommendation for implementation of the bills and formal laws. The Sudan is not a signatory to the Convention on the Elimination of all Forms of Discrimination Against

Women, however it has a legal framework to protect women from some but not all forms of violence.

48. The enabling environment will present some opportunities to promote gender equality for Sudanese women, but much progress has to be made. There are substantial differences between men and women in levels of education in Sudan. The gender divide is particularly stark with regard to poverty levels, women's representation in decision-making in all spheres, and in resource management. Where women have no decision-making capacity they are exposed to challenges in managing and responding to climate change threats. The underlying cause for the inequalities between women and men stems from socio-cultural norms and practices that are translated into local level (customary) laws, customs and practices. The disadvantaged position of women is perpetuated by the resulting social relations and male-female power dynamics. Gender-based violence is often related to armed conflicts and occurs in all areas of the country. The assessment indicates that violence against women and girls and the weak institutional framework addressing the issue hamper gender equality and women's empowerment. Women are subject to unequal divorce rights, limited rights to inheritance and access to land, resources and finances. Various events such as recurrent droughts, declining investments in rural areas, as well as civil conflicts and migration of men to cities have contributed to the increase in the number of women-headed households, which are much more disadvantaged.

49. This has not however hampered women's efforts to contribute to and participate in various productive and reproductive activities. Women have a significant contribution to the well-being of their households and communities. In rural areas, the fetching of water and firewood are the responsibility of women and girls and the amount of time they devote to this is likely to increase due to climate change. Women are employed in the agriculture sector, where their engagement is mainly in the traditional subsistence sector. Women's contribution is seen in crop cultivation in back-yard farms which provide households with early income and food prior to the harvest of field crops. Though the contribution of women is noted, the assessment indicates that further work must be done within communities to identify the challenges for women's access to grievance mechanisms. It will also be important to assess and build on any other efforts that are being supported by non-governmental organizations and civil society organizations in the nine states concerned, to support sustainability, water supply/demand barriers from a gender perspective, and water yard services. An estimate should also be made of the expected income to be generated from vegetable gardens, and support given to the presence of women in traditional local governance groups, water councils, and in village leadership.

50. The assessment also makes a reference to the use and implementation of the household methodology approach to ensure the empowerment needs of women will be envisioned by the women themselves through a visioning exercise. The approach has already been used in Sudan and has provided positive lessons. In addition to addressing many of the gender issues, it will also be one of the crucial tools used to address gender-based violence.

51. The AE, as per the requirements of the GCF Gender Policy, has provided a gender action plan. The gender action plan provided includes activities to address the challenges to gender equality, along with targets, indicators and timelines for implementation and reporting on progress. The AE will also put in place a gender expert to support with the implementation of the gender action plan along with nine gender focal persons that are found in the states. The budget source for the action plan is embedded and mainstreamed in the sub-activities of the funding proposal. The action plan ensures the mainstreaming of gender issues across the various interventions. The activities included are: introduction of drought-resilient seed varieties; introduction of gender-responsive farmer field schools that foster equitable participation and benefit by women and men; establishment of integrated women sustainable agriculture farms with leadership programs, sustainable women-centred home gardens and poultry production groups; skills development for women, in particular to engage in various project activities; gender-related training for service providers; and access to financial services.

The introduction and use of the household methodology are also a critical approach being used in the implementation of the action plan.

## 4.3 Risks

### 4.3.1. Overall proposal assessment (medium risk)

52. The funding proposal requests a GCF grant of USD 25.6 million towards the total project cost of USD 41.6 million. The project supports climate change adaptation efforts among subsistence agro-pastoralist and nomadic pastoralist communities in dryland zones across nine states in Sudan.

### 4.3.2. Accredited entity/executing entity capability to execute (medium risk)

53. The AE, UNDP, has sound experience of implementing similar projects. The AE has a long history in promoting sustainable development in Sudan and has been closely involved in nearly all climate change activities in the country since 1993. The EE is the HCENR, which is also the NDA for Sudan. HCENR works in close collaboration with all government institutions at both the federal and state level. HCENR has overseen previous resilience-building projects in rural areas and has a strong track record of effectively managing climate change adaptation projects. HCENR will enter into agreements with the Ministry of Agriculture and Natural Resources and Ministry of Irrigation and Water Resources both of which will be responsible for delivering particular project activities.

54. As the HCENR serves as NDA and will be the EE for this project, there may be a potential conflict of interest. To mitigate this challenge, an organizational Conflict of Interest Mitigation Plan has been developed. The Plan aims to ensure an organizational firewall between the HCENR dual responsibilities as EE and NDA focal point.

### 4.3.3. Project-specific risks (medium risk)

55. The project activities will be geographically spread out – the target region of the project consists of 138 villages in dryland zones across 9 states in Sudan. The successful implementation of the project will also require active participation by the beneficiaries and other stakeholders. The AE has identified risks of household and community unwillingness to remain engaged in project activities and the adaptation interventions becoming ineffective. These risks are expected to be partly mitigated by local level awareness-raising, capacity strengthening and leadership mobilization for communities, planned by the AE as part of the project. The AE has also provided that the project will adjust practices to better complement local conditions, implementing alternatives where appropriate within the overall design framework of the project.

56. Economic and financial analysis: based on the AE estimates of the economic benefits, the project investment has a net present value of USD 27.8 million and an economic internal rate of return of 21.9 per cent, indicating that project investments are economically viable. A sensitivity analysis has been conducted on an increase in project costs and reduction in benefits. The internal rate of return continues to be approximately 10 per cent or more, even with an increase of 20 per cent in project costs and reduction in benefits by 30 per cent. The emphasis of the project is on non-commercial, subsistence activities within small farmer/pastoralist communities in drought prone areas of Sudan; due to the subsistence nature of the objectives, cost recovery from the project is minimum, which supports the request for GCF grant financing.

### 4.3.4. Compliance risk (medium)

57. The United Nations Security Council in 2005 imposed certain sanctions under Resolution 1591 against Sudan, comprised generally of an arms embargo, asset freeze, travel ban and targeted sanctions against a limited number of individuals. The Accredited Entity has indicated that none of the activities to be undertaken in this project are subject to or prohibited by these sanctions and that none of the individuals listed in the sanctions are involved in the project. In reviewing the activities to be undertaken in the project, the activities do not by themselves to pose any uniquely high risk for money laundering, terrorist financing, or prohibited practices. Nevertheless, appropriate internal controls are necessary to ensure that any inherent risks are properly mitigated and addressed. The Accredited Entity has indicated and committed to such internal controls being applied in this project. Based on these representations, the Compliance risk is assessed as Medium.

**4.3.5. GCF portfolio concentration risk (low risk)**

58. In case of approval, the impact of this proposal on the GCF portfolio concentration in terms of result area and single proposal is not material.

**4.3.6. Recommendation**

59. It is recommended that the Board consider the above factors in its decision.

<b>Summary risk assessment</b>	
Overall programme	Medium
Accredited entity/executing entity capability to implement this programme	Medium
Project-specific execution	Medium
GCF portfolio concentration	Low
Compliance	Medium

## 4.4 Fiduciary

60. UNDP as AE provides a three-tier oversight and quality assurance role involving UNDP staff in Country Offices and at regional and headquarters levels. The quality assurance role supports the Project Board, by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. UNDP is required to deliver GCF-specific oversight and quality assurance services including:

- (a) Day-to-day oversight supervision;
- (b) Oversight of project completion; and
- (c) Oversight of project reporting.

61. The project will be implemented following the UNDP National Implementation Modality, according to the Standard Basis Assistance Agreement between UNDP and the Government of Sudan, and in accordance with the accreditation master agreement (AMA) between UNDP and GCF.

62. HCENR is the project EE. HCENR is the technical arm of the Ministry of Agriculture and Natural Resources in policies, legislation and strategic planning in relation to environmental and natural resources conservation and management.
63. As the executing entity, the HCENR will provide project management support for project implementation through its technical and administrative staff and systems. It will also be responsible and accountable for managing this project, including the monitoring and evaluation of project interventions, achieving project outcomes, and for the effective use of UNDP resources
64. Day-to-day project oversight will be conducted in accordance with established HCENR and UNDP procedures. Implementation arrangements are focused on four organizational elements, namely a Project Board, Project Management Unit, Technical Committee, and State Project Managers.
65. The Project Management Unit is responsible for the day-to-day management of the project activities and is accountable to the Project Board. The Project Management Unit's overall role is to ensure that comprehensive technical and management support is provided to project activities and local beneficiaries, including overseeing knowledge management and monitoring and evaluation.
66. The financial management and procurement of this project will be guided by UNDP financial rules and regulations. The project will be audited in accordance with UNDP policies and procedures on audits, informed by and together with any specific requirements agreed in the AMA. According to the current audit policies, UNDP will appoint the auditors.

## 4.5 Results monitoring and reporting

67. This project seeks to build resilience in three ways. First, the project disseminates a set of sustainable technologies and practices including drought-resistant, early maturing seeds; establishment of integrated women-led sustainable farms; rehabilitation of communal rangelands; development of multi-purpose tree nurseries; and the establishment of shelterbelts to shield cultivatable plots from dust storms. Second, the project increases the availability of water resources through the construction and/or rehabilitation of hafirs (i.e. dugout enlargements into which surface-water runoff is converged during the rainy season), water yards (i.e. water extraction and distribution facilities, which include boreholes, storage tanks, animal watering basins and tap stands), and sand water-storage dams (i.e. rain water harvesting structures). Third, the project strengthens local governance by building capacity among local leaders and stakeholders (i.e. village councils, village development committees, popular committees) regarding best practices, as well as increasing capacity of extension agents from state-level offices of the Ministry of Agriculture and Natural Resources on sustainable technologies/practices suitable for dryland areas.
68. It is an adaptation project that is meant to increase the resilience of 1,181,538 (direct) and 2,499,712 (indirect) beneficiaries.
69. The project will contribute to achieving two fund-level impacts, namely:
- (a) Increased resilience and enhanced livelihoods for the most vulnerable people, communities and regions; and
  - (b) Health and well-being, and food and water security.
70. Regarding the theory of change, a clear causal linkage between the barriers and proposed intervention with clear reference to assumptions and risks are made.
71. Regarding the timetable of implementation, the project conforms with the standard GCF format.

72. For the logical framework, the funding proposal incorporated the comments and suggestions provided by the Secretariat and conforms with GCF performance measurement frameworks.

#### 4.6 Legal assessment

73. The Accreditation Master Agreement (AMA) was signed with the AE on 5 August 2016 and it became effective on 23 November 2016.

74. The AE has provided a certificate confirming that it has obtained all internal approvals and it has the capacity and authority to implement the project.

75. The proposed project will be implemented in the Republic of the Sudan, a country in which GCF is not provided with privileges and immunities. This means that, amongst other things, GCF is not protected against litigation or expropriation in this country, which risks need to be further assessed. The Secretariat submitted a draft of the privileges and immunities agreement to the Government of the Republic of the Sudan on 9 December 2015 and on 9 March 2016. No communication on the substance of the draft agreement has been received by the GCF Secretariat to date.

76. The Heads of the Independent Redress Mechanism (IRM) and Independent Integrity Unit (IIU) have both expressed that it would not be legally feasible to undertake their redress activities and/or investigations, as appropriate, in countries where the GCF is not provided with relevant privileges and immunities. Therefore, it is recommended that disbursements by the GCF are made only after the GCF has obtained satisfactory protection against litigation and expropriation in the country, or has been provided with appropriate privileges and immunities.

#### 4.7 List of proposed conditions (including legal)

77. In order to mitigate risk, it is recommended that any approval by the Board is made subject to the following conditions:

- (a) Signature of the funded activity agreement in a form and substance satisfactory to the Secretariat within 180 days from the date of Board approval; and
- (b) Completion of legal due diligence to the satisfaction of the Secretariat.

## Independent Technical Advisory Panel's assessment of FP139

Proposal name:	Building resilience in the face of climate change within traditional rain fed agricultural and pastoral systems in Sudan
Accredited entity:	United Nations Development Programme (UNDP)
Country/(ies):	Sudan
Project/programme size:	Small

### I. Assessment of the independent Technical Advisory Panel

#### 1.1 Impact potential

*Scale: Medium-High*

1. Sudan is one of the African countries with high susceptibility to drought. The country has four physiographic regions with a sharp rainfall gradient along its latitude (north to south). The northern reaches are mainly desert, while the southern part is in the semi-arid region of sub-Saharan Africa, with relatively higher rainfall gradient than the northern region. Rainfall in Sudan also exhibits an acute temporal distribution, where most of the rainfall occurs between June and September.
2. The economy of Sudan is oriented towards traditional agro-pastoral systems, which are operating predominantly at subsistence level. Agriculture contributes 36.5 per cent of gross domestic product of the country, while over 60 per cent of the gross domestic product is derived from agro-pastoral activities. The agro-pastoral sector provides about 75 per cent of employment in Sudan. Over 88 per cent of the net cultivable area (NCA) is rain-fed, with only 2 million hectares out of 17 million hectares of NCA being irrigated, predominantly by the use of water from the Nile river. However, the use of water from the Nile is restricted by an international treaty, which is why large-scale surface irrigation cannot be made possible and why the farming and pastoral communities have to rely on available rainfall. Consequently, agricultural productivity in the country is low. The lower level of farm income is responsible for the low level of mechanization and investment in irrigation, resulting in the overwhelming dependence on the rain-fed production system.
3. In recent decades there has been a gradual decline in available rainfall throughout the country. The country's national meteorological agency's historical data covering a 40 year period from 1952 to 1992 indicates that the annual average rainfall has been declining from 200 mm by 3.99 to 5.12 mm, depending on specific locations. However, in the 1990s and 2000s the declining trend worsened with the annual average decline in rainfall being in the range of 9.3 mm to as high as 23.4 mm. The latter clearly highlights the intensification of the core problem given the advent of accelerated climate change.
4. The same national data source also suggests that the rainfall isohyets<sup>1</sup> have been moving towards southern reaches and have actually shifted some 250 km southwards since the 1990s. A comparison of rainfall isohyets for the periods 1941–1970 and 1971–2000 shows that there is a southwards shift by hundreds of kilometres. There is a clear demonstration of desertification

<sup>1</sup> A rainfall isohyets is a line on map connecting points of equal rainfall for a given time period.

in the country and repeated incidences of widespread drought<sup>2</sup> in regions such as Darfur. Acute drought in regions that focus on rain-fed agriculture accompanied by a decline in the volumes of water stored in retention ponds and increasing evapo-transpiration have led to repeated losses of crop production and livestock. The results of such losses are widespread hunger, malnutrition and perpetuation of poverty throughout Sudan, especially during the past two decades. The cause-and-effect relationship between poverty and malnutrition on the one hand and much aggravated drought on the other, is well recognized.

5. Model-based future projection of climatology is known to provide average surface temperatures which are higher than that for today. With increasing “climate forcing” (signified by the increasing atmospheric load of greenhouse gases), the warming trend will continue. In addition, the climate models<sup>3</sup> project a further decline in available rainfall over various parts of Sudan, with much aggravated desertification in future decades. The evapotranspiration losses (important for crop production) will also increase, which will have adverse consequences for crop production as well as the production of aboveground biomass in rangelands across Sudan (which are important for foraging livestock production), particularly in the project’s target regions. According to the projections, the existing agro-pastoral production system will likely face grave consequences if business-as-usual responses continue.

6. In the past, agro-pastoral production systems in Sudan have been complemented by community efforts to manage drought. Many locally designed soft-engineering techniques have been employed by the communities to hold as much water from available rainfall and utilize it to compensate for moisture loss due to drought. Pasture production has also been adversely affected by drought-induced acute water stress. However, the water infrastructure cannot be maintained by the poor agro-pastoral communities, or replaced at the end of its economic life, because of the growing inability to invest in operation and maintenance (O&M) of the systems and gradually reducing revenues that have crippled the Government’s financial ability to invest in the maintenance of water infrastructure. The lack of financial services has also contributed to the gradual deterioration of the water infrastructure. Moreover, uncertainties regarding the extent of drought in the wake of climate change have made the rural development planning process ineffective. As a consequence, the agricultural extension service has been unable to integrate climate change into its advisory capacities and unable to come up with locally relevant solutions to address aggravated drought and soil erosion.

7. The high incidence of poverty among poor farming communities and lack of access to financial services at the grass roots level prevents agro-pastoral producers from making connections to available groundwater resources. As a consequence, there has been a gradual water deficit. In 2012, the estimated deficit in water availability for agriculture was 12.5 billion cubic metres, and this has been growing by about 3.3 per cent per year. If business-as-usual growth continues, the estimated water deficit would escalate by 33 billion cubic metres by 2027. Under such conditions, the agropastoral production system will collapse in Sudan.

8. Climate change is predicted to further exacerbate drought conditions and contribute to the water deficit of the country’s agriculture sector. The situation therefore warrants immediate action and holistic planning at both the state and federal level. The holistic plans should consider locally suited adaptive measures that can be readily implemented, supplemented by strengthening of institutional support services that are oriented towards providing appropriate advice and raising the awareness and capacities of stakeholders so that they can participate well to address the issues, under institutional guidance.

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<sup>2</sup> Major droughts occurred in 1967–1973 and again in 1980–1984 across Sudan. Localized drought episodes have been observed in 1987, 1989, 1990, 1991 and 1993, primarily in Kordofan, Darfur, Central Sudan and Khartoum states.

<sup>3</sup> Validated general circulation models are used, and the output data are statistically downscaled via bias correction and spatial disaggregation method. The general circulation models are run using all four representative climate pathway (RCP) scenarios (RCP 2.6, 4.5, 6.0 and 8.5).

9. The proposed project aims to increase climate resilience among agro-pastoralists and nomadic pastoralists, particularly women, in dryland areas through an integrated approach to agricultural production, water resource management and rangeland management. The project's long-term vision is a transition towards greater climate resilience through improved food and water security, enhanced livestock productivity and heightened community resilience achieved through strategic investments in the following broad aspects: (1) introducing sustainable farming practices, to be achieved by establishing integrated women-led farms; (2) installing water supply and distribution infrastructure, and developing community-based management frameworks for maintaining water-related infrastructure; (3) enhancing local governance capacities to address climate change; (4) promoting the empowerment of women, by engaging them in decision-making positions in committees operating at the local level; and (5) strengthening policies and institutions to help communities plan for building resilience and to provide technical advice in a bid to address climate change related vulnerabilities.

10. The proposed project will be implemented within five years of its inception. The project activities will be implemented in 138 villages spreading over 9 states of the country.<sup>4</sup> The prevailing spatial dimensions of reducing rainfall, the state of poverty and local-level conditions have been considered in the process of identifying vulnerable states and locations within those states. The results of such area-delineation processes have been confirmed through a series of consultations in vulnerable areas and states throughout Sudan, during the preparatory phase of the proposal. The independent Technical Advisory Panel (TAP) noted that beneficiary-targeting processes are satisfactory. The circumstances of women and girls have been given adequate priority in the project design, while gender-specific components and activities are integrated into the project design.

11. A total budget of USD 41.18 million<sup>5</sup> is estimated for the project, out of which a total of USD 25.64 million is requested as GCF grant. The project offers a substantial amount of co-financing (31 per cent of the estimated budget). The project will directly reduce the vulnerability of 1.18 million people out of a total of 30.9 million Sudanese. Of the direct beneficiaries, about 35 per cent will be women. The number of indirect beneficiaries will be 2.45 million, of which 35 per cent are women. Although the project consists of activities that are targeted to create greater opportunities for women farmers, the independent TAP noted that benefit streams still target a larger proportion of male farmers and pastoralists. This is because the pastoralists in Sudan are predominantly males.

12. In view of the above analysis, the impact potential of the project is medium-high, given the large number of beneficiaries and the urgency of actions needed in one of the most vulnerable least developed countries (LDCs) in sub-Saharan Africa.

## 1.2 Paradigm shift potential

*Scale: High*

13. Sudan is predominantly an agriculture-based economy, where the rural production system is heavily dependent on rain-fed agriculture and pastoral livestock management. The timeliness and abundance of rainfall has been key to the sustenance of rural people's traditional production system, their livelihoods and well-being. Assuming the project is approved, it will create opportunities to sustainably fight against dwindling rainfall and resulting drought (i.e. moisture stress), holding water in soils to help sustain livestock and pastures, and acquire know-how at the community level so that the climate change induced vagaries of nature may be addressed by the application of new knowledge, technologies that are suitable and financial arrangements created and nurtured at the local level. Institutions with supporting roles and

<sup>4</sup> There are a total of 18 states in Sudan, 3 of which are in the severely drought-affected Darfur region. The state of Kordofan is also one of the worst affected states under drought conditions.

<sup>5</sup> The total budget involves USD 41,185,114. The GCF financing request involves USD 25,645,114. Figures are rounded up.

services will be strengthened, with capacities built and enhanced so that rangeland resource management can be adequately guided with the involvement of members of communities. Such a mix of measures is likely to result in a shift in the production paradigm from vulnerability to resilience, possible even – gradually – to sustainability. The model presented is expected to catalyse impacts beyond a one-off project.

14. The project offers a number of elements that have great potential for scaling up and replication, even without follow-up or additional financing from GCF. The project does not stem from a game-changing innovation; rather it involves a combination of a few advanced technologies such as drought-tolerant seeds and irrigation with already proven productive infrastructures such as water yards (i.e. *hafirs*) and sand water storage dams, complemented by local-level awareness and skills enhancement involving community members and sustainable institutional approaches with support services. While the technologies are simple, their effectiveness in managing arid and semi-arid production conditions in rangelands is beyond doubt. Even if drought does not take place, the water infrastructure and improved seeds and varieties will continue to assist the production system in arid and semi-arid conditions. The simplicity of the low-cost solutions does have great adoption potential at the community level, which gives confidence that they can be accepted and replicated by traditional societies in their rangeland production systems.

15. The process will be strengthened by the presence of local-level institutional nodal points with documented extension support services. The latter will bring in modal shift in the overall production process. The potential policy integration towards a planned extension support service at different management tiers will give the Sudanese Government confidence to commit finance in the near future for the nation-wide replication of project-related best practices. This simple project therefore offers much greater scalability, which is described in the proposal's theory of change. The replication potential is also indicated in the theory of change.

16. The activities that are under output 3 are all about enhancement of knowledge and learning, and are likely to be achieved at both the institutional and community/beneficiary level. The knowledge of extension officers and technical staff will be enhanced through training, which will be complemented by manuals and technical guidelines, where adaptation measures will be explained on the basis of best practice. This project will therefore not only serve the target communities: such manuals and technical guidelines will be applicable to non-targeted communities where similar conditions prevail. Through the community-level training on climate-resilient production systems, the local knowledge base will be enhanced. This will be boosted through peer-to-peer discussions and community interactions involving indirect beneficiaries. Moreover, community training on water infrastructure management, including O&M, will lead to the long-term sustainability of the equipment and water infrastructures and reduce O&M costs; and it will guarantee the shortest intervention time by engaging local-level repairing services. The solution appears simple, but its usefulness cannot be overlooked.

17. The alignment of local-level service delivery institutions will be strengthened through capacity-building of staff, including extension officers. The intended policy integration at various governance tiers will further enable such institutions to offer much-needed extension services beyond the project target communities and beyond the project timeline. This will help with the creation of an enabling environment for the national and local-level institutions that deal with production support services. Since such institutions already exist and are being supported fully by national financing, the sustainability of future interventions is also secured, even without the mobilization of additional GCF financing beyond the project timeline.

18. The target of the project is to create a resilient production system which is predominantly rain-fed and rooted to traditional agro-pastoral production systems, however they are equipped to withstand climate change induced droughts in future. It is premature to predict whether the private sector will invest following the success of the project to turn these in to a value chain production system. However, if the resilience-building is successful, the

process will most likely be drawn to the attention of the private sector, which may influence an ultimate transformation – an integration of the resilient production system into established value chains, where land and labour are likely to meet investment and technologies far beyond the subsistence production system.

19. The project is humble in its approaches and not overambitious to transform traditional subsistence production system into a commercial production venture. For targeting the latter, the five-year timeline for the project is too short. However, the project offers plenty of potential in terms of replicability and scalability within its limited scope. The theory of change adequately explains the approach and the deliverables, which already indicate a considerable contribution to climate-resilient production systems.

20. In view of the above, the paradigm shift potential of the project is rated as high.

### 1.3 Sustainable development potential

*Scale: High*

21. The project will directly contribute to the following Sustainable Development Goals (SDG):

- (a) SDG 1 (No poverty) – by increasing farm-level income and by reducing out-migration from rural areas due to loss of livelihoods dependent on agriculture and pastoral systems;
- (b) SDG 2 (Zero hunger) – by reducing crop loss and loss of livestock; by increasing productivity in agro-pastoral systems; and by increasing resilience against persistent drought, exacerbated by climate variability and change in arid and semi-arid conditions;
- (c) SDG 5 (Gender equality) – by facilitating the establishment of integrated women-headed sustainable agriculture farms; helping to set up tree nurseries involving women groups; and implementing a targeted awareness programme to enhance the knowledge base of women producers;
- (d) SDG 6 (Clean water and sanitation) – by investing in water infrastructure and water services to address climate-induced drought in arid and semi-arid agro-pastoral production systems; by increasing opportunities for the supply of clean drinking water; and by building capacity so that O&M activities are undertaken by local actors using local-level capacities; and
- (e) SDG 13 (Climate action) – by undertaking activities that will enhance local and national level adaptive capacities among farmers and herders as well as at the national institutional level towards sustainable development of agro-pastoral systems in Sudan.

#### 1.3.1. Economic co-benefits

22. The project will provide considerable economic co-benefits, to be achieved by avoiding losses in crop production and livestock heads as a result of droughts, which are exacerbated by climate variability and change. By avoiding such losses, farm productivity will increase, which will increase farm outputs in economic terms, and may even lead to production beyond subsistence levels for the poor agro-pastoral producers. Having ensured farm-level income, the producers will be able to finance O&M costs, thereby contributing to the longevity of water infrastructure. This in turn will provide for financial returns by means of assured water services during drought stress.

### 1.3.2. Social co-benefits

23. In persistent drought conditions there are often conflict situations regarding the access to scarce water resources,<sup>6</sup> which precipitates into rupture of social bonding among groups that have diverse competing water demands. This project will directly contribute to the greater availability of water resources in a sustainable manner, which will help to enhance social cohesion and prevent conflict over dwindling water resources. Moreover, harmonious interventions that are suitable for local-level adoption are likely to facilitate collective management of the agro-pastoral resources involving diverse users. The opportunities created for peer-to-peer learning from social interactions will contribute to strengthening social bonds among direct and indirect beneficiary groups. The project is likely to improve farm-level production, which in turn will improve nutrition for beneficiaries, particularly the women and children of beneficiary households.

24. One of the social co-benefits likely to be enjoyed by the poor people of these regions is access to a supply of good-quality drinking water (for both humans and animals), which in turn will have public health implications. However, the proposal does not have plans to raise awareness and community-level training on sanitation and hygiene, the absence of which will reduce the effectiveness of the agenda regarding quality of the water supply (associated with SDG 6).

25. The project intends to offer resilience-building support without having a negative impact on cultural heritage of project participants. This is considered as a social co-benefit for agro-pastoral producer groups involved in the project.

### 1.3.3. Environmental co-benefits

26. A number of environmental benefits are achievable through the various interventions of the project. The regulation of crop and pastoral rotation will have positive spin-off benefits in terms of enhancing soil quality through improvements to soil nutritional balance. Establishing tree cover over vegetable gardens will have a positive contribution to micro-climates and will prevent soil desiccation under harsh dry conditions. Interventions to arrest wind-driven soil erosion will also have a direct benefit for soil quality. The creation of additional vegetative cover and water retention areas will contribute to greater rangeland integrity and ecosystem harmony; the latter may provide ecosystem goods and services in the longer run.

27. Although the project is perceived as an adaptation-focused project, it offers significant carbon sequestration co-benefits by means of rangeland vegetative cover and afforestation. It is estimated that, a total of 8.24 thousand tonnes of carbon may be sequestered annually, with a total carbon sequestration potential of 205.96 thousand tonnes<sup>7</sup> in 25-year project lifetime. Such a positive contribution needs to be brought under the monitoring, reporting and verification process under the Paris Agreement. Along with such a significant mitigation contribution, increased vegetative cover will contribute to greater biodiversity; while assured irrigation and vegetable gardens in the farming villages will contribute to greater agro-biodiversity. Efforts need to be made to introduce these co-benefits to local stakeholders during awareness-raising sessions (component 3.2) so that they nurture local stewardship towards biodiversity conservation and ecosystem harmony.

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<sup>6</sup> The cases in Darfur have been well documented. There is a growing tension between agro-pastoralists and nomadic pastoralists to have greater control over diminishing water resources, especially in the acute drought-prone regions of Sudan.

<sup>7</sup> The CO<sub>2</sub>eqv amount will be in the order of 755.18 thousand tonnes.

28. The proposed project will promote the use of drought-tolerant seeds among farmers. However, efforts must be made to prevent the promotion of genetically modified organisms, the long-term health implications of which are not fully understood.

#### 1.3.4. Gender-related co-benefits

29. In poverty-stricken households, women generally receive the least amount and the poorest quality of food, with severe nutritional implications: this is no exception in Sudanese agro-pastoral poor households. By providing enabling conditions to safeguard crop production and animal herding, the project will contribute to household food security, which in turn will contribute positively to the gender-differentiated agenda of attaining nutritional equity. This may be achieved without designing any targeted activity. However, the likely positive contribution to public health by offering clean (i.e. non-polluted/non-contaminated<sup>8</sup>) drinking water might have even greater impact if hygiene-related awareness and sanitation support were to be provided to the participating households. The establishment of women-headed sustainable agriculture farms is one of the main aims (component 1.2) of the project, complemented by the establishment of tree nurseries involving women groups (component 1.4). These co-benefits will contribute positively to attaining gender equity in the target areas.

30. In view of the above-mentioned contributions to various elements of sustainable development, it appears that the project will have significant sustainable development potential involving about 2.5 million people of Sudan. Therefore, the independent TAP assesses the sustainable development potential as high.

## 1.4 Needs of the recipient

*Scale: High*

31. Sudan is an African LDC with a low standing in the Human Development Index (HDI) (i.e. ranked 167 out of 188 countries) and a very high incidence of poverty (i.e. 23 per cent of about 30.9 million population). The level of human development in Sudan is below the average level of all sub-Saharan African countries. The society is predominantly agrarian, while agriculture consists of crop, agro-forestry and pastoral systems. The overall performance of agriculture is largely dependent on rainfall (i.e. about 90 per cent of the NCA depends exclusively on the availability of rainfall). Since rainfall has been declining in recent decades, the overall economy of the country, and its agricultural producers, is performing rather poorly. As a result, the Government of Sudan has been struggling to fight poverty and to arrange critical investments in human development. Consequently, access to basic social services has remained largely inadequate for the rural population. All these culminate in the high vulnerability of the country and its food production systems to climate change.

32. Among all the target states of Sudan, Darfur and Kordofan have been globally known as the worst hit climate hotspots in the recent decades. The incidence of poverty in the target states (including eastern, central and western Darfur regions) is very high, compounded by the anecdotal history of repeatedly occurring droughts and subsequent crop failures. Long-term meteorological data clearly indicate the gradual decline in available rainfall, while rainfall isohyets are found to be moving towards the areas in the southern parts of Sudan where rainfall is already relatively more abundant, which is indicative of the strengthening of desertification effect<sup>9</sup> with colossal consequence in terms of food security. The consultations prior to the formulation of the project, which took place across the target regions, clearly highlighted the

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<sup>8</sup> With decreasing water volume in community-based water infrastructures during the dry season, sometimes local-level contamination occurs due to sudden increase in density of locally generated contaminants beyond a certain threshold. With the retention potential of higher volumes of water in such infrastructures, it is likely that such accidental contamination will be prevented.

<sup>9</sup> About 75 per cent of the country is classified as desert or semi-desert, with a possibility of an increase of this share in future under climate change.

fact that both exposure to, and sensitivity regarding, climate change have been increasing in those areas, with grave consequences to the lives and livelihoods of the population of Sudan. Moreover, the rural population possesses an extremely low level of adaptive capacity, which is why they remain at the mercy of climate change related extreme weather events.

33. The plight of women requires special mention because not only are women suffering the most in terms of household food insecurity, but they are forced into drudgery (e.g. collecting water) because of the decline in water volumes due to the high evaporative losses triggered by rising temperatures and declining rainfall. The overall impact of climate change on these women in the target regions is staggering and requires careful planning to address the issues in a holistic manner. Many of the vulnerable households do not have any alternative means to survive in such harsh environmental conditions, therefore they are clinging to their culturally distinct agro-pastoral ways of living. A large proportion of these vulnerable women and men have become rootless in search of gainful employment, while the case studies of Darfur and other vulnerable areas indicate large-scale exploitation of human dignity and destruction of cultural norms and practices. The needs of the country and its affected population are therefore paramount.

34. The Government of Sudan has been addressing issues such as poverty reduction as a national priority. While the poverty level was 47 per cent in 2009, it came down to 23 per cent in 2015, indicating that Government-level efforts have been successful. However, addressing all the issues of human development is putting enormous stresses on the national exchequer. The country has been borrowing international finance to further push the development agenda. While the dividend is visible, debt servicing has now become a serious issue, which is diverting finance from development at a time when climate change adaptation and subsequent desertification call for arranging additional finance. The Government of Sudan is unable to find a win-win solution. Since almost all the activities proposed in the project intend to deliver public goods, there is no way the finance required is going to come from the private sector. Moreover, repeated crop failure in the recent past has largely arrested any major private finance other than insignificant amounts of finance contributed by the poor farmers and herders. There is therefore a clear absence of alternative financing to address the long-pending issues in the dry areas of Sudan.

35. The Government of Sudan has a few institutions that can provide support services to the poor farming and pasture communities: as well as a meteorological service, there is an agricultural extension service which has a presence at the grass roots level. However, these institutions are not equipped with advanced knowledge on climate change, which is why their efforts to address the current situation often fall short. These institutions and their staff need extensive capacity-building and support towards planning and formulating situation-specific solutions, in the form of updated manuals and guidelines, to offer specific guidance to the affected population. This cannot be delivered with the current level of financing available from the Government of Sudan. In the absence of alternative financing to address these issues, GCF financing can play a pivotal role to advance the climate change defying development agenda.

36. A closer look into past actions of the governmental organizations in the country shows that most adaptation-oriented activities are along the lines of addressing inappropriate agricultural practices, and these have continued with weak support services and without having to integrate climate change related special vulnerabilities, or asking the private sector to offer agricultural credit. The financial service providers, including banks and micro-financing institutions, are generally discouraged from enhancing their lending portfolios to farmers due to lack of confidence in the wake of the likelihood of increasing droughts. Therefore, the poor farmers and pastoralists using rain-fed techniques do not have access to finance that could help them to streamline and strengthen their production systems. All these problems have resulted in a downward spiral into poverty, which needs to be overcome with a holistic but simple plan so that the farm producers can easily participate and gain from various services. Since the

available service-providing capacities are underutilized due to lack of planning and finance, the independent TAP considers that the needs of the recipient country, its people and institutions are high.

## 1.5 Country ownership

*Scale: High*

37. The project is aligned with national policies and programmes on climate change. For example, the design and activities of the project stem from two important climate change documents of Sudan, namely its national adaptation programme for action and national adaptation plan (completed in 2014). As a consequence of the strong national commitment to implement adaptation through integrating with national planning processes, Sudan has undertaken a series of state-level assessments to identify climate change related risks and has taken steps to integrate such risks into all national and state-level development plans. The approach and activities of the project are fully aligned with the country's (intended) nationally determined contributions document, which identifies adaptation policies and measures.

38. The project actually builds on a range of adaptation modalities that have been given pilot trials and endorsed at both the state and national level. The small-scale trials have given the confidence needed to put together the first project for GCF financing. The adaptation modalities are identified on the basis of their location-specific applicability. The lessons of earlier trials will be fully integrated into the project so that the effectiveness of delivery is secured.

39. The United Nations Development Programme (UNDP) is the accredited entity (AE) for the project. UNDP has adequate experience and track record for the implementation of similar projects. UNDP has been promoting sustainable development in Sudan and has been associated with majority of climate change related activities in Sudan since 1993.

40. The executing entity (EE) for this project is the Higher Council for Environment and Natural Resources (HCENR), which is also Sudan's national designated authority. The EE works closely with the ministries responsible for the environment, water and natural resources, infrastructure and physical development. The Ministry of Environment, Natural Resources and Physical Development being the key ministry to formulate policies and provide political guidance regarding climate resilience in Sudan. As the technical arm of the ministry, the HCENR works in close collaboration with all government institutions at both the state and federal level. HCENR has been active in pursuing and deploying readiness resources, developing a country programme and participating in project development. The EE has demonstrated capacity to implement climate change related projects in rural areas. HCENR was the key national institution for the preparation of Sudan's national adaptation programme of action and national adaptation plan and the current project sets priorities identified in the two documents. The independent TAP considers the EE has the necessary experience to deliver the project.

41. The project has been designed through a consultative process involving state and federal government agencies, non-government organizations, representatives of trade organizations and professional bodies and a host of local-level stakeholders including women representing the target communities. The gender-specific interventions in the project reflect thorough consultations that have been organized at the grass roots level. There is a stakeholder engagement plan that ensures stakeholder committees will be formed in each of the implementation sites to seek local-level guidance and integrate local concerns in the delivery of location-specific adaptation actions. The federal level stakeholder committee will consist of personnel representing several key ministries, who will ensure that the project is provided with the necessary institutional guidance.

42. Based on the above analysis, the independent TAP considers that the country ownership of the project is high.

## 1.6 Efficiency and effectiveness

*Scale: Medium-high*

43. The project seeks grant financing from GCF to implement urgent community-driven risk-reducing adaptation activities and capacity-building at the institutional and stakeholder level. The grant request is matched by a significantly large amount of co-financing, where the co-financing ratio is 1:0.61. Since Sudan is both an African country and an LDC, and the project benefit streams will predominantly deliver public goods and services, the grant request of USD 25.64 million is well justified.

44. Furthermore, Sudan is one of the countries worst affected by drought in sub-Saharan Africa and this is the first project seeking finance from the GCF. The independent TAP considers that these facts are crucial to the decision regarding grant financing.

45. Since the 1990s, the Government of Sudan has been fighting to address both hunger and poverty as a consequence of climate change induced strengthening of droughts; meanwhile the Government also had to arrange for finance to speed up development activities in various economic and social agendas. The need for climate financing cannot be ignored, but there is a dearth of critical finance to address climate change on an urgent basis. Since a private sector-led alternative financing regime cannot be anticipated in the field of adaptation, GCF financing appears to be the only viable financing option. The target and objectives of the project align well with the results areas of GCF. Therefore, the project is likely to be an effective way to advance finance from GCF to Sudan and help the recipient country boost its resilience-building process.

46. The (organized) private sector<sup>10</sup> of Sudan has so far shown no interest in rain-fed crop production and rangeland livestock management, both being subject to significant investment risks in the wake of climate change induced droughts. The majority of the finance in the project will be to strengthen community-based water infrastructure, which will provide irrigation and an improved water supply and thereby avoiding loss of production. The latter outcome is likely to bring back the private sector's confidence to mobilize investment and establish value chains in the near future, which will not only allow the private sector to make a profit but also enable the rural producers to gain from such value chains. Although it is premature to think about leveraging private-sector financing, achieving a potential value chain nexus in the near future cannot be completely ruled out.

47. Most of the project interventions have been tested in pilot projects, which indicate the effectiveness of the adaptation actions. The project relies on training and capacity-building, which will provide the necessary knowledge base to carry forward adaptation actions beyond the project timeline. This will ensure the effectiveness of the project. Moreover, the technologies to be provided for specific purposes generally represent industry best practices, which indicate that the technology transfer will not be wasted.

48. On the basis of other projects being implemented in Sudan, the accepted benchmarks have been utilized to deliver various components of the project. This indicates financing efficiency, especially in terms of unit costs. The O&M costs are considered in the project design; and local participation is anticipated in paying for O&M expenses. Local people will be trained in O&M-related activities so that the post-project repairing of critical water infrastructure can be possible at nominal costs and in an efficient way (by utilizing locally embedded expertise, where the waiting time is minimized). Such considerations will enhance overall project efficiency.

49. The economic analysis has been carried out using a robust methodology, applying a discount rate of 10 per cent. The latter is acceptable for an LDC. The net present value (NPV) is estimated taking 25 years as the project lifetime. The NPV of the proposed project is estimated to be USD 27.80 million, which will deliver an economic internal rate of return (IRR) of 21.90 per cent. These figures indicate that the proposed investment is economically viable.

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<sup>10</sup> Agro-pastoral production systems are always led by the private sector, mostly the smallholders, in developing countries.

50. A sensitivity analysis has been conducted to check the robustness of the investment. The worst case investment scenario assumes a 20 per cent increase in costs and a simultaneous decline in benefits by 20 per cent. Under such a pessimistic scenario, the project NPV is still positive (USD 8.19 million) and the economic IRR is 13.09 per cent. Therefore, the overall investment is robust and efficient in economic terms. The sensitivity analysis was extended to understand the lower threshold of gains below which the project might become non-viable in economic terms, and this suggests that as long as the gain in agricultural productivity reaches up to 3.20 per cent above the projected yield without the project, the project delivers a positive NPV and an economic IRR above 10.00 per cent, signifying the project to be highly efficient in economic terms.

51. There is an apparent shortcoming in the effectiveness of one of the project elements which involves the supply of safe (i.e. non-polluted) drinking water. It is expected that the well-being of the population will be boosted by such an intervention. However, it is often found that without the matching delivery of awareness on hygiene and sanitation service, water supply interventions fall short of achieving their objectives. The independent TAP therefore recommends that the awareness-raising programme on adaptation should integrate such an issue and the locally operated micro-finance institutions should create opportunities to finance the improvement of sanitation services so that the shortcoming may be addressed. Moreover, it is often found that decision-making bodies that include women appear more effective in ensuring sanitation-related objectives.

## **II. Overall remarks from the independent Technical Advisory Panel**

52. The independent TAP recommends that the Board approve the project. The independent TAP also recommends the following actions:

- (a) That the AE create opportunities through the awareness-raising programme on adaptation regarding sanitation and hygiene, and that it also create opportunities to finance the improvement of sanitation infrastructure through the locally operated micro-finance services. This will increase the probability of improving the health and quality of life of the project target groups including women and children;
- (b) That the project ensure women are included in decision-making positions on local-level project management committees so that the sanitation-related agenda is prioritized along with the supply of drinking water; and
- (c) That the AE include measures to prohibit the promotion of genetically modified organisms while promoting drought-tolerant seed varieties, and that the AE include such prohibitive measures in the environment and social protection plan of the project.

## **Response from the accredited entity to the independent Technical Advisory Panel's assessment (FP 139)**

Proposal name:	Building resilience in the face of climate change within traditional rain fed agricultural and pastoral systems in Sudan
Accredited entity:	United Nations Development Programme (UNDP)
Country/(ies):	Sudan
Project/programme size:	Small

<b>Impact potential</b>
<i>The moderately high rating is noted.</i>
<b>Paradigm shift potential</b>
<i>The high rating is noted.</i> The project's design has the potential to transform traditional subsistence production system into a commercial production venture - even within the ambitiously short project duration period of 5 years – due to the high replicability and scalability potential.
<b>Sustainable development potential</b>
<i>The high rating is noted.</i> The project's environmental, economic, social and gender-related co-benefits will contribute to sustainable development and therefore warrant a rating of high sustainable development potential. Moreover, in keeping with ITAP's specific recommendations, project implementation will seek to ensure that a) co-benefit awareness raising sessions will be introduced as part of training activities; b) genetically modified organisms will not be promoted; and c) hygiene-related and sanitation awareness-raising will be introduced as part of training activities.
<b>Needs of the recipient</b>
<i>The high rating is noted.</i> UNDP further notes and agrees with the observation that Sudan's agro-pastoralists do not have adequate access to finance and face a spirally downward circle of poverty that is exacerbated by climate change.
<b>Country ownership</b>
<i>The high rating is noted.</i> The country ownership of the project is premised on the extensive consultative process in the design of the project involving state and federal Government agencies, non-government organizations, representatives of trade organizations and professional bodies and a host of

local level stakeholders including women representing the target communities, among other factors.

**Efficiency and effectiveness**

*The high rating is noted.*

The project is highly efficient in economic terms. Moreover, in keeping with an ITAP specific recommendation, project implementation will seek to ensure that hygiene-related and sanitation awareness-raising will be introduced as part of training activities, including examining the potential role of micro financing institutions in creating opportunities to improve rural sanitation services.

**Overall remarks from the independent Technical Advisory Panel:**

UNDP is pleased to learn of ITAP' s recommendation to the Board to approve the project. Furthermore, UNDP notes ITAP's three (3) specific recommendations, namely a) creating opportunities through awareness-raising are introduced as part of training activities regarding sanitation and hygiene, including opportunities to finance the improvement of sanitation infrastructure through the locally operated microfinance services; b) including women in decision-making positions in local level project management committees so that any sanitation-related activities are addressed along with the supply of drinking water; and c) avoiding the use of genetically modified organisms in the introduction of drought-tolerant seed varieties.



MAY 8, 2020

**BUILDING RESILIENCE IN THE FACE OF  
CLIMATE CHANGE WITHIN TRADITIONAL  
RAIN-FED AGRICULTURAL AND  
PASTORAL SYSTEMS IN SUDAN**

**GENDER ASSESSMENT AND ACTION PLAN**

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## Contents

List of Tables .....	3
List of Boxes .....	3
1. Introduction.....	4
2. Resilience of the subsistence farmer communities and their response to the increasing threat of climate variability in Sudan .....	5
3. Gender inequality and social inclusion in Sudan.....	6
3.1. Gender Inequality Indices.....	6
3.2. Poverty .....	7
3.3. Health .....	7
3.4. Education.....	7
3.5. Political participation.....	8
3.6. Labour Force Participation .....	9
3.7. Access to Resources .....	9
3.8. Gender Based Violence .....	10
3.9. Horticulture Gardens.....	11
3.10. Livelihood Diversification Strategies .....	11
3.11. Rainwater Harvesting .....	11
3.12. Energy Alternatives .....	11
3.13. Capacity building and Trainings, Political Participation and Decision-making.....	12
4. Mechanisms to address gender inequality in Sudan - legal and administrative framework .....	12
5. Gender and social inclusion in the context of climate resilience among subsistence farmer communities in Sudan .....	13
6. Stakeholder engagement for this analysis .....	13
7. Gender analysis and Recommendations .....	14
7.1. Analysis: Implications of the findings.....	14
7.1.1. Goal of the Gender Action Plan (GAP).....	15
7.1.2. Expected changes through the GAP.....	15
7.1.3. Gender approach .....	16
7.1.4. Monitoring and evaluation .....	17
7.1.5. Budget .....	18
8. Gender and Social Action Plan and Budget.....	18
9. Demographic information on Darfur States, Kordofan States, Eastern States and Nile States.....	33
10. Annex A: Bibliography .....	34

## List of Tables

Table 3-1: Key goals and policies of Sudan’s National Health Strategy (Source: Federal Ministry of Health, Republic of Sudan).....	8
Table 3-2: Completion levels (%) of primary, secondary, and upper secondary education in 2010 (Source: MICS 2010).....	9
Table 7-1: Overview of type of outcomes and indicators.....	18

## List of Boxes

Box 7-1: Overview of IFAD’s Household methodologies .....	17
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## 1. Introduction

This gender assessment aims to provide an overview of the gender situation in Sudan with a specific focus on building resilience within traditional rain fed agricultural and pastoral systems, identify gender issues that are relevant to the project, and to examine potential gender mainstreaming opportunities. The assessment was based upon available data from studies conducted by the Government of Sudan, donor agencies, and multilateral development banks. The direct beneficiaries will be approximately 211,773 people in 138 villages across 9 states who will benefit from subsistence farming, as well as an additional 2,571,853 people who are expected to benefit from the learning generated from this project.

The impacts of climate change are not gender-neutral. Women and men, as well as boys and girls, have specific knowledge of managing natural resources and thus identify different measures to adapt to and cope with changes in their natural environment. To understand the implications of the adverse effects of climate change on the different roles and responsibilities of men and women, and to identify their respective needs to address them, the project interventions will utilise gender-sensitive approaches, and strengthen women's participation in decision-making. Women contribute directly to preserving and managing forests that provide different services and resources contributing to human and animal food security, fuel and medicine, while men are predominantly responsible for extracting timber and non-timber forest products for commercial purposes (Aguilar et al., 2007). Women are also responsible for water and firewood collection and play an essential role in ensuring food security through food productions, food preparation, food storage, as well as sale of agricultural animal and forest products (Ibnouf, 2009). With political and economic factors such as conflicts and seasonal and permanent migration of men from rural to urban areas, women have also taken over farming responsibilities previously carried out by men (Care International, 2012). As such they are differently involved in the utilisation and management of all natural resources that the project interventions will target, i.e. water, livestock, soil and forests.

This gender analysis is presented as an approach, of how the project aims to give gender considerations in the preparation, implementation and monitoring and evaluation. This gender approach is in line with the GCF Gender policy and in line with Sudan's National Women Empowerment Strategy 2007 (GCF, 2014; MSWWCA, 2007). As the GCF is currently developing a gender template, this approach builds on the GCF Gender and Climate Change Toolkit (GCF, unknown) to ensure gender considerations are in line with the Fund's standards and requirements. Further, in developing and implementing the gender approach the project will draw from, and build on good practices and lessons learned from Sudan's past and ongoing experiences in developing and implementing climate change adaptation projects and programmes, most notably the National Adaptation Programme of Action (HCENR, 2007), the National Adaptation Plan (HCENR, 2016), and the Climate Risk Finance for Sustainable and Climate Resilient Rain-fed Farming and Pastoral Systems (HCENR, 2014).

The proposal has three interlinked project outputs:

1. Resilience of food production systems and food insecure communities improved in the face of climate change in Sudan.
2. Improved access of water for human, livestock and irrigation to sustain livelihoods in the face of climatic risks.
3. Strengthened capacities and knowledge of institutions and communities on climate change resilience and adaptation.

In incorporating gender consideration, the project will contribute to achieving the five objectives as laid out in the GCF's gender policy, namely:

- Ensure that by adopting a gender-sensitive approach, the Fund will achieve greater and more sustainable climate change results, outcomes and impacts, in an efficient manner;
- Ensure that women and men will equally benefit from activities supported by the Fund;
- Address assessed potential project/programme risks on women and men associated with adaptation and mitigation activities financed by the Fund;
- Contribute to reducing the gender gap of climate change-induced social, economic and environmental vulnerabilities; and
- Build women and men’s resilience to climate change (GCF, 2014).
- Lessons learned and recommendations from past assessments and studies on gender equality undertaken by the Government of Sudan, UN agencies, development partners, civil society organizations and academic organizations, and information available from programs and projects currently being implemented;
- Stakeholder consultation, recognizing that detailed community consultations on particular activities are expected to be carried out in the implementation phases of the project; and
- Integrating gender and other vulnerability considerations to the proposed indicators, targets and activities, and identifying opportunities for greater leadership and participation in decision making by these particular groups in Sudan.

## 2. Resilience of the subsistence farmer communities and their response to the increasing threat of climate variability in Sudan

This project aims to ensure that gender-considerations are integrated in the design, implementation, and monitoring and evaluation of the project. As such, this approach outlines how the project aims to ensure gender-considerations by:

- Defining objectives, impacts and activities that incorporate gender dimensions;
- Identifying main challenges and barriers faced by women and men that have been further exacerbated by climate change;
- Ensuring that the activities identified will include actions to mainstream gender in climate change mitigation and adaptation; and
- Building the capacity and raise awareness of institutions to address gender issues that are related to climate change (GCF, unknown).

In Sudan, vulnerability in disasters is most often identified around women. The risk of climate change magnifies women’s relative poverty. Women are disproportionately affected due to vulnerability and the capacity to adapt to the process of climate change are affected by various factors, including age, education, social status, wealth, access to resources, sex, gender and many other social dimensions. Sudanese women are also very often underrepresented in decision-making in resource management and other issues on how best to manage the climate threat. When a disaster strikes, men and women are treated in the same manner. Any assistance in the form of disaster preparedness trainings provided from the Government or NGOs do not have a specific gender aspect.

In order to build resilience and adaptive capacity of the most vulnerable communities, the project is aiming to achieve the following key objectives:

- Build adaptive capacity by introducing drought-resistant varieties of crops, access to water for small scale irrigation and domestic using and promoting climate resilient animal production practices;

- Enhance overall resilience of vulnerable communities as first responders of climate change-induced hazards in ways that strengthen government actions intended to increase local resilience to non-climatic risks (e.g., conflicts, lack of infrastructure, overgrazing, soil nutrient depletion);
- Integrate specific proposed climate change adaptation interventions that prove successful into national and state policy development planning frameworks,
- Develop and implement a monitoring, knowledge management and communication strategy in support of wide adoption and upscaling of proposed interventions

### 3. Gender inequality and social inclusion in Sudan

Since 2011, the economy of Sudan has been recovering due to the division of South Sudan and the loss of nearly 75% of their oil resources. Gender inequalities in Sudan exists and due to years of conflicts and security circumstances, women are often disproportionately affected. One of the prevalent factors for human development in Sudan is violence against women and girls and the weak institutional framework addressing this issue.<sup>1</sup>

The Government of Sudan is committed to gender equality through its National Policy for the Empowerment of Women (2007), formulated by the Ministry of Social Welfare, Women and Child. The policy includes the following six areas where the advancement of women and their capabilities will be prioritized:<sup>2</sup>

- Health and Environment;
- Education Policies;
- Economic Empowerment;
- Human Rights and Legal Knowledge;
- Political Participation and Decision Making; and
- Field of Peace and Conflict Resolutions

#### 3.1. Gender Inequality Indices

Through the years, several indices have developed to quantify the concept of gender inequality. The United Nations Development Programme uses the Gender Inequality Index (GII) and Gender Development Index (GDI).<sup>3</sup> GII is a composite measure that shows inequality in achievement between women and men in reproductive health, empowerment and the labour market while with a measures achievement in human development in three areas: health, education, and command over economic resources. The GDI considers the gender gaps on human development between men and women.

Sudan has a GII of 0.628 (2013) and ranks 140 out of 145 countries assessed. The GDI value of 2013 is unknown.<sup>4</sup>

The Organization for Economic Cooperation and Development (OECD) developed the Social Institutions and Gender Index (SIGI), a composite index that scores countries (i.e., 0 to 1) on 14 indicators grouped into five sub-indices: discriminatory family code, restricted physical integrity, son bias, restricted resources and assets, and restricted civil liberties to measure the discrimination against

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<sup>1</sup> <http://africa.unwomen.org/en/where-we-are/eastern-and-southern-africa/sudan>

<sup>2</sup> <https://webapps01.un.org/nvp/indpolicy.action?id=1621>

<sup>3</sup> United Nations Development Programme. Human Development Report. <http://hdr.undp.org/en/content/table-4-gender-inequality-index>.

<sup>4</sup> <http://hdr.undp.org/sites/default/files/hdr14-report-en-1.pdf>

women in social institutions across 160 countries. The 2014 SIGI value for Sudan is 0.555 suggesting that discrimination against women is very high.<sup>5</sup>

### 3.2. Poverty

In Sudan, 46.5% of the population lives below the poverty line. There are significant gender inequalities in poverty levels and in the incidence of poverty between urban and rural areas. Due to inefficient development plans and strategies, low public expenditures on basic services, erosion of land and natural resources, the level of poverty in Sudan has been amplified.<sup>6</sup> The Government of Sudan has recognized the importance of pro-poor spending, defined as “spending that benefits the poor more than the non-poor” (Ministry of Finance and National Economy).<sup>7</sup>

In rural areas, water and firewood fetching are the responsibility of women and girls. With the impacts of climate change further exacerbating, thereby increasing erratic rainfall, drought and desertification, the amount of time women and girls spend collecting water and firewood is likely to increase (HCENR, 2012). Efforts need to be directed in reducing time poverty and strategies for reducing women's workload, including a more systematic focus on reducing women's workload (HCENR, 2016).

### 3.3. Health

The overall health system in Sudan does not have clear policies to address issues such as equitable access to quality health care of all population segments. Access to basic medicines has been estimated in the range of 30% to 40%. While efforts have been made to reduce the overall maternal mortality ratio (MMR), the Sudan Household Health Survey (SHHS) in 2016 showed an MMR of 1107 out of 100,000 births.<sup>8</sup> A National Health Strategy has been developed and adopted in Sudan in order to resolve some of the challenges. The strategy contains the policies outlined in Table 3-1.

### 3.4. Education

There are substantial differences in the level of education between men and women in Sudan. The Gender Parity Index, used for measuring the relative access to education of males and females was 0.8 as of 2006. The index is calculated by determining the population of official school age for each level of education and by dividing the number of students enrolled in each class by the official school age and multiplying the result by 100. In 2010, the female population with at least a secondary education was 12.8%, in comparison to 18.2% for males.

Completion levels of primary, secondary, and upper secondary education in 2010 among population aged 3-5 years above primary graduation age, in percentage is presented in Table 3-2. It is clear that primary completion rate is the lowest amongst women in the rural areas, having the poorest wealth status. Lower secondary education completion rate is similarly low for females and individuals living in rural areas, and part of the poorest and second wealth quintile. Upper secondary completion rate shows to be the lowest amongst the three levels of education. Males have a slightly higher completion rate and the gap between poverty levels of urban and rural residence is significantly high. The poorest and the second wealth quintile are partaking the lowest completion rate.

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<sup>5</sup> OECD. Social Institutions and Gender Index 2014. Country Profiles <http://www.genderindex.org/country/sudan>

<sup>6</sup> [http://www.sd.undp.org/content/dam/sudan/docs/UNDP\\_Sudan\\_CPAP\(2013-2016%20%2025%20July\)\\_Signed-1.pdf](http://www.sd.undp.org/content/dam/sudan/docs/UNDP_Sudan_CPAP(2013-2016%20%2025%20July)_Signed-1.pdf)

<sup>7</sup> The Republic of Sudan. National Population Council (NPC/GS) Ministry of Welfare and Social Security. Sudan Millennium Development Goals Progress Report 2010

<sup>8</sup> *idem*

**Table 3-1: Key goals and policies of Sudan’s National Health Strategy (Source: Federal Ministry of Health, Republic of Sudan)**

Goal	Policies
1	<ul style="list-style-type: none"> <li>• National Nutrition Policy and Strategic Plan (<a href="http://www.fmoh.gov.sd/English/Health-policy/doc/Nutrition%20Policy_final.pdf">http://www.fmoh.gov.sd/English/Health-policy/doc/Nutrition%20Policy_final.pdf</a>)</li> <li>• Basic Nutrition Package (<a href="http://ghiqc.usaid.gov/aidstar/docs/650-09-21/annex_f.pdf">http://ghiqc.usaid.gov/aidstar/docs/650-09-21/annex_f.pdf</a>)</li> <li>• National guidelines for Management of Acute Severe Malnutrition</li> <li>• Nutrition Emergency Package</li> <li>• Food Fortification Strategy</li> </ul>
4	<ul style="list-style-type: none"> <li>• Child health policy</li> <li>• EPI Mid Year Plan</li> <li>• EPI Five years Strategic Plan</li> <li>• National plan for Child Mortality reduction</li> </ul>
5	<ul style="list-style-type: none"> <li>• NRHP, RH 5 Year strategy (2006-2010)</li> <li>• upgrading midwifery training: Adoption of Skilled Birth Attendants care provision at the community - Declaration on MPS (Provision of village midwives)</li> <li>• Strengthen the community involvement)</li> <li>• National plan for MM reduction</li> </ul>
6	<ul style="list-style-type: none"> <li>• National HIV/AIDS Policy (<a href="http://www.fmoh.gov.sd/English/Health-policy/doc/National%20Policy%20HIV.pdf">http://www.fmoh.gov.sd/English/Health-policy/doc/National%20Policy%20HIV.pdf</a>)</li> <li>• 5 year HIV/AIDS control strategic plan</li> <li>• RBM strategy</li> <li>• TB-DOTS strategy</li> <li>• National Malaria Management Guidelines</li> </ul>
8	<ul style="list-style-type: none"> <li>• Community Based Initiatives (CBI) strategy</li> <li>• Partnership for health 5 years plan</li> </ul>

### 3.5. Political participation

The Comprehensive Peace Agreement (CPA) recommends a quota of 25% for women at all levels of government in Sudan. However, no specific recommendation of how women would benefit from the 25% quota had led to the criticism of the CPA being “gender blind”.<sup>9</sup>

- [...] a minimum quota of 25 per cent for the representation of women in the civil service, legislative and executive at all levels of government, as provided for by the SPLM/A constitution. One senior male member of the SPLM/A delegation laughed and asked me where the women would be found to fill these positions. The 25 per cent quota was eventually accepted in the larger group, where there were at least three women, but then the all-male SPLM/A drafting committee reduced this figure to 5 per cent. The SPLM/A Chairman raised this to 10 per cent as a compromise. Later on we learned that it had been dropped altogether when government negotiators refused a quota for women in power sharing on the grounds that they had not been fighting women.<sup>49</sup>

In Article 32 of the Interim National Constitution (INC) of the Republic of Sudan (2005), it has been stated that women’s rights shall be promoted, however, no specific quota of women’s representation in the politics has been allocated.<sup>10</sup> In the National Elections Act (NEA) of 2008, the women’s quota

<sup>9</sup> The Politics of Women’s Representation in Sudan: Debating Women’s Rights in Islam from the Elites to the Grassroots. CMI Report, 2010. Available here: <https://www.cmi.no/publications/file/3643-the-politics-of-womens-representation-in-sudan.pdf>

<sup>10</sup> *ibid*

**Table 3-2: Completion levels (%) of primary, secondary, and upper secondary education in 2010 (Source: MICS 2010)**

Education level	Sex		Residence		Wealth quintile				
	Male	Female	Urban	Rural	Poorest	Second	Middle	Fourth	Richest
Primary	73.5	63.9	86.2	59.4	35.7	44.5	65.5	86.2	96.5
Lower secondary	59.4	51	74.4	43.7	19.2	26	47.2	71.2	90.1
Upper secondary	35	30.2	51	22.3	6.1	7.7	18.3	43.7	72.4

has been specified as 25% of the total number of any Legislative Assembly and nominated by a political party.<sup>11</sup>

### 3.6. Labour Force Participation

The Fifth Sudan Population and Housing Census (2008) estimated the total labour force as 52.4%, out of which 72.2% were allocated to men and 31.3% to women. The estimated labour participation rate was 10.08% for the total population, out of which 6.08% for women and 15% for men.<sup>12</sup> Women are employed in the agriculture sector (49.48%), the service sector (22.45%), industry (2.27%) and other activities (25.8%). Women engaged in agriculture are mainly involved in the traditional subsistence sector (78% - 90%), with only 10% being involved in the modern sector.<sup>13</sup> Men constitute the majority of total employment in all sectors (67.67%), in comparison with women (32.33%). As of 2008, only 10% of all women were high skilled and 24% were employed in white collar while 76% in blue collar professions. Overall, women are more likely to be unemployed than man, they often take care of children and the housework leaving them with less opportunities for professional development and decision-making processes.

### 3.7. Access to Resources

In Sudan, women lack the same legal rights as men to own land assets; ] however, women and men have the same legal rights and secure access to non-land assets although this does not apply to all groups of women (OECD, 2019).

In the rural areas, women contribute significantly to the household economy and food security with differences among regions. For instance, they participate in household farming by contributing to crops cultivation in back yard farms (*Jubrakas*), which provide households with early income and food prior to the harvest of field crops (HCENR, 2014; 2016). Achieving food and nutritional security by enhancing food productivity, especially in times of scarcity is essential for women in Sudan.

Project interventions targeted at diversifying the sources of communities' incomes increases their resilience to the adverse effects of climate change and contributes to women's economic empowerment. In many rural areas, project interventions have encouraged women to also engage in non-farm enterprises like traditional food processing, petty trading, poultry rearing, and traditional apiculture etc., where most of their earnings are dedicated to family well-being (HCENR, 2016a;b).

Various events such as recurrent droughts, budget cuts, declining developmental investment in rural areas, as well as civil conflicts in some targeted areas in the Darfur and Kordofan area, as well as

<sup>11</sup> National Election Act 2008, Article 3

<sup>12</sup> Labour Market and Unemployment in Sudan, United Nations University - MERIT

<sup>13</sup> Karshenas, Massoud (2001). "Agriculture and Economic Development in sub-Saharan Africa and Asia". Cambridge Journal of Economics. 25 (3): 315–342. doi:10.1093/cje/25.3.315.

migration of men to cities in search of better employment opportunities, has resulted into a relatively large number of women-headed households in the targeted states (MEFPD, 2013). As such, the project will pay a special attention to women and women-headed households as beneficiaries by ensuring access to resources, production inputs, financing opportunities as well as improved agricultural technologies (HCENR, 2016a;b).

### 3.8. Gender Based Violence

Sudan is not a signatory to the Convention on the Elimination of All form of Discrimination against Women (CEDAW).<sup>14</sup> There is a legal framework in place to protect women from some, but not all forms of violence including intimate partner violence, rape or sexual harassment (OECD, 2019). It is telling that 34 percent of women aged 15–49 years consider a husband to be justified in hitting or beating his wife for at least one of the specified reasons: if his wife burns food, argues with him, goes out without telling him, neglects the children, or refuses sexual relations (OECD, 2019). Further, the example of Female Genital Mutilation (FGM) points to possible challenges at community level in relation to socio-cultural norms and practices and attitudes and how they affect women’s and indeed men’s lives and the lives of their families.

While there is a legal framework in place to protect women and girls from FGM, some customary, religious and traditional laws or practices encourage the practice even though formal law takes precedence (OECD, 2019). In reality, 40.9 percent of women aged 15-49 years who have heard of FGM think the practice should continue. In practice, 86.6 percent of women aged 15-49 years who have undergone FGM (OECD, 2019). Similar discrepancies exist around marriage and inheritance, etc.

While it is difficult to establish the current GBV prevalence, women experience unequal divorce rights, limited rights to inheritance and access to land, resources and finances. Only 33.1 per cent of women in the total number of people aged 15 years and above who have an account at a financial institution (by themselves or together with someone else) (OECD, 2019). Further, 86.6 percent of women aged 15-49 years who have undergone female genital mutilation (FGM) (OECD, 2019).

In Article 149 of the Criminal Act of 1991, rape is refined as “In Sudan’s Criminal Act of 1991, rape is defined within Article 149 as “sexual intercourse by way of adultery or homosexuality with any person without consent.” The law conflates rape with infidelity and leads to severe punishments for victims of gender-based violence.<sup>52</sup>

Gender-based violence is often related to armed conflicts in Sudan and happens in all areas of the country. In 2012, in a peaceful demonstration event called “Sudan’s own Arab Spring”, women and youth from all ages demanded political change. Gender-based violence is a stigmatised topic in Sudan, but in recent years more and more often women testify about assaults at the hands of government security forces. In the capital of Sudan, women refugees or internally displaced women are often engaged in the informal labour market increasing their vulnerability and exposure to violence.

The victims of sexual violence are not able to access medical services, psychosocial support, access to justice and protection. They are also often faced with challenges in relation to access to employment, education and livelihoods, as responses from the national government are lacking.<sup>15</sup> International and regional presence providing responses against gender-based violence have also been limited in

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<sup>14</sup> <http://africa.unwomen.org/en/where-we-are/eastern-and-southern-africa/sudan#sthash.PpKkoA2k.dpuf>

<sup>15</sup> Nobel Women’s Initiative, *War on Women: Time for Action to End Sexual Violence in Conflict*, May 2011, <http://www.nobelwomensinitiative.org/wp->

Sudan.<sup>16</sup>

### 3.9. Horticulture Gardens

In the past, the establishment of community-managed horticulture gardens (*Jubrakas*) have proved to provide high potential for subsistence farming and economic empowerment, particularly for women. Using small-scale irrigation facilities and providing communities with vegetable seeds, agricultural hand tools, and training on horticulture farming has in recent and ongoing adaptation projects resulted in:

- Improved nutritional status of households, particularly women and children, and increased income by selling produce in local markets
- Enhanced access to water for human and livestock consumption
- Strengthened local saving system (*sandug*) and enhanced women's economic capabilities; and
- Increased women's participation in income generating activities resulting in enhanced small investments

### 3.10. Livelihood Diversification Strategies

Livelihood diversification strategies such as introducing sheep and goat improvement programmes for food security and income generation has been one of the successful adaptation strategies utilized in past and ongoing adaptation interventions from which many communities, particularly women, have greatly benefited. Introducing disease control and vaccination, as well as the utilization of crop residues for feed has the potential to further strengthen these activities. Other livelihood diversification strategies are poultry raising and tailoring, the latter of which can be supported through dedicated trainings (HCENR, 2012).

### 3.11. Rainwater Harvesting

Rainwater harvesting technologies increase agricultural production and reduce environmental degradation by reducing the pressure on ground water resources. Rainwater harvesting, together with agricultural production, enhances food security and provides income-generating opportunities for both women and men, and revenues for further strategic investments. Some of the best practices from the NAPA project interventions demonstrate how the introduction of rainwater harvesting techniques enabled families to purchase animal-drawn carts for transporting produce thereby increasing their income opportunities (HCENR, 2012).

### 3.12. Energy Alternatives

One of the most successful project interventions of current and past climate change projects in Sudan was the introduction of energy alternatives that resulted in significant environmental and social benefits. Providing energy alternatives to reduce firewood cutting and charcoal making with the effect of increasing tree cover and reducing land degradation and soil erosion has additional benefits for communities, particularly women. Past project interventions, like the NAPA, provided stoves and gas cylinders through a revolving fund system with the effect of reducing women's workload to collect firewood. As a result, many women in the targeted communities were able to use that saved time to engage in community activities and committees, or in income-generating activities.

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content/archive/stories/Conference\_Ottawa\_Women\_Forging\_a\_New\_Security/ war-on-women-web.pdf, p. 12-14.

<sup>16</sup><http://nobelwomensinitiative.org/wp-content/uploads/2013/12/Survivors-Speak-Out-Sudan-web.pdf?ref=218>

### 3.13. Capacity building and Trainings, Political Participation and Decision-making

Capacity building, trainings and ensuring balanced political participation and decision-making of women and men are important component of the project. Based on previous experience capacity-building activities including improving women's and men's ability to use adaptation technologies and financial services are essential in ensuring the sustainability of the project interventions (HCENR, 2014). Building on good practices, ensuring the representation of women in technical committees has been beneficial in enhancing their political participation and decision-making opportunities. In addition, ensuring balanced representation within state-level committees and task forces as well as within the project management team can contribute to ensuring the integration of gender-considerations in all parts of the project management, including in the monitoring and evaluation.

## 4. Mechanisms to address gender inequality in Sudan - legal and administrative framework

The legal framework in Sudan derives from British common law and Islamic law (*Shari'a*) which does not grant women same equal rights to men. In the MENA region, Sudan is one of the two countries, alongside with Iran that has not ratified the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW). Bill of Rights has been established to promote gender equality, however there is no framework to protect women from gender-based violence. Commitments have been made to a number of international and regional gender equality conventions. These include the following:

- International Covenant on Economic, Social and Cultural Rights (1986)
- International Covenant on Civil and Political Rights (1986)
- Convention on the Rights of the Child (1990)
- Amendment to article 43 (2) of the Convention on the Rights of the Child (2000)
- Optional Protocol to the Convention on the Rights of the Child on the involvement of children in armed conflict (2005)
- Optional Protocol to the Convention on the Rights of the Child on the sale of children, child prostitution and child pornography (2004)
- Convention on the Rights of Persons with Disabilities (2009)

State legislature in Sudan disregards women's rights. However, a number of laws provide for certain entitlements that women partake. Section 92 of the Muslim Family Law (1991) states that if a wife refuses to obey her husband, her right to be provided with a living ceases to be valid. The Muslim Family Law also states that a marriage is valid and conditioned on the existence of a guardian who would conclude the contract for the woman. Section 51 of the law also provides for women's rights in relation to her husband.<sup>17</sup>

Chapter three of the Public Transportation, as part of the Public Order Act (1996) provides for ten seats in public transportation within the state specifically reserved for women as well as 25% of the total seats in public transportation. A clear separation between the role of men and women in Sudan has been identified in chapter six of Miscellaneous Provisions of the Public Order Act, such as a clear separation of men and women queuing and no dancing between men and women, nor dancing of women in front of men.<sup>18</sup>

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<sup>17</sup> <http://www.equalitynow.org/content/muslim-personal-law-act-sudan-1991>

<sup>18</sup> [http://www.pclrs.com/Khartoum\\_Public\\_Order\\_Act\\_1998.pdf](http://www.pclrs.com/Khartoum_Public_Order_Act_1998.pdf)

## 5. Gender and social inclusion in the context of climate resilience among subsistence farmer communities in Sudan

Climate change is a multidimensional problem that is a priority on the international development agenda. While climate change is affecting people generally, these conditions can render certain groups in the community particularly vulnerable. As projections indicate that climate change will cause less secure means of subsistence, more vulnerability to poverty and hunger, exacerbation of social inequalities (including gender inequalities) and more environmental degradation, it is likely that the poorest and most vulnerable groups in a society will be most affected.<sup>19</sup>

Emerging climatic trends such as more frequent droughts, declined precipitation, higher temperatures, more intense sandstorms have led to the degradation of natural resources and have led to the increased exposure of farmer communities and pastoralists heavily reliant on rain-fed agriculture to higher climate risk in Sudan. Based on the NAPA and NAP processes the project proposal has identified five strategic components for effective adaptation to climate change in Sudan's rural areas (HCENR, 2016c), including:

- **Improved seed varieties:** Early maturing, stable and drought tolerance varieties of millet, sorghum, groundnut, sesame and cowpeas. Here, activities will focus on the implementation of crops to improve food security and increase small-scale farmers' resilience.
- **Control strategies:** Improved crop cultivation practices such as spacing, seed priming and micro-dosing, or intercropping. Here, project interventions will focus on the implementation of range and livestock adaptation options including rangeland restocking and improving livestock health and nutrition technologies.
- **Management practices:** Integrated Water Management practices such as water harvesting techniques at micro-and macro-levels, small scale irrigation, implementing new or improving existing irrigation systems contour bands and ridges. Here, activities will focus on introducing and adopting integrated water resource management practices at different scales, including community, local, national and state-levels; protection of water sources, water harvesting techniques, or protection of large catchments areas.
- **Quality assurance/enhancement:** Harvest and post-harvest packages to improve crop quality and reduce losses; and
- **Animal husbandry practices:** Livestock health and nutrition (diseases control (vaccination), livestock mineral supplementation, improved diet quality, strategic supplementary feeding, feed resource improvement and others.)

Within each of the five strategic components, a set of adaptation options are offered that have proven to be effective to reduce vulnerabilities to climate change in the Sudan context, and contribute to increasing resilience in Sudan's rural areas. In further designing the project interventions of considerations will be given on how these interventions benefit women and men.

## 6. Stakeholder engagement for this analysis

Stakeholder consultations took place on the period 10 July to 20 August 2016 in Sudan. Four workshops and field missions for field level consultations with stakeholders and state authorities in the targeted states were organized by UNDP and HCENR. Target location of stakeholder consultations include West and South Kordofan (EL-Fula/ West Kordofan); Kassala and Red Sea (Port Sudan/ Red

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<sup>19</sup> UNDP *Resource Guide on Gender and Climate Change*, 2009

Sea); Northern (Dongola Northern State) and West, Central and East Darfur(Khartoum). The analysis drew substantially on documentation from existing climate and disaster resilience projects in Sudan.

The gender analysis, through stakeholder engagement and consultation enabled the following:

- Assessment of the activities that respond to the continuing threat of extreme weather on farmer communities and pastoralists, including gender roles and responsibilities, decision making, and resource use and management raised by the project;
- Initial engagement, development and input into the design of the project activities;
- Demonstration of the need for gender-disaggregated data and indicators to establish a baseline in which to measure improvements and identify areas of focus; and
- Establishment of recommendations to help incorporate the Gender and Social Inclusion Plan into the implementation of the project.

An additional annex to this proposal shows the full results from the stakeholder engagement, which details the specific issues and difficulties that women face in responding to the increasing threat of climate change and how this is related to women's security.

Specific issues raised during the stakeholder consultations include the following:

- The need for animal and agricultural community societies in West and South Kordofan State
- The need for micro-finance window in West Kordofan State and Khartoum State
- The need for savings and credit groups in South Kodofan State and Red Sea state
- The need for women saving and credit groups and revolving finds Microfinance institutions in Kassala state
- Opportunity for farmers and pastoralist committees in the Northern State
- The need for Professional Producer Associations in East Darfur State
- Integrated solution for Agriculture Sector Programme in West Darfur State

## 7. Gender analysis and Recommendations

This proposal identifies and integrates interventions to encourage gender responsive and transformative results. As women and men are both key players in their communities, it is integral to the success of the project that both are equitably engaged throughout the project and that both benefit also. Further, it is likely that gender equality concerns are not the only marker of exclusion or vulnerability, and it is therefore important to build on and leverage the Government's approach of addressing climate threats faced by farmers in Sudanese communities, in order to target the most vulnerable. This may include youth, people living with disabilities, etc.

The gender analysis undertaken at the onset and design of this project will inform the gender mainstreaming of the project.

### 7.1. Analysis: Implications of the findings

This gender analysis acts as an entry point for addressing gender equality and women's empowerment in the project through mainstreaming approaches. This means ensuring all areas of the project work towards strengthening gender equality and provide opportunities for rural women along with men to adopt adaptation options that reduce their vulnerability. Doing so will bolster the climate resilience of rural households and communities in the project areas and even beyond through shared learning, exchanges, awareness-raising/advocacy campaigns, and other means.

The project seeks to align with national gender policies and programmes as well as international commitments under the Paris Agreement, CEDAW, SDGs, etc. Building climate change resilience means addressing structural (socio-cultural norms in particular) and relational/power issues along with technical issues. While there is a national policy in place to support women, implementation and accountability face challenges due to a lack of resources and capacity to translate into action the policy itself.

One of the challenges directly relevant to women's (and men's lives) and the lives of their families is addressing the socio-cultural norms and practices and how these translate into local level (customary) laws, customs and practices, and social relations/power dynamics between women and men (and among women themselves along age, ethnicity, socioeconomic, and other lines and also among men). As a new study (IUCN, 2020) shows, there is enough evidence now to show that climate change is increasing gender-based violence which calls for action at all levels. Environmental degradation stresses ecosystems, leading to scarcity and stress for people; increases in environmental pressure leads to gender-based violence (IUCN, 2020). The project will address GBV issues through integrating dialogues around resilience visioning at household, group, and community levels, and also through engaging men (and supporting them as change agents) in Farmer Field Schools and other project activities including trainings, awareness-raising campaigns, microfinance, and income-generating activities.

The project recognizes the linkages of climate change to the health and resilience of men and women and the potentially different impacts therein. Literacy and education also play a strong role in determining resilience and how men and women can access and adopt adaptation measures that are proposed by the government and other stakeholders. To this end, leadership skills incorporated into women's group (production and microfinance) activities will contribute to addressing some of the constraints women face through illiteracy and lack of education. It will provide them with some of the leadership/business skills they need to run successful tree nurseries, poultry production enterprises, and other income-generating activities.

#### **7.1.1. Goal of the Gender Action Plan (GAP)**

The project will increase women's access to, and benefits from, adaptation options (e.g. climate smart agriculture approaches, micro-financing); rather it will do so through a baseline exercise to understand the potentially different costs (e.g. labour, time, finances, reallocating time from school attendance, increased/decreased social capital, increased/decreased gender-based violence, etc.) and benefits of adaptation options proposed and the potential outcomes for women and men and their families. The project will mitigate any costs or identified negative impacts and leverage opportunities for increasing benefits. It is important to increase/improve women's access to information (her agency), but there is also the need to address structural inequalities (including socio-cultural norms) and inequitable social relations and power inequalities (within households/communities) to strengthen household and community resilience. These can be addressed through this mainstreamed approach across Farmer Field Schools, production activities, training, and income-generating activities. It is expected that taking this approach will contribute to strengthening household and community resilience overall.

#### **7.1.2. Expected changes through the GAP**

The GAP approaches undertaken will stimulate positive behaviour change of women and men and transforming their lives through doing so. Behaviour change will lead to greater gender equality, which is central to establishing/sustaining resilient households and communities. The project will incorporate Household Methodologies (HHM) approaches (e.g. Gender Action Learning Systems or GALS) which represent a good return on investment (ROI) because, by securing behavioural change at the heart of daily living in the household, farmers' groups, Farmer Field Schools, and the wider community, they deepen the impact and enhance the sustainability of conventional development initiatives and adoption of adaptation practices. HHMs are also very adaptable and can be

mainstreamed into a range of development interventions and implemented in different cultural and social contexts.

### 7.1.3. Gender approach

The project will mainstream gender equality/women's empowerment issues throughout all relevant activities including training, Farmer Field Schools, village extension, and processes around rangeland management and water resources management. It will also incorporate women-focused activities including establishing tree nurseries and women's sustainable farms. Farmer Field Schools, women-focused activities (gardens, nurseries, poultry, microfinance, etc., and other key interventions will mainstream skills and dialogues for men and women that are informed by Household Methodology (GALS) tools/approaches focusing on gender equality which have been championed in Sudan, e.g. by IFAD.<sup>20</sup> This kind of approach will also engage men and boys as change agents around issues of gender, adaptation, and resilience. The Household Methodology tools can be adapted for visioning resilience strategies with men and women.

Undertaking a baseline at the inception of the project will help refine the projects' understanding of the women and men who will participate from the perspective of understanding the numbers and prevalence of female and male-headed households in project areas and the household structure. A baseline exercise will be conducted early on in the project to establish a reference point for future qualitative and quantitative monitoring surveys that will be designed and administered in ways that ensure provisions for collecting, analyzing, and reporting on disaggregated data (e.g. by sex/age, etc.). These surveys will be undertaken to verify Expected Result A2.3 and selected indicators for Outputs 1 and 2 (See sections E.3 and E.5 of the full proposal). The baseline exercise will use funds allocated to the relevant outputs and help to establish the potentially different costs, benefits, and perceptions of adaptation options proposed and the potential outcomes for women and men and their families

To support gender mainstreaming throughout the project, the project will include a Gender Officer who will be supported by the strengthened staff/partner capacity throughout the nine states. The Gender Officer will work with staff/partners (including agricultural extension workers) in the nine states to develop their capacity to mainstream gender equality and women's empowerment approaches into their work with communities and provide technical support to them in this endeavour. This may include training and/or identifying suitable trainers to train staff (through ToTs for the states) to mainstream gender approaches into their work with communities. This will include adapting gender mainstreaming approaches that have been used elsewhere in Sudan including, for example, Household Methodologies (GALS) (used by IFAD; see Box 7-1) for use in Farmer Field Schools to strengthen activities and ensure women as well as men in a household enjoy the benefits of their efforts and to ensure suitable adaptation options are adopted.

The project will build these activities into the existing budget through mainstreaming gender approaches and training staff/partners (including extension workers) to integrate these gender approaches into their work (see Budget below). Output 3 focuses on training/capacity development and will incorporate gender training (including Household methodologies/GALS) into other trainings and as stand-alone as necessary. Actual use of household methodologies/GALS will fall under interventions such as Farmer Field Schools and elsewhere in terms of community/group dialogues where needed. Farmer Field Schools are highlighted as a clear starting point for integrating this kind of approach.

The project design will:

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<sup>20</sup> <https://www.ifad.org/documents/38714170/40253742/CSW+HHM+good+praticce+FINAL.pdf/18f2a214-813a-4db8-aff2-83e623e8fbad>

- Follow from the baseline and M&E gender-differentiated roles, responsibilities, roles, decision-making, access/control of resources, and opportunities and constraints experienced by men and women in managing extreme weather, the benefits (or negative impacts) experienced by men and women through project activities;
- Focus on differing conservation incentives and experiences of women and men;
- Use the data and information collected at baseline and through the project to identify gender gaps and devote expertise/resources to implementing strategies to close the gaps, and monitor the results of implementation;
- Include all stakeholders involved in the project to develop awareness raising and incorporate trainings aimed at drawing attention to the linkages between gender equality and of climate resilience and adaptation;
- Adjust advocacy and awareness-raising to reflect the different experiences, needs, and challenges faced by women and men.;
- Incorporate community discussions and dialogues (including adapted Household Methodology/Gender Action Learning Systems or GALS tools/ into Farmer Field Schools and other relevant fora (e.g. village extension) ) to strengthen household and community resilience.

#### 7.1.4. Monitoring and evaluation

To ensure the continuous consideration of gender in the implementation of the project, gender must be also integrated in the monitoring and evaluation of the project by developing a monitoring and evaluation strategy which incorporates the indicators focused on disaggregated data and which analyses the gender-related impacts of the project. In developing the M&E strategy, gender should be integrated in the baseline data collection, through incorporating gender-sensitive indicators and targets (based on those outlined in this plan and others as identified at project inception), as well as impacts.

In developing the M&E strategy, consideration will also be given to promoting best practices and lessons learned from the different interventions and approaches and tools used, and how to communicate these at different levels in line with the information and knowledge sharing strategy as outlined in the project concept note (HCENR, 2016c). At the community level, this involves, amongst others, community mobilisation and field-based demonstration of gender and climate change adaptation practices, including the need and benefits for incorporating gender-considerations into climate change adaptation projects. At the institutional level, this includes building capacities and raising awareness of the need for incorporating gender into climate change interventions of local

#### Box 7-1: Overview of IFAD's Household methodologies

IFAD notes in their **Household Methodologies How To Do Toolkit** (<https://www.ifad.org/documents/38714170/40198517/How+To+Do+Household+Methodologies.pdf/564875ac-af4b-4409-9271-0c90ff464b3b>) notes, "Household methodologies (HHMs) can be implemented through groups. The group acts as the entry point for reaching individual households with the visioning and action planning tools. Group members learn the basic skills in visioning and planning and then replicate the process at home, with the support of the group facilitator and peers (these can be community-based staff/partners/extension workers working with the Farmer Field Schools). Peer sharing triggers a multiplier effect among a wider audience and creates a supportive environment for behaviour change. The group-based approach can also be used to develop a group vision and action plan; this can advance the interests of the group as a whole and also help members realize their individual household visions. Embedding HHMs in existing local groups can make the process more sustainable and provides an opportunity to deliver HHMs at scale." Further, "Group meetings are typically held either weekly, bimonthly or monthly." These can be adjusted depending on the approach to be integrated in the Farmer Field Schools

ministries and institutions. Finally, at the policy level, this involves integrating and mainstreaming gender and climate change adaptation measures in strategic and annual plans.

The analysis identified the differences between men and women within at-risk populations. In order to monitor and evaluate progress of the project. Table 7-1 provides an overview of measurable indicators for the project’s quantitative and qualitative outcomes.

**Table 7-1: Overview of type of outcomes and indicators**

Type of outcome	Indicator
Quantitative	<ul style="list-style-type: none"> <li>• #/% of beneficiary households by sex of head of household</li> <li>• Improvements in health and well-being by sex/age (this could incorporate key nutrition indicators for example which could be measured at baseline at end of project) ;</li> <li>• Women’s livelihoods strengthened (quantitatively could be measured by               <ul style="list-style-type: none"> <li>✓ change in income generated over time (to be checked qualitatively for who is benefiting from income increase);</li> <li>✓ change in labour/time allocation to specific tasks (e.g. water collection);</li> <li>✓ Rural women’s enterprise groups (e.g. nurseries) strengthened financially (can be measured by change in produce marketed, income generated, etc.) (To be checked again qualitatively against who benefits from the income change if positive)</li> </ul> </li> </ul>
Qualitative	<ul style="list-style-type: none"> <li>• Link income-generating activities identified by women with projects and initiatives active in the targeted project areas in Sudan.</li> <li>• Time-saving for women as a result of lower hours in labour required for agricultural and water management practices prior to the implementation of the project;</li> <li>• Contribution to improved self-esteem and empowerment of women in the community;</li> <li>• Expanded involvement in public and project decision-making as a result of initiation of women into active participation in income generating activities;</li> <li>• Support for training and educational activities which may include activities related to climate change, agriculture, leadership, business, finance, entrepreneurship and decision-making, thereby enabling empowerment and involvement (or increased involvement) of women to participate with confidence in community meetings;</li> </ul>

#### 7.1.5. Budget

The approach to implementing the gender action plan is to mainstream the costs associated with all actions into ongoing activities as many of the actions proposed in the gender action plan are mainstreamed into overall activities and sub-activities to avoid side-lining or marginalizing gender issues. Some activities are specific to women and are also included in the overall proposal (i.e., establish integrated women sustainable agriculture farms with leadership program.

## 8. Gender and Social Action Plan and Budget

This Gender and Social Inclusion plan provides entry points for gender-responsive and socially inclusive actions to be taken under the activity areas of the project. In addition, specific indicators and targets are also proposed to measure and track progress. These can be incorporated into the detailed M&E plan which will be developed at the start of implementation.

Recommendation: Overall, the project should consider gender and social inclusion implications including the following:

- Consider the differing needs of women and men experiencing climate change impacts within traditional rain fed agricultural and pastoral systems;
- Analyse the gendered division of labour (e.g. gender-differentiated roles, responsibilities, and needs); gender-differentiated access to, and control over environmental resources and the goods and services that they provide; access to financial services and markets; and gendered decision-making dynamics in households and groups.
- Use sex and age disaggregated data to facilitate improved understanding of the gender and social inequality gaps that exist to inform the development and implementation of action plans that are adequately resourced (financial, technical expertise) to address these gaps; monitor the results of implementation; and ensure accountability of institutions and individuals for gender equality outcomes;
- Ensure equitable participation by women and men at both macro and micro level climate resilience processes;
- Promote advocacy and awareness that contribute to addressing gender inequalities that exacerbate the impacts of climate change and weaken resilience at household and community level. Project strategies should address these inequalities including gender-based violence (GBV) overall and following disasters;
- Include all stakeholders involved in the project to develop awareness raising / training aimed at drawing attention to the implication of climate resilience adaptation and gender equality;
- Identify specific strategies to include or target women in particular for financial inclusion interventions;
- Undertake community discussions and dialogue in relation to gender and social inclusion in climate and disaster resilience (e.g. through adapting household methodologies/GALS approaches in Farmer Field schools and elsewhere as relevant).

In addition to the recommendations listed above, it will be important to ensure that the gender and social inclusion aspects of the project are tailored specifically for a Sudanese context. In order to do this, the following approaches are also strongly recommended:

- Build on the projects, structures and initiatives being rolled out by the Government of Sudan and other development partners, in order to maximize the use of resources, and for greatest efficiency and effectiveness;
- Assess how gender is currently being mainstreamed in differing Ministries and sectors, to most effectively develop needs assessments, enable planning, and be effective in monitoring and evaluation;
- Link income-generating/financial inclusion activities identified by women and men with projects and initiatives active in the nine targeted areas

Objective	Sub-activities	Indicator and Target	Timeline	Means of Verification	Responsible Institutions	Allocated Budget
<b>Output 1: Resilience of food production systems and food insecure communities improved in the face of climate change in Sudan, benefiting at least 200,000 households and farmers and pastoralists with 35 % women</b>						
Activity 1.1: Introduction of drought-resilient seed varieties of sorghum, millet, groundnut, and wheat that have demonstrated greater yields (and from a gender perspective also other qualities such as storage, taste, marketability) in the face of climatic changes through village procurement systems	1.1.1 Develop and implement participatory gender-responsive identification/testing/training programme for drought tolerant and early maturing certified seed distribution. This should consider the potential gender-differentiated needs and interests in terms of seed selection. While productivity is one criterion, women may also choose other criteria such as taste (for household consumption), marketability, storage).	<ul style="list-style-type: none"> <li>Indicator: Number/% of farmers participating in seed testing, feedback, training processes (disaggregated by sex, age group).</li> <li>Target: 35 % women</li> <li>Surveys/FGD data (e.g. baselines, M&amp;E) disaggregated by sex (and age group if possible)</li> </ul>	Year 2 – 5	<ul style="list-style-type: none"> <li>Baseline and other surveys undertaken (and collecting and reporting data disaggregated by sex/age) to monitor progress.</li> <li>Focus Group Discussion outputs from testing with women, men (separate focus groups for women/men)</li> <li>Women’s group reports/FGD outputs</li> <li>FFS reports</li> <li>Agricultural extension database entries</li> <li>Adoption reports</li> <li>Project reports</li> <li>Knowledge sharing documents</li> <li>Knowledge-sharing fora</li> </ul>	<ul style="list-style-type: none"> <li>State ministries of Agriculture and Natural Resources (MANR)</li> <li>Ministry of Irrigation and Water Resources (MIWR)</li> </ul>	Costs to be mainstreamed in overall budget
	1.1.2 Ensure women as well as men participate in the replication of drought tolerant and early maturing seeds across neighbouring communities. This may mean addressing issues of women’s mobility (social-cultural norms) and working with men in households/ groups/community leaders (see also GALS under Activity 1.2 )	<ul style="list-style-type: none"> <li>Indicator: Number/% of farmers (disaggregated by sex) benefitting from adoption of varieties</li> <li>Target: 35% women</li> </ul>	Year 2 – 5	<ul style="list-style-type: none"> <li>Baseline and other surveys undertaken (and collecting and reporting data disaggregated by sex/age) to monitor progress.</li> <li>Focus Group Discussion outputs from testing with women, men (separate focus groups for women/men)</li> <li>Women’s group reports/FGD outputs</li> <li>FFS reports</li> <li>Agricultural extension database entries</li> <li>Adoption reports</li> <li>Project reports</li> <li>Knowledge sharing documents</li> <li>Knowledge-sharing fora</li> </ul>	<ul style="list-style-type: none"> <li>MANR</li> <li>MIWR</li> </ul>	Costs to be mainstreamed in overall budget

	<p>1.1.3 Ensure women as well as men participate in seed multiplication farms. This will require understanding the role of women in seed multiplication, identifying peer women seed multipliers (if any) as role models for other women in communities, and addressing socio-cultural norms that may limit women's participation.</p>	<ul style="list-style-type: none"> <li>• Indicator: Number/% of farmers (disaggregated by sex) benefitting from participation in multiplication farm activities.</li> <li>• Target: 35% women</li> </ul>	Year 2 – 5	<ul style="list-style-type: none"> <li>• Baseline and other surveys undertaken (and collecting and reporting data disaggregated by sex/age) to monitor progress.</li> <li>• Focus Group Discussion outputs from testing with women, men (separate focus groups for women/men)</li> <li>• Women's group reports/FGD outputs</li> <li>• FFS reports</li> <li>• Agricultural extension database entries</li> <li>• Adoption reports</li> <li>• Project reports</li> <li>• Knowledge sharing documents</li> <li>• Knowledge-sharing fora</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	Costs to be mainstreamed in overall budget
	<p>1.1.4 Develop gender-responsive knowledge-sharing of seed production, handling &amp; exchange.</p>	<ul style="list-style-type: none"> <li>• Indicator: Number/% of farmers (disaggregated by sex) benefitting from participation in seed procurement processes. Target: 35% women</li> </ul>	Year 2 – 5	<ul style="list-style-type: none"> <li>• Baseline and other surveys undertaken (and collecting and reporting data disaggregated by sex/age) to monitor progress.</li> <li>• Focus Group Discussion outputs from testing with women, men (separate focus groups for women/men)</li> <li>• Women's group reports/FGD outputs</li> <li>• FFS reports</li> <li>• Agricultural extension database entries</li> <li>• Adoption reports</li> <li>• Project reports</li> <li>• Knowledge sharing documents</li> <li>• Knowledge-sharing fora</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	Costs to be mainstreamed in overall budget
	<p>1.1.5 Develop/strengthen / deliver with women and men micro-finance programme/model using development and delivery of gender-responsive training</p>	<ul style="list-style-type: none"> <li>• Indicator: Participants benefitting from participation in micro-finance model (disaggregated by</li> </ul>	Year 2 – 5	<ul style="list-style-type: none"> <li>• Baseline and other surveys undertaken (and collecting and reporting data disaggregated by sex/age) to monitor progress.</li> <li>• Focus Group Discussion outputs from testing with women, men</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	Costs to be mainstreamed in overall budget

	materials on launching, accessing and operating rural micro-finance systems.	sex/age group).Target: 35% women		(separate focus groups for women/men) <ul style="list-style-type: none"> <li>• Women’s group reports/FGD outputs</li> <li>• FFS reports</li> <li>• Agricultural extension database entries</li> <li>• Adoption reports</li> <li>• Project reports</li> <li>• Knowledge sharing documents</li> <li>• Knowledge-sharing fora</li> </ul>		
Activity 1.2: Introduce gender-responsive sustainable practices in agricultural production at the community level through introducing gender-responsive management of water resources, women’s farms, home gardens, and demonstration plots.	1.2.1 Establish integrated women sustainable agriculture farms with leadership program (i.e. seed priming; fertilizer micro-dosing; intercropping, etc.)	<ul style="list-style-type: none"> <li>• Indicator 1: #/% integrated women sustainable agriculture farms per village showcasing the new technologies and practices established</li> <li>• Target: 100 sustainable farms</li> <li>• Indicator2: #/% of women participants acquire leadership skills</li> <li>• Target:35 % women</li> </ul>	Year 2-5	<ul style="list-style-type: none"> <li>• Women’s group reports</li> <li>• Knowledge sharing /communications documents</li> <li>• FFS reports</li> <li>• FGD outputs</li> <li>• Project reports</li> <li>• Training reports</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	Costs to be mainstreamed in overall budget
	1.2.2 Establish sustainable women-centered home gardens program	<ul style="list-style-type: none"> <li>• Indicator 1: #/% of women-centred home gardens established and sustained (for 2 years at least).</li> <li>• Target: 100% of home gardens</li> <li>• Indicator 2: #/% of women participating in home gardens benefiting from home garden program. (Nb. Women to participatorily discuss</li> </ul>	Year 2-5	<ul style="list-style-type: none"> <li>• Women’s group reports</li> <li>• Knowledge sharing /communications documents</li> <li>• FFS reports</li> <li>• FGD outputs</li> <li>• Project reports</li> <li>• Training reports</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	Costs to be mainstreamed in overall budget

		indicators – what do they consider benefits?) • Target: 100% women				
	1.2.3 Establish gender-responsive sustainable practices (e.g. Wadi) training that also provides for the equitable participation of women and men.	<ul style="list-style-type: none"> <li>Indicator: #/% of farmers participating in sustainable practices training (disaggregated by sex/age group)</li> <li>Target: 35% women</li> </ul>	Year 2-5	<ul style="list-style-type: none"> <li>Women’s group reports</li> <li>Knowledge sharing /communications documents</li> <li>FFS reports</li> <li>FGD outputs</li> <li>Project reports</li> <li>Training reports</li> </ul>	<ul style="list-style-type: none"> <li>MANR</li> <li>MIWR</li> </ul>	Costs to be mainstreamed in overall budget
	1.2.4 Develop and implement training manual and trainings in a gender-responsive manner. This should include ensuring women’s as well as men’s concerns and interests are included in materials as well as including a module that is not only focused on technical aspects but also socio-cultural aspects of water management	<ul style="list-style-type: none"> <li>Indicator: All training materials and trainings are gender-responsive (i.e.. consider men’s and women’s concerns, interests, challenges and socio-cultural aspects of water management).</li> <li>Target: 100 relevant materials</li> </ul>	Year 2-5	<ul style="list-style-type: none"> <li>Women’s group reports</li> <li>Knowledge sharing /communications documents</li> <li>FFS reports</li> <li>FGD outputs</li> <li>Project reports</li> <li>Training reports</li> </ul>	<ul style="list-style-type: none"> <li>MANR</li> <li>MIWR</li> </ul>	Costs to be mainstreamed in overall budget
	1.2.5 Establish gender-responsive Farmer Field Schools that foster equitable participation and benefits by women and men. This will include mainstreaming household methodology (e.g. GALS approach)/ engaging men approaches into Farmer Field School curriculum/dialogues to facilitate women and men developing and working together on common visions of sustainable climate smart agriculture/ resilience for their households/communities.	<ul style="list-style-type: none"> <li>Indicator: Number/% of farmers participating in gender-responsive Farmer Field Schools (disaggregated by sex, age group)</li> <li>Target: 35 % women</li> <li>Indicator: Number/% of farmers participating in gender dialogues (e.g., HH/GALS).</li> <li>Target 100% participants (all men, all women)</li> </ul>	Year 2-5	<ul style="list-style-type: none"> <li>Women’s group reports</li> <li>Knowledge sharing /communications documents</li> <li>FFS reports</li> <li>FGD outputs</li> <li>Project reports</li> <li>Training reports</li> </ul>	<ul style="list-style-type: none"> <li>MANR</li> <li>MIWR</li> </ul>	Costs to be mainstreamed in overall budget

Activity 1.3: Introduction of rangeland management practices that reduce pastoral stress on communal lands through demonstration farms and rangeland rehabilitation techniques in ways that consider men's and women's needs and constraints as well as knowledge and experience.	1.3.1 In developing and testing technical guideline for climate adaptive rangeland management, ensure participation of women and men to identify key issues and experiences as well as needs and challenges. These will help inform more relevant technical approaches. Note: women and men may have different knowledge/experiences of their surroundings, the ecosystem, biodiversity, e.g. plants (and uses), soils, etc.	<ul style="list-style-type: none"> <li>Indicator: Number/% of women project beneficiaries contributing to development and testing of technical guidelines</li> <li>Target 35% women</li> </ul>	Year 1-5	<ul style="list-style-type: none"> <li>Baseline and other project monitoring reports</li> <li>Group reports</li> <li>Women's focus group discussion output</li> <li>Technical guideline for climate adaptive rangeland management</li> <li>Training reports</li> <li>Project reports</li> <li>Knowledge sharing /communication pieces</li> </ul>	<ul style="list-style-type: none"> <li>MANR</li> <li>MIWR</li> </ul>	Costs to be mainstreamed in overall budget
	1.3.2 Consult women as well as men in establishing communal rangeland reserves (e.g. issues of access, use, safety, etc.)	<ul style="list-style-type: none"> <li>Indicator 1: Number/% of women beneficiaries consulted in establishment of communal reserves.</li> <li>Target: 35% women</li> <li>Indicator 2: Women's as well as men's concerns/ interests/needs incorporated into communal rangeland reserves.</li> <li>Target: 35% women</li> </ul>	Year 1-5	<ul style="list-style-type: none"> <li>Baseline and other project monitoring reports</li> <li>Group reports</li> <li>Women's focus group discussion output</li> <li>Technical guideline for climate adaptive rangeland management</li> <li>Training reports</li> <li>Project reports</li> <li>Knowledge sharing /communication pieces</li> </ul>	<ul style="list-style-type: none"> <li>MANR</li> <li>MIWR</li> </ul>	Costs to be mainstreamed in overall budget
Activity 1.4: Establish shelterbelts/ agroforestry in a gender-responsive manner to improve productivity and reduce land and environmental	1.4.1 Establish village women's groups to manage nursery/leadership program with multipurpose seedlings.	<ul style="list-style-type: none"> <li>Indicator: Number of women's nursery/leadership groups established</li> <li>Target: 30 small-scale tree nurseries (500,000 seedlings)</li> </ul>	Year 2-5	<ul style="list-style-type: none"> <li>Baseline &amp; monitoring reports</li> <li>Women's group reports</li> <li>Training reports</li> <li>Project reports</li> <li>Knowledge sharing documents</li> </ul>	<ul style="list-style-type: none"> <li>MANR</li> <li>MIWR</li> </ul>	Costs to be mainstreamed in overall budget

degradation. This involves increasing the access to water by installing communal water infrastructure and considers men's and women's needs/constraints.	1.4.3 Establish gender-responsive, climate adaptive community-based afforestation/ forest management) that fosters the equitable participation and active voice of men and women and mainstream gender (language and content). Community-based afforestation activities can incorporate HH methodology/GALS approaches to ensure community visioning and dialogues consider men's and women's interests, needs, and challenges.	<ul style="list-style-type: none"> <li>Indicator: Number/% of beneficiaries participating (disaggregated by sex, age group) in community-based afforestation. Target: 35% women</li> </ul>	Year 2-5	<ul style="list-style-type: none"> <li>Baseline &amp; monitoring reports</li> <li>Women's group reports</li> <li>Training reports</li> <li>Project reports</li> <li>Knowledge sharing documents</li> </ul>	<ul style="list-style-type: none"> <li>MANR</li> <li>MIWR</li> </ul>	Costs to be mainstreamed in overall budget
<b>Objective</b>	<b>Sub-activity</b>	<b>Indicator</b>	<b>Timeline</b>	<b>Means of verification</b>	<b>Responsible Institution</b>	<b>Allocated Budget</b>
<b>Output 2: Improved access of water for human, livestock and irrigation to sustain livelihoods in the face of climatic risks in the nine targeted states benefiting at least 200,000 households</b>						
Activity 2.1: Construct/rehabilitate water yards and drilling of shallow/borehole for drinking water for human and livestock and small-scale irrigation in targeted locations. This involves increasing the access to water by installing communal water infrastructure.	2.1.1 Ensure participation of women as well as men in identifying water-related problems based on their use, access.	<ul style="list-style-type: none"> <li>Indicator: Number/% of participants (disaggregated by sex/age group) in rehabilitation process.</li> <li>Target: 35% women</li> </ul>	Year 1-5	<ul style="list-style-type: none"> <li>Baseline &amp; monitoring reports</li> <li>Group reports</li> <li>Focus group discussions</li> <li>Training reports</li> <li>Project reports</li> <li>Knowledge sharing documents</li> </ul>	<ul style="list-style-type: none"> <li>MANR</li> <li>MIWR</li> </ul>	Costs to be mainstreamed in overall budget
	2.1.3 Establish gender-responsive trainings of village water committees that foster equitable participation and learning of women as well as men and that incorporate women's water-related concerns and needs (including e.g. accessing water safely, water usages, etc.).	<ul style="list-style-type: none"> <li>Indicator1: Number/% of participants (disaggregated by sex/age group) in training opportunities (e.g. solar pumps, etc.)</li> <li>Target: 35% women</li> <li>Indicator 2: Evidence of gender inclusion analysis in training materials developed for</li> </ul>	Year 1-5	<ul style="list-style-type: none"> <li>Baseline &amp; monitoring reports</li> <li>Group reports</li> <li>Focus group discussions</li> <li>Training reports</li> <li>Project reports</li> <li>Knowledge sharing documents</li> </ul>	<ul style="list-style-type: none"> <li>MANR</li> <li>MIWR</li> </ul>	Costs to be mainstreamed in overall budget

		<p>village water committees</p> <ul style="list-style-type: none"> <li>• Target: 100% relevant training materials</li> </ul>				
<p>Activity 2.2: Establish sand storage dams in support of small scale irrigation in targeted localities and villages taking into consideration the different concerns of women and men. This involves the blocking of seasonal wadis for groundwater storage and exploitation.</p>	<p>2.2.1 Ensure participation of women as well as men in identifying water-related problems based on their use, access</p>	<ul style="list-style-type: none"> <li>• Indicator: Number/% of participants (disaggregated by sex/age group) in community discussions of water storage dam constructions.</li> <li>• Target: 35% women</li> </ul>	<p>Year 1-3</p>	<ul style="list-style-type: none"> <li>• Group reports</li> <li>• Focus group discussions</li> <li>• Project reports</li> <li>• Knowledge sharing documents</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	<p>Costs to be mainstreamed in overall budget</p>
	<p>2.2.3 Identify and train women and men for operation and maintenance of sand water-storage dam and solar pumps for water management scheme.</p>	<ul style="list-style-type: none"> <li>• Indicator 1: Number/% of participants (disaggregated by sex/age group) in training opportunities (e.g. solar pumps, etc.)</li> <li>• Target: 35% women</li> <li>• Indicator 2: Evidence of gender considerations (language, content) in training materials developed for sand storage dams</li> <li>• Target: 100% of relevant training materials</li> <li>• Indicator 3: Women working as solar pump managers</li> <li>• Target: 35 % women</li> </ul>	<p>Year 1-3</p>	<ul style="list-style-type: none"> <li>• Training reports</li> <li>• Focus group discussions</li> <li>• Project reports</li> <li>• Knowledge sharing documents</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	<p>Costs to be mainstreamed in overall budget</p>

Activity 2.3: Construct improved Hafirs and/or upgrading of existing ones, excavating natural pond and cistern to increase availability of drinking water taking into consideration the different concerns of women and men	2.3.1 Establish gender-responsive development/upgrading of Hafirs/excavation of ponds and cisterns using a process that considers roles, responsibilities, use, access/control of women/men in the design and implementation).	<ul style="list-style-type: none"> <li>Indicator: Number of participants (disaggregated by sex/age group) in the process of Haffir development/upgrading programme Target: 35 % women</li> </ul>	Year 1-3	<ul style="list-style-type: none"> <li>Group reports</li> <li>Focus group discussions</li> <li>Project reports</li> <li>Training reports</li> <li>Knowledge sharing documents</li> </ul>	<ul style="list-style-type: none"> <li>MANR</li> <li>MIWR</li> </ul>	Costs to be mainstreamed in overall budget
	2.3.3 Identify and train women and men for operation and maintenance of for water management scheme (e.g. solar pumps).	<ul style="list-style-type: none"> <li>Indicator 1: Number/% of participants (disaggregated by sex/age group) in training opportunities Target: 35% women</li> <li>Indicator 2: Evidence of gender considerations (language, content) in training materials Target: 100% of relevant training materials</li> </ul>	Year 1-3	<ul style="list-style-type: none"> <li>Group reports</li> <li>Focus group discussions</li> <li>Project reports</li> <li>Training reports</li> <li>Knowledge sharing documents</li> </ul>	<ul style="list-style-type: none"> <li>MANR</li> <li>MIWR</li> </ul>	Costs to be mainstreamed in overall budget
<b>Objective</b>	<b>Sub-activity</b>	<b>Indicator</b>	<b>Timeline</b>	<b>Means of verification</b>	<b>Responsible Institution</b>	<b>Allocated Budget</b>
<b>Output 3: Strengthened capacities and knowledge of institutions and communities on climate change resilience and adaptation</b>						
Activity 3.1: Train extension officers and other government stakeholders on climate change resilience and adaption related issues that incorporates policy, technical and (social/cultural issues including gender/social inclusion). This involves the development of raining materials	3.1.1 Mainstream gender across all training for all staff/partners at all levels including extension worker, project staff/ management (from needs assessments to development/adaptation of materials; training of extension staff, government agencies; development of guidelines on adaptation measures; and the development of a best	<ul style="list-style-type: none"> <li>Indicator: Assessment report incorporates language and findings that consider gender (including sex-disaggregated data where needed).</li> <li>Target: 1 assessment report (or 1 per state if needed)</li> </ul>	Year 1-4	<ul style="list-style-type: none"> <li>Assessment report</li> <li>Other project reports</li> <li>Training manuals/ materials</li> <li>Training workshops pre- and posttraining assessments</li> <li>Post training follow-up capacity assessments.</li> </ul>	<ul style="list-style-type: none"> <li>MANR</li> <li>MIWR</li> </ul>	Costs to be mainstreamed in overall budget

<p>tailored to local circumstances and delivered through a series of workshops.</p>	<p>practices manual on climate adaptation measures. Training for extension workers will incorporate a module on household methodologies (Gender Action Learning Systems or GALS) to strengthen community dialogues and help households and groups strengthen resilience by addressing social constraints/challenges.</p>					
	<p>3.1.2 Mainstream gender across all training for all staff/partners at all levels including extension worker, project staff/ management (from needs assessments to development/adaptation of materials; training of extension staff, government agencies; development of guidelines on adaptation measures; and the development of a best practices manual on climate adaptation measures. Training for extension workers will incorporate a module on household methodologies (Gender Action Learning Systems or GALS) to strengthen community dialogues and help households and groups strengthen resilience by addressing social constraints/challenges.</p>	<ul style="list-style-type: none"> <li>• Indicator: Training manuals/materials consider gender throughout (language and content including GALS tools/approaches, gender-responsive capacity and vulnerability assessment, etc.). (Note: there are many good gender-responsive adaptation-related tools now).</li> <li>• Target: All training materials</li> </ul>	<p>Year 1-4</p>	<ul style="list-style-type: none"> <li>• Assessment report</li> <li>• Other project reports</li> <li>• Training manuals/ materials</li> <li>• Training workshops pre- and post-training assessments</li> <li>• Post training follow-up capacity assessments.</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	<p>Costs to be mainstreamed in overall budget</p>

	<p>3.1.3 Mainstream gender across all training for all staff/partners at all levels including extension worker, project staff/ management (from needs assessments to development/adaptation of materials; training of extension staff, government agencies; development of guidelines on adaptation measures; and the development of a best practices manual on climate adaptation measures. Training for extension workers will incorporate a module on household methodologies (Gender Action Learning Systems or GALS) to strengthen community dialogues and help households and groups strengthen resilience by addressing social constraints/challenges</p>	<ul style="list-style-type: none"> <li>• Indicator: Extension workers improved capacity to address gender (including Gender Action Learning Systems or GALS) and climate change issues into their climate and drylands work with communities (to be defined qualitatively)</li> <li>• Target: 100% of extension workers participating in project areas.</li> </ul>	<p>Year 1-4</p>	<ul style="list-style-type: none"> <li>• Assessment report</li> <li>• Other project reports</li> <li>• Training manuals/ materials</li> <li>• Training workshops pre- and post-training assessments</li> <li>• Post training follow-up capacity assessments.</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	<p>Costs to be mainstreamed in overall budget</p>
	<p>3.1.4 Mainstream gender across all training for all staff/partners at all levels including extension worker, project staff/ management (from needs assessments to development/adaptation of materials; training of extension staff, government agencies; development of guidelines on adaptation measures; and the development of a best practices manual on climate</p>	<ul style="list-style-type: none"> <li>• Indicator: Guideline on adaptation measures for upscaling consider gender throughout (language and content including GALS tools/approaches, gender-responsive capacity and vulnerability assessment, etc.). (Note: there are many good gender-responsive</li> </ul>	<p>Year 1-4</p>	<ul style="list-style-type: none"> <li>• Assessment report</li> <li>• Other project reports</li> <li>• Training manuals/ materials</li> <li>• Training workshops pre- and post-training assessments</li> <li>• Post training follow-up capacity assessments.</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	<p>Costs to be mainstreamed in overall budget</p>

	<p>adaptation measures. Training for extension workers will incorporate a module on household methodologies (Gender Action Learning Systems or GALS) to strengthen community dialogues and help households and groups strengthen resilience by addressing social constraints/challenges.</p>	<p>adaptation-related tools now).</p> <ul style="list-style-type: none"> <li>• Target: 100% materials</li> </ul>				
	<p>3.1.5 Mainstream gender across all training for all staff/partners at all levels including extension worker, project staff/ management (from needs assessments to development/adaptation of materials; training of extension staff, government agencies; development of guidelines on adaptation measures; and the development of a best practices manual on climate adaptation measures. Training for extension workers will incorporate a module on household methodologies (Gender Action Learning Systems or GALS) to strengthen community dialogues and help households and groups strengthen resilience by addressing social constraints/challenges.</p>	<ul style="list-style-type: none"> <li>• Indicator: Manual on best practices in adaptation considers gender throughout (e.g. language, content, perspectives, experiences).</li> <li>• Target: 100% materials</li> </ul>	<p>Year 1-4</p>	<ul style="list-style-type: none"> <li>• Assessment report</li> <li>• Other project reports</li> <li>• Training manuals/ materials</li> <li>• Training workshops pre- and post-training assessments</li> <li>• Post training follow-up capacity assessments.</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	<p>Costs to be mainstreamed in overall budget</p>

<p>Activity 3.2: Build capacity of women and men beneficiaries for coping with climate change risks and local operation &amp; maintenance of project interventions. This involves a series of seminars and workshops to raise awareness among village leadership councils about gender-responsive, sustainable climate change coping strategies.</p>	<p>3.2.1 Mainstream gender (including gender-responsive tools which focus on building resilience, e.g. GALS visioning/ decision-making tools) into climate resilience training for village extension networks and village development committees.</p>	<ul style="list-style-type: none"> <li>• Indicator: Gender mainstreamed (language, content including GALS visioning tools) throughout training materials</li> <li>• Target: All training materials for village extension networks and village development committees.</li> </ul>	<p>Year 1 – 4</p>	<ul style="list-style-type: none"> <li>• Training materials</li> <li>• Training reports</li> <li>• Project reports</li> <li>• Knowledge-sharing/ communication documents</li> <li>• Awareness campaigns (posters, radio programmes, ads, outreach messages)</li> <li>• Project reports</li> <li>• Knowledge sharing materials</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	<p>Costs to be mainstreamed in overall budget</p>
	<p>3.2.2 Mainstream gender (including gender-responsive tools which focus on building resilience, e.g. GALS visioning/ decision-making tools) into climate resilience training for village extension networks and village development committees.</p>	<ul style="list-style-type: none"> <li>• Indicator: Gender mainstreamed (language, content including GALS visioning tools) throughout training materials</li> <li>• Target: All training materials for village extension networks and village development committees.</li> </ul>	<p>Year 2 onwards</p>	<ul style="list-style-type: none"> <li>• Training materials</li> <li>• Training reports</li> <li>• Project reports</li> <li>• Knowledge-sharing/ communication documents</li> <li>• Awareness campaigns (posters, radio programmes, ads, outreach messages)</li> <li>• Project reports</li> <li>• Knowledge sharing materials</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	<p>Costs to be mainstreamed in overall budget</p>
	<p>3.2.3 Develop gender-responsive awareness raising campaigns on building climate resilience (e.g. this may include considering different types of media, methods to address women, men; language; focus, etc.)</p>	<ul style="list-style-type: none"> <li>• Indicator: Awareness-raising campaigns mainstream gender (language, content) throughout (including attention to gender-based violence (GBV) links to resilience).</li> <li>• Target: All awareness-raising campaigns.</li> </ul>	<p>Year 2 onwards</p>	<ul style="list-style-type: none"> <li>• Training materials</li> <li>• Training reports</li> <li>• Project reports</li> <li>• Knowledge-sharing/ communication documents</li> <li>• Awareness campaigns (posters, radio programmes, ads, outreach messages)</li> <li>• Project reports</li> <li>• Knowledge sharing materials</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	<p>Costs to be mainstreamed in overall budget</p>

	<p>3.2.3 Mainstream gender into awareness-raising campaigns on building resilience to climate change with women's and men's participation to develop effective messaging around resilience that is gender-responsive and highlights the socio-cultural dimensions that weakens/strengthen resilience.</p>	<ul style="list-style-type: none"> <li>• Indicator: Awareness-raising campaigns mainstream gender (language, content) throughout (including attention to gender-based violence (GBV) links to resilience).</li> <li>• Target: All awareness-raising campaigns.</li> </ul>	<p>Year 2 onwards</p>	<ul style="list-style-type: none"> <li>• Training materials</li> <li>• Training reports</li> <li>• Project reports</li> <li>• Knowledge-sharing/communication documents</li> <li>• Awareness campaigns (posters, radio programmes, ads, outreach messages)</li> <li>• Project reports</li> <li>• Knowledge sharing materials</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	<p>Costs to be mainstreamed in overall budget</p>
	<p>3.2.4 Facilitate women's participation in community and extension staff exchanges across localities. This may benefit from linking with the household methodologies/GALS approaches under the FFS to address issues around social norms that may limit women's mobility and participation in such exchanges.</p>	<ul style="list-style-type: none"> <li>▪ Indicator 1: #/% of women extension workers participating in exchanges</li> <li>• Target: 35 %</li> <li>• Indicator 2: #/% of women community members participating in exchanges.</li> <li>• Target: 35%</li> </ul>	<p>Year 2 onwards</p>	<ul style="list-style-type: none"> <li>• Training materials</li> <li>• Training reports</li> <li>• Project reports</li> <li>• Knowledge-sharing/communication documents</li> <li>• Awareness campaigns (posters, radio programmes, ads, outreach messages)</li> <li>• Project reports</li> <li>• Knowledge sharing materials</li> </ul>	<ul style="list-style-type: none"> <li>• MANR</li> <li>• MIWR</li> </ul>	<p>Costs to be mainstreamed in overall budget</p>

## 9. Demographic information on Darfur States, Kordofan States, Eastern States and Nile States

The location and number of households (i.e., beneficiaries) have been developed on the basis on a series of consultative workshops held in areas of rural Sudan. The proposed project aims to improve the resilience against climate change of 674,466 households distributed throughout the targeted localities. The duration of the effort is 5 years, with activities sequenced to maximize sharing of lessons learned from the implementation location across the targeted areas. A breakdown of direct and indirect beneficiaries per state, locality, and village cluster is provided in Table 1-14. Roughly half of all beneficiaries of the project are women.

Region	State		Locality		Villages	Direct beneficiaries		Indirect beneficiaries		All beneficiaries	
	#	Name	#	Name		HHs	Population	HHs	Population	HHs	Population
Darfur States	1	West Darfur State	1	Genana	4	1,629	10,934	536	3,601	2,165	14,535
			2	Krenik	1	1,200	8,400	1,724	12,065	2,924	20,465
		<i>Subtotal</i>		5	2,829	19,334	2,260	15,666	5,089	35,000	
	2	Central Darfur State	3	Zalingi	9	3,065	18,388	40,023	240,112	43,088	258,500
			4	Azoom	4	4,662	27,972	2,731	16,388	7,393	44,360
		<i>Subtotal</i>		13	7,727	46,360	42,754	256,500	50,481	302,860	
	3	East Darfur State	5	Eldain	3	22,100	110,500	5,329	26,645	27,429	137,145
			6	Firdous	2	16,400	82,000	40,049	200,247	56,449	282,247
			7	Asalia	5	9,200	46,000	39,090	195,452	48,290	241,452
			<i>Subtotal</i>		10	47,700	238,500	84,468	422,344	132,168	660,844
Kordofan States	4	West Kordofan State	8	Asalam	9	688	5,219	15,456	117,243	16,144	122,462
			9	Al Nohoud	9	649	3,894	37,184	223,106	37,833	227,000
			10	Alsunut	10	4,346	29,353	20,084	135,647	24,430	165,000
			<i>Subtotal</i>		28	5,683	38,466	72,724	475,996	78,407	514,462
	5	South Kordofan State	11	El Goz	12	3,000	15,000	20,778	103,889	23,778	118,889
			12	Dilling	12	7,350	36,750	35,207	176,035	42,557	212,785
			<i>Subtotal</i>		24	10,350	51,750	55,985	279,924	66,335	331,674
Eastern States	6	Kassala State	13	Kassala	6	30,000	180,000	19,755	118,529	49,755	298,529
			14	Telkuk	5	17,708	106,248	28,122	168,730	45,830	274,978
			15	Rural Nhr	5	26,500	132,500	882	4,411	27,382	136,911
			<i>Subtotal</i>		16	74,208	418,748	48,759	291,670	122,967	710,418
	7	Red Sea State	16	Agig	6	7,000	42,000	10,500	63,000	17,500	105,000
			17	Dordaib/Haya	3	30,000	180,000	20,000	120,000	50,000	300,000
			18	Guneb Olib	6	15,000	90,000	20,000	120,000	35,000	210,000
<i>Subtotal</i>		15	52,000	312,000	50,500	303,000	102,500	615,000			
Nile States	8	Northern State	19	Dongala	7	1,729	8,645	28,303	141,516	30,032	150,161
			20	Marawi	7	4,600	23,000	26,946	134,729	31,546	157,729
			21	AlDabaha	4	2,600	13,000	27,109	135,545	29,709	148,545
			<i>Subtotal</i>		18	8,929	44,645	82,358	411,790	91,287	456,435
	9	Khartoum State	22	Rural	5	1,115	5,575	22,885	114,425	24,000	120,000
			23	Rural Sharg	4	1,232	6,160	0	0	1,232	6,160
<i>Subtotal</i>		9	2,347	11,735	22,885	114,425	25,232	126,160			
<b>GRAND TOTAL</b>					<b>138</b>	<b>211,773</b>	<b>1,181,538</b>	<b>462,693</b>	<b>2,571,315</b>	<b>674,466</b>	<b>3,752,853</b>

## 10. Annex A: Bibliography

- Aguilar, Araujo, Quesada-Aguilar (2007): *Reforestation, Afforestation, Deforestation, Climate Change and Gender*. In: [http://cmsdata.iucn.org/downloads/gender\\_factsheet\\_forestry.pdf](http://cmsdata.iucn.org/downloads/gender_factsheet_forestry.pdf) [last accessed: 12/10/2014].
- Care International (2012): *Sudan Gender Analysis*. Draft. Unpublished.
- GCF, (2011): *Governing Instrument*. In: [https://www.greenclimate.fund/documents/20182/56440/Governing\\_Instrument.pdf/caa6ce45-cd54-4ab0-9e37-fb637a9c6235](https://www.greenclimate.fund/documents/20182/56440/Governing_Instrument.pdf/caa6ce45-cd54-4ab0-9e37-fb637a9c6235) [last accessed: 19/08/2016].
- GCF, Green Climate Fund (2014): *Gender Policy and Gender Action Plan. Eighth Meeting of the Board*, Bridgetown, Barbados. In: [https://www.greenclimate.fund/documents/20182/24946/GCF\\_B.08\\_19\\_-\\_Gender\\_Policy\\_and\\_Action\\_Plan.pdf/afd29fd9-3efa-41c3-8318-7d86587c7701?version=1.1](https://www.greenclimate.fund/documents/20182/24946/GCF_B.08_19_-_Gender_Policy_and_Action_Plan.pdf/afd29fd9-3efa-41c3-8318-7d86587c7701?version=1.1) [last accessed: 19/08/2016].
- GCF, Green Climate Fund (unknown): *Gender and Climate Change Toolkit*. Unpublished.
- HCENR (2007): *National Adaptation Programme of Action*. In: <http://unfccc.int/resource/docs/napa/sdn01.pdf> [last accessed: 19/08/2016].
- HCENR (2014): *Climate Risk Finance for Sustainable and Climate Resilient Rain-fed Farming and Pastoral Systems Sudan*. In: [https://info.undp.org/docs/pdc/Documents/SDN/Signed\\_cover\\_page\\_of\\_CRF\\_prodoc.pdf](https://info.undp.org/docs/pdc/Documents/SDN/Signed_cover_page_of_CRF_prodoc.pdf) [last accessed: 19/08/2016].
- HCENR (2016a): *National Adaptation Plan*. Khartoum, Sudan. Unpublished.
- HCENR (2016b): *Building Resilience in the Face of Climate Change within Traditional Rain-Fed Agricultural and Pastoral Systems in Sudan. Concept Note to the Green Climate Fund*. Khartoum, Sudan. Unpublished.
- HCENR and United Nations Development Programme-Sudan (2016): *Implementing Priority Adaptation Measures to Build Resilience of Rain-fed Farmer and Pastoral Communities of Sudan, especially Women-headed Households, to the Adverse Impacts of Climate Change*. Report on Gender Analysis. Khartoum, Sudan. Unpublished.
- HCENR, Higher Council for Environment and Natural Resources (2012): *Implementing NAPA Priority Interventions to build resilience in the agriculture and water sectors to the adverse impacts of climate change in Sudan. NAPA Best Practices in Sudan. Documentation Study*. Khartoum, Sudan.
- Ibnouf, Fatma Osman (2009): The role of Women in Providing and Improving Household Food Security in Sudan. Implications for Reducing Hunger and Malnutrition. *Journal of International Women's Studies*, 10(4).
- Karshenas, Massoud (2001). "Agriculture and Economic Development in sub-Saharan Africa and Asia". *Cambridge Journal of Economics*. 25 (3): 315–342. doi:10.1093/cje/25.3.315.
- MEFPD, Ministry of Environment, Forestry and Physical Development (2013): *Sudan. Second National Communications under the United Nations Framework Convention on Climate Change*. In: <http://unfccc.int/resource/docs/natc/sudnc2.pdf> [last accessed: 19/08/2016].
- MSWWCA, Ministry of Social Welfare, Women Child Affairs (2007): *Women Empowerment Policy*. March 2007. In:

[http://www.africanchildforum.org/clar/policy%20per%20country/sudan/sudan\\_woman\\_2007\\_en.pdf](http://www.africanchildforum.org/clar/policy%20per%20country/sudan/sudan_woman_2007_en.pdf) [last accessed: 19/08/2016].

The Politics of Women's Representation in Sudan: Debating Women's Rights in Islam from the Elites to the Grassroots. CMI Report, 2010.

OECD. 2019. Gender, Institutions and Development Database 2019  
<https://stats.oecd.org/Index.aspx?DataSetCode=GIDDB2019>

The Republic of Sudan. National Population Council (NPC/GS) Ministry of Welfare and Social Security. Sudan Millennium Development Goals Progress Report 2010

UNDP, United Nations Development Programme (2001), *Introductory Gender Analysis & Gender Planning Training Module for UNDP Staff*, New York.

World Bank. 2019. Data <https://data.worldbank.org/> (Accessed 20 March 2020)

World Bank, (1996), *Participation Sourcebook; Appendix I, Method and Tools*, Washington D.C.

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