Funding Proposal

FP139: Building resilience in the face of climate change within traditional rain fed agricultural and pastoral systems in Sudan

Sudan | United Nations Development Programme (UNDP) | Decision B.26/02

21 August 2020
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
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**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.

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Please submit the completed proposal to:

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

<table>
<thead>
<tr>
<th>A.1. Project or programme</th>
<th>Project</th>
<th>A.2. Public or private sector</th>
<th>Public</th>
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<tr>
<td>A.3. Request for Proposals (RFP)</td>
<td>If the funding proposal is being submitted in response to a specific GCF Request for Proposals, indicate which RFP it is targeted for. Please note that there is a separate template for the Simplified Approval Process and REDD+.</td>
<td>Not applicable</td>
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<td>A.4. Result area(s)</td>
<td>Check the applicable GCF result area(s) that the overall proposed project/programme targets. For each checked result area(s), indicate the estimated percentage of GCF budget devoted to it. The total of the percentages when summed should be 100%.</td>
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**Mitigation:** Reduced emissions from:
- ☐ Energy access and power generation:
- ☐ Low-emission transport:
- ☐ Buildings, cities, industries and appliances:
- ☐ Forestry and land use:

**GCF contribution:**
- Enter number %
- Enter number %
- Enter number %
- Enter number %

**Adaptation:** Increased resilience of:
- ☒ Most vulnerable people, communities and regions:
- ☐ Health and well-being, and food and water security:
- ☐ Infrastructure and built environment:
- ☐ Ecosystem and ecosystem services:

**A.5. Expected mitigation impact** | NA | A.6. Expected adaptation impact | 1,181,538 (direct) and 2,499,712 (indirect) beneficiaries, 21% of population |
| A.7. Total financing (GCF + co-finance) | 41,185,114 USD | A.9. Project size | Small (Upto USD 50 million) |
| A.8. Total GCF funding requested | 25,645,114 USD | | |

**A.10. Financial instrument(s) requested for the GCF funding**
- ☒ Grant 25,645,114 USD
- ☐ Loan Enter number
- ☐ Guarantee Enter number
- ☐ Equity Enter number
- ☐ Results-based payment Enter number

**A.11. Implementation period** | 5 years, 0 months | A.12. Total lifespan | 25 years |
| A.13. Expected date of AE internal approval | 5/19/2020 | A.14. ESS category | B |

**A.15. Has this FP been submitted as a CN before?** | Yes ☒ No ☐ | A.16. Has Readiness or PPF support been used to prepare this FP? | Yes ☐ No ☒ |
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.

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.

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.

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.

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.
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 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.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.1

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

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1 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.
• 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 sensitive 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.
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
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 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 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 advisors 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 cultivable 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

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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$^3$, or 1.46 Mm$^3$ 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
rams 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$^3$ 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 rainfall. 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$^3$ 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
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.

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.

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 19d 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.
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 Mm³/year which is well below annual recharge rates that range from 375 Mm³/year for shallow (i.e., less than 10 meters to the groundwater table) alluvial aquifers to 600 Mm³/year for the Nubian Sandstone aquifer and 1,915 Mm³/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 Mm³/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
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 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 OCIMP.
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/famer 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)

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<td>(v) Reimbursable grants</td>
<td>Enter amount</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(vi) Grants</td>
<td>25,645.114</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(vii) Results-based payments</td>
<td>Enter amount</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total amount: 25,645.114 million USD ($)

(b) Co-financing information

<table>
<thead>
<tr>
<th>Name of institution</th>
<th>Financial instrument</th>
<th>Amount</th>
<th>Currency</th>
<th>Tenor &amp; grace</th>
<th>Pricing</th>
<th>Seniority</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal Ministry of Agriculture and Forestry</td>
<td>Grant</td>
<td>15,000,000</td>
<td>million USD ($)</td>
<td>5 years</td>
<td>Enter %</td>
<td>Options</td>
</tr>
<tr>
<td>UNDP</td>
<td>Grant</td>
<td>0.540,000</td>
<td>million USD ($)</td>
<td>5 years</td>
<td>Enter %</td>
<td>Options</td>
</tr>
</tbody>
</table>

Click here to enter text.

(c) Total financing

(c) = (a)+(b)

Total amount: 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

<table>
<thead>
<tr>
<th>Output</th>
<th>Activity</th>
<th>Indicative cost USD ($)</th>
<th>GCF financing</th>
<th>Co-financing</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Activity 1.1: Introduce drought-resistant seed varieties of sorghum, millet, groundnut and wheat that have demonstrated greater yields in the face of climatic changes through village procurement systems</td>
<td>3,908,212</td>
<td>2,960,212</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Activity 1.2: Introduce sustainable practices in agricultural production at the community level. This involves the introduction of greater irrigation efficiency in the</td>
<td>4,689,000</td>
<td>3,451,000</td>
</tr>
</tbody>
</table>
### Output 1: Improved management of water resources benefitted by at least 200,000 households and farmers and pastoralists with 35% women participation

| Activity 1.3: Introduce rangeland management practices that reduce communal lands stress on demonstration farms and 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 degradation | 3,163,000 | 1,925,000 | Grants | 1,238,000 | Grants
| Federal Ministry of Agriculture and Forestry |

#### Output 1 Total

| 13,498,212 | 9,126,212 | 4,372,000 |

### Output 2: Improved access to 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/water wells for drinking water and livestock and small-scale irrigation in targeted locations | 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 | 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 | 5,414,500 | 4,346,500 | Grants | 1,068,000 | Grants
| Federal Ministry of Agriculture and Forestry |

#### Output 2 Total

| 23,899,347 | 14,321,347 | 9,578,000 |

### 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 | 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 | 947,500 | 422,500 | Grants | 525,000 | Grants
| Federal Ministry of Agriculture and Forestry |

#### Output 3 Total

| 2,374,110 | 1,324,110 | 1,050,000 |

### Project management

| 1,413,445 | 873,445 | Grants | 540,000 | Grants
| UNDP |

#### Indicative total cost (USD)

| 41,185,114 | 25,645,114 | 15,540,000 |
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 with 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 grassroots 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 (though 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; c) improved tree cover in household vegetable gardens that will improve micro-climates; d) 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 with 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 dependable 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.
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 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 minimum. 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 intercropping, agroforestry, improved livestock diets, women’s home gardens, microfertilization, 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 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%.

<table>
<thead>
<tr>
<th>Benefit scenarios</th>
<th>Cost scenarios</th>
<th>Base Case</th>
<th>+10%</th>
<th>+20%</th>
<th>+30%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>NPV (million 2017 US$)</td>
<td>IRR (%)</td>
<td>NPV (million 2017 US$)</td>
<td>IRR (%)</td>
</tr>
<tr>
<td>Base Case</td>
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<td>$27.86</td>
<td>21.95%</td>
<td>$24.34</td>
<td>19.59%</td>
</tr>
<tr>
<td>-10%</td>
<td></td>
<td>$21.55</td>
<td>19.35%</td>
<td>$18.03</td>
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<td>$8.93</td>
<td>14.01%</td>
<td>$5.40</td>
<td>12.24%</td>
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</table>
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

Choose the appropriate 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.

<table>
<thead>
<tr>
<th>E.2.1. Expected tonnes of carbon dioxide equivalent (t CO₂eq) to be reduced or avoided (mitigation and cross-cutting only)</th>
<th>Annual</th>
<th>Click here to enter text. t CO₂eq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lifetime</td>
<td>Click here to enter text. t CO₂eq</td>
<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>E.2.2. Estimated cost per t CO₂eq, defined as total investment cost / expected lifetime emission reductions (mitigation and cross-cutting only)</th>
<th>(a) Total project financing</th>
<th>Choose an item.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(b) Requested GCF amount</td>
<td>Choose an item.</td>
<td></td>
</tr>
<tr>
<td>(c) Expected lifetime emission reductions</td>
<td>t CO₂eq</td>
<td></td>
</tr>
<tr>
<td>(d) Estimated cost per t CO₂eq (d = a / c)</td>
<td>Choose an item. / t CO₂eq</td>
<td></td>
</tr>
<tr>
<td>(e) Estimated GCF cost per t CO₂eq removed (e = b / c)</td>
<td>Choose an item. / t CO₂eq</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>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)</th>
<th>(f) Total finance leveraged</th>
<th>Choose an item.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(g) Public source co-financed</td>
<td>Choose an item.</td>
<td></td>
</tr>
<tr>
<td>(h) Private source finance leveraged</td>
<td>Choose an item.</td>
<td></td>
</tr>
<tr>
<td>(i) Total Leverage ratio (i = f / b)</td>
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</tr>
<tr>
<td>(j) Public source co-financing ratio (j = g / b)</td>
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<td></td>
</tr>
<tr>
<td>(k) Private source leverage ratio (k = h / b)</td>
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E.2.4. Expected total number of direct and indirect beneficiaries, (disaggregated by sex)

<table>
<thead>
<tr>
<th>Direct</th>
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<tbody>
<tr>
<td>35% female</td>
<td></td>
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</table>

<table>
<thead>
<tr>
<th>Indirect</th>
<th>2,499,712</th>
</tr>
</thead>
<tbody>
<tr>
<td>35% female</td>
<td></td>
</tr>
</tbody>
</table>

For a multi-country proposal, indicate the aggregate amount here and provide the data per country in annex 17.

E.2.5. Number of beneficiaries relative to total population (disaggregated by sex)

<table>
<thead>
<tr>
<th>Direct</th>
<th>10% (Expressed as %) of country(ies)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect</td>
<td>22% (Expressed as %) of country(ies)</td>
</tr>
</tbody>
</table>

For a multi-country proposal, leave blank and provide the data per country in annex 17.
E.3. Fund-level impacts

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.

<table>
<thead>
<tr>
<th>Expected Results</th>
<th>Indicator</th>
<th>Means of Verification (MoV)</th>
<th>Baseline</th>
<th>Target</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mid-term</td>
<td>Final</td>
<td></td>
</tr>
</tbody>
</table>

**A1.0 Increased resilience and enhanced livelihoods of the most vulnerable people, communities and regions**

<table>
<thead>
<tr>
<th>A1.1 Change in expected losses of lives and economic assets (US$) due to the impact of extreme climate-related disasters</th>
<th>Counterfactual impact analysis before and after project activities</th>
<th>0</th>
<th>NA</th>
<th>• Loss of lives directly due to extreme climatic events is zero</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Economic assets are 10% to 25% greater than counterfactual case</td>
<td></td>
<td></td>
<td>• An accurate definition of the counterfactual case (i.e., without project interventions under climatic extremes) is possible</td>
</tr>
<tr>
<td></td>
<td>• Contractor to be recruited to carry out independent impact analysis (before and after)</td>
<td></td>
<td></td>
<td>• Mid-term target not available due to timing of impact analysis (i.e., before and after project activities)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A1.2 Number of males and females benefiting from the adoption of diversified climate resilient livelihood options (including fisheries, agriculture, tourism, etc.)</th>
<th>Agricultural extension services databases and surveys on rainfed agriculture patterns</th>
<th>0</th>
<th></th>
<th>• Local communities are willing to fundamentally alter their current farming and pastoralist practices to cope with climate change, hence ushering in paradigm shift</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Gender-sensitive surveys undertaken within targeted communities</td>
<td></td>
<td></td>
<td>• Local communities are willing to fundamentally alter their current farming and pastoralist practices to cope with climate change, hence ushering in paradigm shift</td>
</tr>
<tr>
<td></td>
<td>• Quarterly field/laboratory testing and measurements to establish water quality</td>
<td></td>
<td></td>
<td>• 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</td>
</tr>
<tr>
<td></td>
<td>• Quarterly field-based measurements to ensure water supply matches design specifications</td>
<td></td>
<td></td>
<td>• 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</td>
</tr>
</tbody>
</table>

**A2.0 Increased resilience of health and well-being, and food and water security**

<table>
<thead>
<tr>
<th>A2.1 Number of males and females with yearround access to reliable and safe water supply despite climate shocks and stresses</th>
<th>Gender-sensitive surveys undertaken within targeted communities</th>
<th>0</th>
<th></th>
<th>• Local communities are willing to fundamentally alter their current farming and pastoralist practices to cope with climate change, hence ushering in paradigm shift</th>
</tr>
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<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>A2.2 Number of males and females with yearround access to reliable and safe water supply despite climate shocks and stresses</th>
<th>• 450,000 subsistence agro-pastoralists (292,500 males and 157,500 females),</th>
<th>0</th>
<th></th>
<th>• Local communities are willing to fundamentally alter their current farming and pastoralist practices to cope with climate change, hence ushering in paradigm shift</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• 112,500 nomadic pastoralists (73,125 males and 39,375 females)</td>
<td></td>
<td></td>
<td>• 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</td>
</tr>
<tr>
<td></td>
<td>• 945,230 subsistence agro-pastoralists (614,400 males and 330,830 females)</td>
<td></td>
<td></td>
<td>• 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</td>
</tr>
<tr>
<td></td>
<td>• 236,308 nomadic pastoralists (153,600 males and 82,707 females)</td>
<td></td>
<td></td>
<td>• 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</td>
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</tbody>
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</tr>
</tbody>
</table>
## E.4. Fund-level outcomes

<table>
<thead>
<tr>
<th>Expected Outcomes</th>
<th>Indicator</th>
<th>Means of Verification (MoV)</th>
<th>Baseline</th>
<th>Target</th>
<th>Assumptions</th>
</tr>
</thead>
</table>
| A5.0 Strengthened institutional and regulatory systems for climate-responsive planning and development | A5.1 Institutional and regulatory systems that improve incentives for climate resilience and their effective implementation | • National register of regulations  
• Guidelines for local resilience-building incentives | • Number of mechanisms: 0  
• Outdated codes for water infrastructure and agricultural development that lack climate risk considerations | • Number of mechanisms: 1  
• National policies and regulations proposed and finalized for improving climate resilience incentives in water and agriculture | • Federal authorities maintain commitment to overcome implement legal-regulatory-coordination barriers to establish formal climate resilience incentive regulatory regime  
• A scorecard approach to measuring effective implementation of national policies and regulations is adequate |
| A5.2 Number and level of effective coordination mechanisms | • Institutional capacity assessment as part of initial surveys  
• Reports and minutes from state-federal coordination meetings | • No institutional mechanism in place to facilitate coordination of resilience-building measures between federal and state agencies | • Institutional framework to facilitate coordination of resilience-building measures between federal and state agencies, proposed and finalized | • The total number of coordination mechanisms between federal and state agencies established within formal regulations |
| A6.0 Increased generation and use of climate information in decision-making | A6.2 Use of climate information products/services in decision-making in climate-sensitive sectors | • Households surveys conducted annually | • 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. | • 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. |
| A7.0 Strengthened adaptive capacity and reduced exposure to climate risks | 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 | • No vulnerable agro-pastoralist households in the targeted localities use any fund-supported strategies to respond to climate change and variability. | • Farmer direct beneficiaries experience an increase in crop yields of at least 10% relative to average historical yields from agricultural interventions. | • Farmer direct beneficiaries experience an increase in crop yields of at least 30% relative to average historical yields from agricultural interventions. |

- **Indicators**: A5.1, A5.2, A6.2, A7.1
- **MoVs**: National register of regulations, guidelines for local resilience-building incentives, institutional capacity assessment, reports and minutes from state-federal coordination meetings, household surveys conducted annually, no vulnerable agro-pastoralist households in the targeted localities use any fund-supported strategies to respond to climate change and variability.
- **Baseline**: Number of mechanisms: 0, outdated codes for water infrastructure and agricultural development that lack climate risk considerations.
- **Target**: Number of mechanisms: 1, national policies and regulations proposed and finalized for improving climate resilience incentives in water and agriculture.
- **Assumptions**: Federal authorities maintain commitment to overcome legal-regulatory-coordination barriers to establish formal climate resilience incentive regulatory regime; a scorecard approach to measuring effective implementation of national policies and regulations is adequate; 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; farmer direct beneficiaries experience an increase in crop yields of at least 30% relative to average historical yields from agricultural interventions.
### E.5. Project/programme performance indicators

<table>
<thead>
<tr>
<th>Expected Results</th>
<th>Indicator</th>
<th>Means of Verification (MoV)</th>
<th>Baseline</th>
<th>Target</th>
<th>Assumptions</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Percentage increase in average annual crop yields</td>
<td>Agricultural surveys within targeted communities</td>
<td>Annual crop yields or sorghum and millet in decline</td>
<td>20% increase in sorghum and millet crop yields</td>
<td>40% increase in sorghum and millet crop yields</td>
</tr>
<tr>
<td></td>
<td>Perception of effectiveness of climate resilience measures in agriculture and water</td>
<td>Qualitative surveys of village leaders through structured interviews</td>
<td>Poor perception among agro-pastoralists of the effectiveness of climate resilience measures that improve food/water security</td>
<td>A simple majority of people interviewed have favorable perception of resiliency benefits of project interventions</td>
<td>A two-thirds majority of people interviewed have favorable perception of resiliency benefits of project interventions</td>
</tr>
<tr>
<td></td>
<td>Percentage of early adopters among indirect beneficiaries</td>
<td>Household surveys in vicinity but outside targeted communities to assess level of early adoption</td>
<td>Local populations unaware of potential benefits of interventions</td>
<td>A simple majority of non-participating population has positive perception of project benefits</td>
<td>A two-thirds majority of non-participating population has positive perception of project benefits</td>
</tr>
<tr>
<td></td>
<td>Number of women participating in sandug microfinance arrangements for agricultural inputs</td>
<td>Qualitative gender-sensitive surveys within targeted communities</td>
<td>None to few women participating in microfinance arrangements for agricultural inputs</td>
<td>Microfinance arrangements in place being actively accessed by at least 20% of women beneficiaries</td>
<td>Robust microfinance arrangements in place being actively accessed by at least 50% of women beneficiaries</td>
</tr>
<tr>
<td></td>
<td>GHG sequestration as a result of improved land and forest management</td>
<td>Calculated estimates of annual carbon storage in rehabilitated rangelands, afforested areas, and shelterbelts</td>
<td>Annual carbon storage in rangelands and afforested areas is in decline</td>
<td>Up to an incremental 30,000 tCO2e sequestered by the middle of the project in rehabilitated rangelands, afforested areas and shelterbelts</td>
<td>Up to an incremental 90,000 tCO2e sequestered by the end of the project in rehabilitated rangelands, afforested areas and shelterbelts</td>
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<tr>
<td>Output 1:</td>
<td>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.</td>
<td></td>
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</tr>
</tbody>
</table>
### Output 2: Improved access of water for human, livestock and irrigation to sustain livelihoods in the nine targeted states benefiting at least 200,000 households

<table>
<thead>
<tr>
<th><strong>Water fetching time savings for women and girls (% reduction in monthly time spent)</strong></th>
<th><strong>Qualitative gender-sensitive surveys within targeted communities</strong></th>
<th><strong>Local communities with sharply constrained access to sustainable water supply</strong></th>
<th><strong>25% reduction in the time spent in fetching water by women and young girls</strong></th>
<th><strong>50% reduction in the time spent in fetching water by women and young girls</strong></th>
<th><strong>Local communities are supportive and engaged in the implementation of water supply infrastructure;</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Water fetching time savings for women and girls (% reduction in monthly time spent)</td>
<td>• Qualitative gender-sensitive surveys within targeted communities</td>
<td>• Local communities with sharply constrained access to sustainable water supply</td>
<td>• Large monthly time allotment for water fetching (i.e., 2 hours per day; roughly 60 hours per month)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 25% reduction in the time spent in fetching water by women and young girls</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• 50% reduction in the time spent in fetching water by women and young girls</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Local communities are supportive and engaged in the implementation of water supply infrastructure;</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th><strong>Number of extension workers trained</strong></th>
<th><strong>Pre- and post-training assessment of extension workers participating in project trainings</strong></th>
<th><strong>No extension workers equipped with knowledge of climate resilient practices</strong></th>
<th><strong>Up to 800 extension workers trained</strong></th>
<th><strong>Up to 1,750 extension workers trained</strong></th>
<th><strong>Local governments are supportive and engaged in training activities; Extreme climatic events do not disrupt the implementation of training activities</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>• Number of extension workers trained</td>
<td>• Pre- and post-training assessment of extension workers participating in project trainings</td>
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</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• Local governments are supportive and engaged in training activities; Extrem</td>
</tr>
<tr>
<td>of farmers and pastoralists participating in project trainings</td>
<td>climate resilient practices</td>
<td>village extension networks and development committees trained</td>
<td>networks and development committees trained</td>
<td>participate in training activities that aim to modify their current farming and pastoralist practices</td>
<td></td>
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<td>---</td>
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<td></td>
</tr>
<tr>
<td>Extreme climatic events do not disrupt the implementation of training activities</td>
<td>Number of training workshops held</td>
<td>Workshop completion and evaluation surveys</td>
<td>No resilience-building training activities in place</td>
<td>At least 10 training workshops held</td>
<td></td>
</tr>
<tr>
<td>At least 25 training workshops held</td>
<td>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.</td>
<td></td>
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</tr>
</tbody>
</table>
### E.6. Activities

<table>
<thead>
<tr>
<th>Activity</th>
<th>Description</th>
<th>Sub-activities</th>
<th>Deliverables</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity 1.1:</strong> Introduction of drought-resistant seed varieties of sorghum, millet, groundnut and wheat that have demonstrated greater yields in the face of climatic changes through village procurement systems</td>
<td>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</td>
<td>1.1.1 Develop and implement programme for drought tolerant and early maturing certified seed distribution&lt;br&gt;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&lt;br&gt;1.1.3 Establish climate adapted seed multiplication farms&lt;br&gt;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</td>
<td>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:&lt;br&gt;- Designing adequate distribution/adoption programme, subsequently implemented (1.1.1)&lt;br&gt;- Sorghum and millet drought-resistant seeds introduced (1.1.2);&lt;br&gt;- A total of 130,000 small holder farmer households in the target villages to participate (about 86% of directly benefiting households) (1.1.4);&lt;br&gt;- 100 hectares of climate adapted seed multiplication farms (1.1.3)&lt;br&gt;- Programmes for seed procurement for up to 7,500 hectares and implemented in collaboration with village-level leadership committees (1.1.4);&lt;br&gt;- 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)</td>
</tr>
<tr>
<td><strong>Activity 1.2:</strong> 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</td>
<td>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.</td>
<td>1.2.1 Establish integrated women sustainable agriculture farms (i.e. seed priming; fertilizer micro-dosing; intercropping, etc)&lt;br&gt;1.2.2 Establish sustainable women-centered home gardens&lt;br&gt;1.2.3 Train farmers on sustainable wadi cultivated practices and subsequent cultivation in at least 5 specific wadi/depression zones&lt;br&gt;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)&lt;br&gt;1.2.5 Set up climate adaptation-oriented Farmers’ Field Schools</td>
<td>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:&lt;br&gt;- A range of sustainable practices that aim to strengthen small holder farmer resilience to recurrent drought conditions introduced (1.2.4);&lt;br&gt;- Integrated women sustainable farms per village (total of 100) showcasing the new technologies and practices established (1.2.1);&lt;br&gt;- 5,000 hectares of climate adapted home gardens for women (1.2.2)&lt;br&gt;- Small scale irrigation of 2,500 hectares near wadis (1.2.3)&lt;br&gt;- Farmer training programmes for up to 750 persons, developed and implemented to ensure long-term adoption of sustainable practices (1.2.4);&lt;br&gt;- 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)</td>
</tr>
<tr>
<td><strong>Activity 1.3:</strong> Introduction of rangeland management practices that reduce pastoral stress on communal lands through demonstration farms and rangeland rehabilitation techniques</td>
<td>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</td>
<td>1.3.1 Develop technical guideline for climate adaptive rangeland management&lt;br&gt;1.3.2 Establish communal rangeland reserves for drought resistant rangeland seed production&lt;br&gt;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</td>
<td>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:&lt;br&gt;- A working handbook of practices for rangeland management that have proven effective under recurrent drought conditions developed (1.3.1);&lt;br&gt;- A total of 2,000 hectares of communal rangeland reserves established for drought resistant rangeland seed production (1.3.2)&lt;br&gt;- A total of 2,000 hectares of degraded rangelands rehabilitated (1.3.3);</td>
</tr>
<tr>
<td>Activity 1.4: Establish shelterbelts/agroforestry to improve productivity and reduce land and environmental degradation. This involves the planting of trees to absorb energy from dust storms and protection of cultivable areas</td>
<td>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.</td>
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<tr>
<td>• A total of 2,500 hectares of rangelands rehabilitated (1.3.3);</td>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-activities are designed to protect project interventions in cultivable areas by mitigating erosion impacts from strong winds through afforestation. Key deliverables are:</td>
<td>Sub-activities are designed to increase water availability by exploiting renewable groundwater aquifers. Key deliverables are:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Village women’s groups established to manage 30 small-scale tree nurseries totaling 500,000 multipurpose seedlings (1.4.1);</td>
<td>• Rehabilitation of boreholes, storage tanks, and irrigation systems for 30 existing water yards (2.1.1);</td>
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<tr>
<td>• 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);</td>
<td>• Construction of 50 new water yards, comprising boreholes, solar pumps, storage tanks, and irrigation (2.1.2);</td>
<td></td>
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</tr>
<tr>
<td>• 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).</td>
<td></td>
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</tr>
<tr>
<td>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</td>
<td>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.</td>
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</tr>
<tr>
<td>Activity will install new 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</td>
<td>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</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sub-activities are designed to increase water availability by exploiting renewable groundwater aquifers.</td>
<td>Sub-activities are designed to increase water availability by capturing and storing rainwater.</td>
<td></td>
<td></td>
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<tr>
<td>• Construction of 30 new sand water-storage dams (2.2.1);</td>
<td>• Construction of 30 new sand water-storage dams (2.2.1);</td>
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<tr>
<td>• Installation of 50 solar pumps, and small-scale irrigation systems in vicinity of the sand dams in support of interventions (2.2.2);</td>
<td>• Installation of 50 solar pumps, and small-scale irrigation systems in vicinity of the sand dams in support of interventions (2.2.2);</td>
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<tr>
<td>• 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)</td>
<td>• Community training programmes for up to 250 persons, developed and implemented to ensure effective long-term maintenance of the water yards (2.1.3);</td>
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<tr>
<td>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</td>
<td>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.</td>
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<tr>
<td>Activity will install new sand water-storage dams in drought-prone areas</td>
<td>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 2.2.3 Provide training for operation and maintenance of sand water-storage dam and solar pumps for water management scheme</td>
<td></td>
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<tr>
<td>Sub-activities are designed to increase water availability by capturing and storing rainwater. Key deliverables are:</td>
<td>Sub-activities are designed to increase water availability during periods of low rainfall through enhanced water harvesting. Key deliverables are:</td>
<td></td>
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<tr>
<td>• Construction of 75 new hafirs with a total daily water storage capacity of 50,000 m³ (2.3.1);</td>
<td>• Construction of 75 new hafirs with a total daily water storage capacity of 50,000 m³ (2.3.1);</td>
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<tr>
<td>• Training manual for hafir construction and maintenance (2.3.2);</td>
<td>• Training manual for hafir construction and maintenance (2.3.2);</td>
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<tr>
<td>• Community training programmes for up to 1,200 persons, developed and implemented to ensure effective long-term maintenance of hafir structures (2.3.3)</td>
<td>• Community training programmes for up to 1,200 persons, developed and implemented to ensure effective long-term maintenance of hafir structures (2.3.3)</td>
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<tr>
<td>Activity 2.3: 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</td>
<td>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.</td>
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<tr>
<td>Activity will install new and rehabilitate existing hafirs, including by repair of earthen embankments and thorny wire fencing, as well as construction of new hafirs</td>
<td>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</td>
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<tr>
<td>Sub-activities are designed to increase drinking water availability during periods of low rainfall through enhanced water harvesting.</td>
<td>Sub-activities are designed to increase water availability by capturing and storing rainwater.</td>
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<tr>
<td>Activity 3.1: Train extension officers and other government stakeholders on climate change resilience and adaptation related issues. This</td>
<td>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</td>
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<tr>
<td>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</td>
<td>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</td>
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<tr>
<td>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:</td>
<td>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:</td>
<td></td>
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<tr>
<td>Activity 3.1: Increase institutional understanding of climate change risks and capacities to address climate change adaptation measures</td>
<td>Activity 3.2: 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</td>
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<tr>
<td>3.1.3 Train extension staff from Ministry of Agriculture and concerned government agencies</td>
<td>3.2.1 Conduct climate resilience training of village extension networks</td>
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<tr>
<td>3.1.4 Develop a guideline on adaptation measures for up-scaling to other localities</td>
<td>3.2.2 Conduct training of village development committees</td>
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<td>3.1.5 Develop a manual of best practices on climate change adaptation measures</td>
<td>3.2.3 Carry out awareness-raising campaigns on building resilience to climate change</td>
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<td></td>
<td>3.2.4 Facilitate exchange visits of communities and extension staff across localities</td>
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<td></td>
<td>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:</td>
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<tr>
<td></td>
<td>• 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);</td>
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<td></td>
<td>• 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);</td>
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<tr>
<td></td>
<td>• Development of climate change awareness-raising programmes (3.2.3)</td>
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<td></td>
<td>• Promotion of exchange of lessons learned across villages and neighboring localities (3.2.4)</td>
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<td></td>
<td>• Training of up to 5,000 stakeholders in village extensions networks (3.2.2);</td>
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<td></td>
<td>• Training of up to 500 stakeholders in village development committees (3.2.2);</td>
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<td></td>
<td>• Facilitation of exchange visits for up to 2,500 persons (3.2.4)</td>
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<td></td>
<td>• Farmer training programmes for up to 500 persons, developed and implemented to ensure long-term adoption of drought-resistant seed packages (3.2.2)</td>
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</tbody>
</table>

**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.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Sub-activity</th>
<th>All households in project villages</th>
<th>All leadership committees in project villages</th>
<th>Selected beneficiaries</th>
<th>All concerned agencies in project states</th>
</tr>
</thead>
<tbody>
<tr>
<td>Activity 1.1: Drought-Resilient Seed Varieties</td>
<td>1.1.1 Develop and implement programme for drought tolerant and early maturing certified seed distribution</td>
<td>✓</td>
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<td>5</td>
</tr>
<tr>
<td></td>
<td>1.1.2 Replicate successful implementation of drought tolerant and early maturing seed varieties of sorghum, millet, and wheat to neighboring communities through participatory process</td>
<td>✓</td>
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<tr>
<td></td>
<td>1.1.3 Establish climate adapted seed multiplication farms</td>
<td>✓</td>
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<td></td>
<td>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</td>
<td>✓</td>
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<tr>
<td></td>
<td>1.1.5 Facilitation of access to micro-financing schemes</td>
<td>✓</td>
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<tr>
<td>Activity 1.2: Sustainable Practices in Agricultural Production</td>
<td>1.2.1 Establish integrated women sustainable agriculture farms (i.e. seed priming; fertilizer micro-dosing, intercropping, etc)</td>
<td>✓</td>
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<tr>
<td></td>
<td>1.2.2 Establish sustainable women-centered home gardens</td>
<td>✓</td>
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<td></td>
<td>1.2.3 Train farmers on sustainable wadi cultivated practices and subsequent cultivation in at least 5 specific wadi/depression zones</td>
<td>✓</td>
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<td></td>
<td>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)</td>
<td>✓</td>
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<td></td>
<td>1.2.5 Set up climate adaptation-oriented Farmers’ Field Schools</td>
<td>✓</td>
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<tr>
<td>Activity 1.3: Rangeland Management Practices</td>
<td>1.3.1 Develop technical guideline for climate adaptive rangeland management</td>
<td>✓</td>
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<td></td>
<td>1.3.2 Establish communal rangeland reserves for drought resistant rangeland seed production</td>
<td>✓</td>
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<td></td>
<td>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</td>
<td>✓</td>
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<tr>
<td>Activity 1.4: Shelterbelts/Afforestation</td>
<td>1.4.1 Develop and implement programme for a total of 30 multi-purpose tree nurseries to be run by women groups</td>
<td>✓</td>
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<tr>
<td></td>
<td>1.4.2 Establish shelterbelts with drip irrigation system</td>
<td>✓</td>
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<tr>
<td></td>
<td>1.4.3 Establish climate adaptive community-based afforestation</td>
<td>✓</td>
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<tr>
<td>Activity 2.1: Rehabilitation of Water Yards</td>
<td>2.1.1 Rehabilitation work for existing water yards to repair/replacement components as needed (e.g., borehole, storage tanks, animal watering basins, tap stands, solar pumps)</td>
<td>✓</td>
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<tr>
<td></td>
<td>2.1.2 Drilling of new water yards, including boreholes, solar pumps, storage tanks and small-scale irrigated plots in vicinity of water yards</td>
<td>✓</td>
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<tr>
<td></td>
<td>2.1.3 Conduct community training for maintenance in water yards</td>
<td>✓</td>
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<tr>
<td>Activity 2.2: Water Storage Dams in Drought-Prone Areas</td>
<td>2.2.1 Construct sand water-storage dams in drought-prone areas</td>
<td>✓</td>
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<tr>
<td></td>
<td>2.2.2 Install small pumping units around sand water-storage dam for sustainable agriculture</td>
<td>✓</td>
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</tbody>
</table>
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

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.

- 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

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.

- 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

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 leadership 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 anyone 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:

<table>
<thead>
<tr>
<th>GCF M&amp;E requirements</th>
<th>Primary responsibility</th>
<th>Indicative costs to be charged to the Project Budget(^3) (US$)</th>
<th>Time frame</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>GCF grant</td>
<td>Co-financing</td>
</tr>
<tr>
<td>Inception Workshop</td>
<td>UNDP Country Office</td>
<td>USD 11,000</td>
<td>None</td>
</tr>
<tr>
<td>Inception Workshop Report and baseline assessments</td>
<td>Project Manager</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>Standard UNDP monitoring and reporting requirements as outlined in the UNDP POPP</td>
<td>UNDP Country Office</td>
<td>None</td>
<td>None</td>
</tr>
</tbody>
</table>

\(^3\) Excluding project team staff time and UNDP staff time and travel expenses.
<table>
<thead>
<tr>
<th>Activity</th>
<th>Responsible party</th>
<th>Cost Estimate</th>
<th>Frequency</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monitoring of indicators in project results framework (including hiring of external experts, project surveys, data analysis etc.)</td>
<td>M&amp;E officer</td>
<td>Project lifetime: USD 90,000</td>
<td>None</td>
<td>Annually</td>
</tr>
<tr>
<td>Annual Project Report</td>
<td>Project Manager and UNDP Country Office and UNDP-GEF team</td>
<td>None</td>
<td>None</td>
<td>Annually</td>
</tr>
<tr>
<td>NIM Audit as per UNDP audit policies</td>
<td>UNDP Country Office</td>
<td>Per year: USD 10,000</td>
<td>None</td>
<td>Annually or other frequency as per UNDP Audit policies</td>
</tr>
<tr>
<td>Lessons learned, case studies, and knowledge generation</td>
<td>International consultant</td>
<td>Project lifetime: USD 100,000</td>
<td>None</td>
<td>Two times per project life</td>
</tr>
<tr>
<td>Monitoring of environmental and social risks, and corresponding management plans and monitoring of quality on drought tolerant seeds including travel as relevant</td>
<td>Project Manager UNDP CO</td>
<td>Project lifetime: USD 49,580</td>
<td>None</td>
<td>On-going</td>
</tr>
<tr>
<td>Monitoring of gender action plan</td>
<td>Project Manager UNDP CO</td>
<td>Project lifetime: USD 8,040</td>
<td>None</td>
<td>On-going</td>
</tr>
<tr>
<td>Monitoring of stakeholder engagement plan</td>
<td>Project Manager UNDP CO</td>
<td>Project lifetime: USD 76,380</td>
<td>None</td>
<td>On-going</td>
</tr>
<tr>
<td>Addressing environmental and social grievances</td>
<td>Project Manager UNDP Country Office BPPS as needed</td>
<td>None</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Project Board meetings</td>
<td>Project Board UNDP Country Office Project Manager</td>
<td>Per year: USD 2,300</td>
<td>None</td>
<td>At minimum annually</td>
</tr>
<tr>
<td>Supervision missions</td>
<td>UNDP Country Office</td>
<td>None^4</td>
<td>None</td>
<td>Two per year</td>
</tr>
<tr>
<td>Oversight missions</td>
<td>UNDP-GEF team</td>
<td>None^4</td>
<td>None</td>
<td>Troubleshooting as needed</td>
</tr>
<tr>
<td>GCF learning missions/site visits</td>
<td>UNDP Country Office and Project Manager UNDP-GEF team</td>
<td>None</td>
<td>None</td>
<td>To be determined.</td>
</tr>
<tr>
<td>Independent Mid-Term evaluation (MTE) and management response</td>
<td>UNDP Country Office and Project team and UNDP-GEF team</td>
<td>USD 50,000</td>
<td>None</td>
<td></td>
</tr>
<tr>
<td>Independent Final Evaluation included in UNDP evaluation plan, and management response</td>
<td>UNDP Country Office and Project team and UNDP-GEF team</td>
<td>USD 50,000</td>
<td>None</td>
<td>At least three months before operational closure</td>
</tr>
<tr>
<td>TOTAL indicative COST</td>
<td></td>
<td>USD 496,500</td>
<td>None</td>
<td></td>
</tr>
</tbody>
</table>

^4 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.

<table>
<thead>
<tr>
<th>Selected Risk Factor 1</th>
<th>Category</th>
<th>Probability</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Technical and operational</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td></td>
<td>Ineffectiveness of adaptation interventions to build resilience to climate change impacts</td>
<td></td>
</tr>
<tr>
<td><strong>Mitigation Measure(s)</strong></td>
<td></td>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Selected Risk Factor 2</th>
<th>Category</th>
<th>Probability</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Technical and operational</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td></td>
<td>Households and communities become unwilling to remain engaged in project activities</td>
<td></td>
</tr>
<tr>
<td><strong>Mitigation Measure(s)</strong></td>
<td></td>
<td>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.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Selected Risk Factor 3</th>
<th>Category</th>
<th>Probability</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Technical and operational</td>
<td>Low</td>
<td>Medium</td>
</tr>
<tr>
<td><strong>Description</strong></td>
<td></td>
<td>Local government office extension agents become unsupportive and/or unwilling to remain engaged in project activities</td>
<td></td>
</tr>
<tr>
<td><strong>Mitigation Measure(s)</strong></td>
<td></td>
<td>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</td>
<td></td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Category</th>
<th>Probability</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical and operational</td>
<td>Low</td>
<td>Low</td>
</tr>
</tbody>
</table>

**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

<table>
<thead>
<tr>
<th>Category</th>
<th>Probability</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical and operational</td>
<td>Low</td>
<td>High</td>
</tr>
</tbody>
</table>

**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 be 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 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 increase 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)


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/Natio nal%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

<table>
<thead>
<tr>
<th>Annex</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NDA no-objection letter</td>
</tr>
<tr>
<td>2</td>
<td>Feasibility study</td>
</tr>
<tr>
<td>3</td>
<td>Financial appraisal</td>
</tr>
<tr>
<td>4</td>
<td>Co-financing letter and letter of commitment letter for O&amp;M</td>
</tr>
<tr>
<td>5</td>
<td>Term Sheet</td>
</tr>
</tbody>
</table>
| 6     | a-Social and Environmental Screening Procedure (SESP)  
b-Environmental and Social Management Framework (ESMF)  
c-Environmental and Social Safeguards (ESS) Disclosure |
| 7     | Appraisal report |
| 8     | Evaluation report of baseline project |
| 9     | Maps |
| 10    | Timetable of project/programme implementation |
| 11    | Project confirmation |
| 12    | a-Economic Analysis (methodology)  
b-Economic Analysis (analysis in spreadsheet format) |
| 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 |
| 14    | Response to GCF comments |
| 15    | UNDP Endorsement letter |
| 16    | Monitoring and Evaluation plan |
| 17    | Legal due diligence |
| 18    | Accredited Entity Fee Request |
| 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.