Report on the consultations for support in preparing the adaptation component of the updated NDC project

Background

In accordance with the recent guidance from COP24 (2018), in particular Decision 4/CMA.1, para 7, Sudan intends to update and resubmit its Nationally Determined Contributions (NDC), with the overall objective of transforming it from a communication document into an action plan implementable within the agreed timeframe for NDC aiming to achieve thefollowing specific objectives under project

- Update the current NDC in line with the relevant COP decisions (since Paris 2015) including review of its timeframe, contributions and the information required to be reported

Climate change represent significant threat to food security and sustainable development in Sudan, as more than 70% of the livelihoods are dependent on vulnerable sectors. The national studies identified water, agriculture, coastal zone, and health sectors as most vulnerable sectors in the country. Accordingly, Sudan prioritizes action on climate change adaptation planning and implementation with the objectives of building resilience and facilitating the integration of climate change into development plans and strategies particularly as initiated by Sudan NAP IN 2016.
Since the INDC (2015) Sudan implemented/ implementing and identified several adaptation measures that are highly required for addressing climate change impacts in the 18 states of the country. The update of NDC will be informed by the ongoing work including the currently underway NAP Readiness project, that gives emphasis to enhancement of the level of precision of climate change data/information (for assessment of climate change impacts and vulnerability in the medium and long term), capacity building and strengthening national institutions. The third national communication that is currently had been finalized, conducted assessment of the current and projected CC vulnerability/impacts on the agriculture sector (farming system and livestock). The finding of these studies underlined the importance of preparedness for facing anticipated vulnerabilities/impacts, through implementation of the adaptation measures that build resilience in the vulnerable sectors.
In this report will update measures for adaptation sectors that are at high risk from the current and projected impacts of climate change, namely: water, agriculture, health and the coastal zone**.** The aim is to promote sustainable development that improves adaptive capacity and limit growth of GHG emissions through integration of CC issues and concerns into polices and development plans.

The main objective of the consultancy is to defined adaptation contributions from the priority sectors (water, agriculture, health and coastal zone) in the updated NDC.

This report contents:

- The priority contributions of adaptation sectors
- Elements of an adaptation communication
- list of stakeholders involved
- Other duties and responsibilities during the Consultation.

1. The priority contributions of adaptation sectorsWater Sector

Water sector:

Adaptation priority 1#	**Water Supply programme:** The aim is to achieve sustainable utilization of ground water, increased water resilience of households in vulnerable rural areas, through supply of drinking water (for both human and livestock) to all vulnerable states/localities in Sudan, including schools and health facilities
Relevance in the national context	Water Resources 2021-2031 Strategy (Water Supply Transformation Strategic Plan), National Policy on Drinking Water, Sanitation and Hygiene, 2011 (draft) and updated draft 2018; and (c) Sudan Country Strategy on Integrated Water Resources Management, 2007. NAP, NAPA
Main Outputs	• Reach 100 % access to water supply in rural and pastoralist areas based on population growth projections • Development and rehabilitation of water infrastructure: Water yards: 7765 - Mini water yards: 4,360 - Hand pumps, protected wells: 10,825 - Haffir/dam w/ treatment: 548 - Household or compound networks: 3,107513 = 15,537,565 people • Strengthening relevant institutions and stakeholders at the national and sub-national levels
Responsible institutions	Ministry of Irrigation and Water Resources
Mitigation co-benefits	Reduced emissions associated with water access and transportation and the cash related to water extraction and pumping through use of solar technologies
Cost	2.1 billion USD
Responsible institutions	Ministry of Irrigation and Water Resources, …… state
Mitigation co-benefits	
Cost	100 Million USD

Adaptation priority 2#	Building resilience against floods: aim is to build resilience and reduce risks and prevent loss of lives and assets in floods prone areas in (Darfur, Kassala, ….. states
Relevance in the national context	Water Resources 2021-2031 Strategy (Water Supply Transformation Strategic Plan), National Policy on Drinking Water, Sanitation and Hygiene, 2011 (draft) and updated draft 2018, and (c) Sudan Country Strategy on Integrated Water Resources Management, 2007. NAP, NAPA
Main Outputs	- Risk assessment and mapping of areas vulnerable to risks of floods - Strengthening preparedness and early warning system - Enable forecasting of extreme weather events including through: ➢ Installation of and operation of automatic water level instruments with satellite-based transmission technology ➢ Implementation and installation of automatic loggers and management of key locations in Sudan ➢ Implementation and installation of Telemetry monitoring on key stations ➢ Improved water harvesting and water management practices introduced in 500 Hectares (out of a total area of 500,000 Ha), taking stock of successful pilot interventions such as those in Wadi El Kilu in Darfur and the Gash Basin in Kassala
Responsible institutions	Ministry of Irrigation and Water Resources, …… state
Mitigation co-benefits	Significant reduction in poverty among nearly 1.5 million rural poor farming and pastoral farmers and their families; i) Address the challenges of unbalanced development through building irrigation facilities in less marginal areas.
Cost	100 Million USD

Adaptation priority 3 #	Sustainable water management: aim is to introduce and establish monitoring systems for climate sensitive ground and surface water sources including Nile Stations. (specify an area)
Relevance in the national context	Water Resources 2021-2031 Strategy (Water Supply Transformation Strategic Plan), National Policy on Drinking Water, Sanitation and Hygiene, 2011 (draft) and updated draft 2018; and (c) Sudan Country Strategy on Integrated Water Resources Management, 2007. NAP, NAPA
Main Outputs	- Institutional Capacity building and Development, Program Management, and Enabling Environment - Sector reform, including policy, legal aspects such as laws and proclamations for water supply, Preparation of applicable guidelines, manuals - Smart IT used in the Nile and upscaled to all major catchments - National Map for potential water resource use and recharge zoning - Monitoring station for seasonal rivers (non-Nile) - Treatment plant/compact units - Household or compound networks - Good quality water data that is better managed, shared and applied - Risk analysis incorporated in MoIWR regulatory strategy - Residents encouraged to dramatically reduce water consumption.
Responsible institutions	Ministry of Irrigation and Water Resources, …… state
Mitigation co-benefits	
Cost	20 Million USD

Adaptation priority 4 #	Rehabilitation of existing dam systems, (Modernize small scale pump irrigation schemes): Aim is to improve water management for irrigation purposes targeting vulnerable farmers, livestock
Relevance in the national context	Water Resources 2021-2031 Strategy (Water Supply Transformation Strategic Plan), National Policy on Drinking Water, Sanitation and Hygiene, 2011 (draft) and updated draft 2018; and (c) Sudan Country Strategy on Integrated Water Resources Management, 2007. NAP, NAPA
Main Outputs	- Structure and develop sustainable water services, in order to improve people's living conditions - Introduction of modern, climate friendly, sustainable irrigation systems

	- Create some 25,000 employment opportunities for Sudanese people; - Provide better income and livelihood security for about 0.5 million farmers and their family members through affordable and reliable irrigation supplies; - Expand groundwater use for small scale irrigation, particularly in areas away from the Nile. This will help mitigate the challenge of unbalanced development in the country.
Responsible institutions	Ministry of Irrigation and Water Resources, …… state
Mitigation co-benefits	
Cost	150 Million USD

Agriculture and Rangeland Sector:

Adaptation priority 1 #	Building resilience of the main crop production system: Aim is to increase resilience of vulnerable crop farming systems to climate change to improve socio-economic conditions, reduce poverty and contribute to achieving SDGs.
Relevance in the national context	Ministry of Agriculture's and forestry 2021-2023Programme for Stability and Economic Development , Sudan Comprehensive Africa Agriculture Development Programme (CAADP) 2016-2020 ,updated 2020-2023
Main Outputs/Activities	- adoption of improved adaptation technology *e.g.*, drought and heat tolerant seeds and efficient tillage practices, - improve crop management practices through post-harvest and value addition practices - Water harvesting and integrated solutions, in the traditional rain subsector - Sustainable solution and technologies, such as solar systems, in the irrigated subsector
Responsible institutions	Ministry of Agriculture and forests, government of relevant states
Mitigation co-benefits	Conservation of soil carbon, reduce emissions through use of solar technology instead of fossil fuel
Cost	

Adaptation priority 2 #	Climate resilient agriculture systems: Aim is to build enabling environment for climate resilient development in the agriculture and related sectors
Relevance in the national context	Ministry of Agriculture's and forestry 2021-2023Programme for Stability and Economic Development , Sudan Comprehensive Africa Agriculture Development Programme (CAADP) 2016-2020 ,updated 2020-2023
Main Outputs/Activities	- Adopt and implement of climate change related policies - Improve climate monitoring and early warning systems - Introduce weather indexed crop insurance - National and on-farm reserves storage of grains during good harvests - Provision of agricultural and rural finance - Establishment of Farmers' social groups and net works - Promote the diffusion of adaptation technologies (extension services outreach) - Promotion of actor differentiated awareness of climate change - Support research and development on crop varieties and cultural practices - Women empowerment and promotion of gender mainstreaming approach in all interventions. - Women saving groups, women income and food opportunities (household garden), diversified livelihood sources.
Responsible institutions	Ministry of Agriculture and forests, government of relevant states
Mitigation co-benefits	
Cost	

Adaptation priority 3 #	Climate resilient irrigated cropping system: Aim is to strengthen the preparedness of irrigated cropping systems (e.g.Wheat and Faba beans) to build their resilience to projected climate change impacts particularly the projected increase in temperature
Relevance in the national context	Ministry of Agriculture's and forestry 2021-2023Programme for Stability and Economic Development , Sudan Comprehensive Africa Agriculture Development Programme (CAADP) 2016-2020 ,updated 2020-2023

Main Outputs/Activities	- Develop and release a number of climate resilient varieties combining high yield potential and heat tolerance - Early maturing crop varieties and proper sowing date to avoid the hazards of elevated temperature and manipulation of sowing time - Sustainable, efficient, renewable (e.g. solar) powered irrigation systems - Improvement of water productivity in the irrigated sector - Women empowerment and promotion of gender mainstreaming approach in all interventions. - Women saving groups, women income and food opportunities (household garden), diversified livelihood sources.
Responsible institutions	Ministry of Agriculture and forests, government of relevant states
Mitigation co-benefits	
Cost	

Adaptation priority 4 #	Resilient Livestock production system: Aim is to build resilience of livestock production systems to reduce the vulnerability of the livelihood systems of the pastoral communities. To improve livestock production and livestock feeding systems
Relevance in the national context	NAP, livestock …. strategy/plan?
Main Outputs/Activities	- integration of livestock into farming systems and efficient utilization of crop residues in the big irrigated schemes (Gezera Suki, Rahad and New Halfa schemes) to improve nutritive value and animal feeding system and enhancing animal health services - increasing animal resilience against climate related epidemic diseases including through vaccination of animals against epidemic diseases - provision of well-equipped mobile clinics and provision of animal drugs such as anthelmintic, antibiotics to reduce disease and parasites infestation during rainy season - improving rangeland productivity and grazing management practices - Ley farming systems (protected areas, close to settlements be reserved and planted with tree seedlings and forage legumes and grazing with sheep during the dry season) - Strategic Supplementary Feeding Technologies to Desert Sheep - Capacity building and training of related stakeholders in various aspects of the above activities, disease preventive measures, rural dairy processing and hygiene in handling animal and dairy products, and bookkeeping are essential
Responsible institutions	Ministry of Animal Resources and Fisheries and relevant States
Mitigation co-benefits	Conservation and increasing soil carbon content, carbon sequestration in the vegetation
Cost	

Adaptation priority 5 #	Building resilience of the rangelands Aim is to rehabilitation, restoration and improving productivity of degraded rangeland to reduce vulnerability and build resilience of vast rural communities their livelihood systems depend on them
Relevance in the national context	NAP, livestock/Rangelands …. strategy/plan?
Main Outputs/Activities	- Rehabilitation of livestock water points, including shallow wells, hafirs, water yards, etc. - Establishment of shelterbelt program - Water harvesting and integrated solutions in the traditional rain sector Capacity building on improvement of soil, pasture and rangeland management - Women empowerment and promotion of gender mainstreaming approach in all interventions.
Responsible institutions	Ministry of Animal Resources and Fisheries and relevant States
Mitigation co-benefits	Carbon removal through planting of shelterbelts
Cost	

Adaptation priority 6 #	Building resilience of livestock production systems Enhanced preparedness of livestock sector to increase its resilience to projected climate change impacts on distribution of animals' breed
Relevance in the national	NAP, livestock …. strategy/plan?

context	
Main Outputs/Activities	- Improving rangelands through introducing forage legumes and perennials rather than annual grasses would help in carbon sequestration - Establishing breed association for the endangered livestock breeds (Kenana and Butana cattle, Desert sheep) would hold in this regard. - Replacement of non-productive animals from cattle herds and sheep flocks and keeping only productive ones, would help in reducing GHG emissions from livestock. This measure requires measures such as awareness raising and capacity building as it is associated with cultural practices and might require behavioral changes, - Development of alternative livelihood programs/ livelihood transformation programs, and vocational training for pastoral communities - Development of forecast-based finance instruments to minimize potential losses to productive systems and designing of combinations of appropriate risk finance tools and instruments applicable to the different parts of the country that suits the different vulnerable agropastoral groups.
Responsible institutions	Ministry of Animal Resources and Fisheries and relevant States
Mitigation co-benefits	Conservation and increasing soil carbon content, carbon sequestration in the vegetation
Cost	

Health sector

Adaptation priority 1 #	- Building resilience in the health sector - Aim is to build a healthy, resilient, low emission recovery from COVID-19 that prevents future threats and unlocks inclusive, sustainable growth
Relevance in the national context	NAP, Health …. Plan?
Main Outputs/Activities	- Introduction of early disease diagnosis and treatment programmes for malaria, meningitis, and leishmaniasis - Raising the health awareness of communities in vulnerable areas to climate change related diseases in order to increase their adaptive capacities - Building the capacities of the health cadres and improvement of health services to meet the evolving and increasing challenges of climate change - Increasing health resilience to climate change related diseases and reducing the associated mortality by supporting family's and school's health programmes - Control of Endemic and epidemic diseases induced by climate change through combating vectors and insects borne diseases, controlling of diseases shared between humans and animals - Improve community sanitation and medical services, including capacities for diagnosis and treatment - Solar for health to provide basic services to communities in remote areas without access to electricity services
Responsible institutions	
Mitigation co-benefits	
Cost	

Coastal Zone:

Adaptation priority 1 #	Building resilience in coastal zone: Aim is to reduce the vulnerability of the coastal communities to the impacts of climate change in their livelihood systems
Relevance in the national context	NAP, Integrated coastal zone management plan??,
Main Outputs/Activities	- Mangroves Restoration and management for building resilience of dependent local communities specially in marine subsistence and commercial fisheries. - Protection of coral reef and, sea grass beds - Sustaining marine food chain - Building resilience of ecologically and historically altruistic islands against climate impacts - Mapping and demarcation of coastal hazard lines subjected to sea level rise and over flooding
Responsible institutions	HCENR and Government of Red Sea State
Mitigation co-benefits	Restoration and conservation of Blue carbon
Cost	

2. Elements of an adaptation communication

An adaptation communication may include information on the following elements:

(a)National circumstances, institutional arrangements and legal frameworks

Climate change represents significant threat to food security and sustainable development in Sudan, as more than 70% of the livelihoods are dependent on vulnerable sectors. The national studies identified water, agriculture, coastal zone, and health sectors as the most vulnerable sectors in the country. Accordingly, Sudan prioritizes action on the climate change adaptation planning and implementing with objectives of building resilience and facilitating the integration of climate change into development plans and strategies particularly as initiated by the Sudan NAP in 2016.

Based on wide consultations at the federal and state levels the NAPA process recognized 32 urgent adaptation interventions mainly in the water and agricultural sectors to reduce the increasing vulnerability of the rural communities to current and future climatic risks (HCENR, 2007). According to HCENR, (2016) the NAP extended existing efforts to identify and prioritize potential adaptation interventions at the state level, as primarily assessed during the NAPA process.

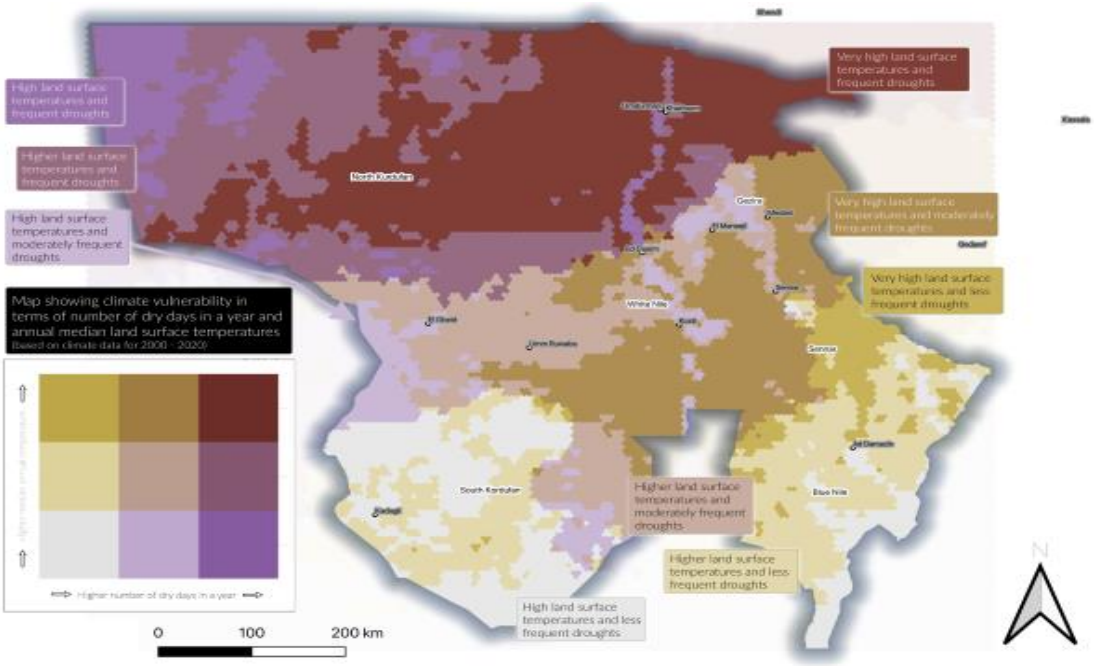
(b)Impacts, risks and vulnerabilities, as appropriate;

The climate impacts estimated that dry Sudan has 19% reduction in rainfall - flooding frequency is 6 folds. There has been persistent reduction, over years, in the amount of rainfall, coupled with increasingly erratic distribution and intensity of rainfall whenever it occurs. This has a negative impact on the amount of surface and ground water available for human consumption and productive purpose; thereby resulting in competition and conflict between farmers and pastoralists for scarce water resources. There is also the problem of desert encroachment resulting partly from deforestation activities as well as climate change.

Furthermore, Sudan 2015 INDCs identified water, agriculture and energy as the most vulnerable sectors to climate hazards/risks. In this study, the health and gender sectors are added as cross cutting issues. The study also takes the variability in rainfall and surface water flows into consideration as main drivers affecting livelihoods food security, access to drinking water and health services, impacting communities' crop and animal production systems, and forests and pasture resources and their vegetative cover. The assessment of the impact of climate hazards/risks are mapped by stocktaking risk, vulnerability and adaptive capacity of the most vulnerable social groups and ecosystems based on available data.

The impact of climate is experienced differently by regions, generations, age groups and sexes and has diverse effects on males and females given their different roles in society and access to social, economic and physical resources.

1. Female groups
2. The small producers in the rural areas
3. The population in different ecological livelihood zones are exposed to multitude of climate related hazards and risks. Drought prone area is estimated at 690,000 km^2 which is expected to produce 90% of the cultivated food crops and 85% firewood.
4. The traditional rainfed farmers are prone to climate risks and conflicts. They have restricted access to land, water and pastures and suffer from land degradation and desertification.
5. Successive years of drought in certain parts of the Sudan have caused severe shortages of food, social disruption, displacement, widespread health and nutritional problems. Droughts cause internal migration and displacement. Pastoralists adjusted their livestock herd structure/composition to reduce losses and adapt to the drought cycles.
6. All regions have been affected, but the worst states are North Kordofan, North and West Darfur, Red Sea and White Nile states (UNEP, 2007).
7. The farmers, pastoralists and agro-pastoralists are the main vulnerable groups exposed to climate hazards and risks. The farmers and their families living in the gum Belt constitute about 10 million. These people and their livelihood ecologies have been exposed to a southward shift of the rainfall isohyets at 5 kilometers per decade. They are also subject to decrease of annual rainfall at a rate of o.5 mm per decade. The temperature rises in the belt increase by 0.5ºC people are to change their farming practices and crop pattern to adjust to these changes.



Geographical Vulnerability Maps of Sudan, done by ICRAF, (climate vulnerability assessments For Sudan, based on rainfall and temperature data over the period 2000 to 2020)

(c)National adaptation priorities, strategies, policies, plans, goals and actions;

The prime objective of Sudan is to minimize vulnerability to the impacts of climate change by augmenting adaptive capacity and resilience building for state and federal institutions. A minor, still equally important objective is to support mainstreaming of climate change adaptation dimensions into current and new policies, strategies, plans, programs and activities.

Guiding Adaptation Principles

1. Achieve food and water security through the sustainable management of resources
2. Enhance the resilience of the infrastructure, urban and rural areas to subsist climate-related disasters
3. Ensure and protect public health, well-being and safety of all communities through climate-resilient systems
4. Incorporate Nature-Based Solutions as a first line of defense from adverse impacts of climate change
5. Combat desertification and land degradation by achieving Land Degradation Neutrality
6. Substantially reduce the risk of climate and non-climate related disasters to protect lives, the economy and physical and natural assets

Policies and Institutional Reforms

The lack of clarity and coordination about roles and responsibilities between sectors and across geographic scales is prevalent, hampering the optimal use of limited resources for facilitating and regulating the sector. The involvement of beneficiaries during the project life cycle is often missing, with the federal ministries overseeing construction, handing operations over to states after completion.

While the federal government ensures the participation of the states in the management of projects, the state organs exercise powers in accordance with the federal plans, policies, and legislation in relation to sectors management, in states.

The resources required to fill the existing access and coverage gaps extend well beyond the potential financial and technical capacities that can be made available during this program's horizon. To address the most critical needs and support the prioritization of geographic areas to be supported, planning will be carried out in a parallel process of "bottom-up" and "top down" approaches.

- **Top down** – The national level has put the following to systematically address the prevailing access gaps, the following criteria should be considered:
  - Proportion of unserved population
  - Poverty rates
  - Vulnerability to climate shocks (communities/towns that suffer from extreme droughts and floods)

- High prevalence of water-and-excreta-borne diseases
- Limited resources or funding provided in last 5 years
- Not served by any other funding source (e.g., NGO or externally financed project or program)

- **Bottom up** – Based on the selection and prioritization criteria set forth at the national level, states will be provided with guidance and resource availability. As resources become available, states and localities can continue to expand their geographic scope and propose new areas as part of an annual planning exercise.

Furthermore outlines for example the 10-year priorities of the irrigation sector, thus providing a common framework for all irrigation water management and development interventions. That also provides the means to communicate with other sectors and line-Ministries within the Sudanese Government as well as with other institutions that share similar interests, in particular, the private sector and farmers' organisations, multilateral development banks and Green Funds, bilateral aid organisations, UN organizations and diplomatic missions, service providers, think-tanks, and research and academia.

(d)Implementation and support needs of, and provision of support to, developing country Parties;

The roles and responsibilities of sector stakeholders shall be clearly delineated to avoid duplication and inconsistency in roles. Local communities may manage the rural systems and shall be responsible for system sustainability. The government shall be responsible for supporting and enabling the communities. The government shall also be responsible for institutional and legislative arrangements, capacity building of government staff and communities, and implementation of the policy.

The State bears the responsibility of supporting and facilitating the development of sustainable facilities for the provision of basic services that are equitably distributed to all segments of society, where benefices bear the costs of production, distribution, and management of the sectors services. Vulnerable segments of the community, including women, children, and people with special needs, shall not be deprived from the services on the pretext that; hence, adequate subsidy and support mechanisms will be adapted and adopted. Vulnerable community groups should be given priority and attention.

Although coordination mechanisms are established, exchange of information remains weak, which leads to duplication of efforts or limited government oversight once infrastructure is constructed (post-construction O&M support). The private sector plays a role in the sectors that is currently limited to the sales of ad-hoc services and inputs.

(e)Implementation of adaptation actions and plans, including:

(i)Progress and results achieved;

For the water sector, access and coverage of water supply in rural and urban areas are expected to reach 100% by 2031, with due consideration for water supply to pastoralist communities. Costed results have been obtained from existing sector strategies and the Sudan SDG6 Plan. Parallel activities related to the provision of water supply to institutions such as schools and health facilities, as well as complementary activities for sanitation and hygiene, have been identified and costed in the Sudan SDG 6 Plan. However, for the agriculture sector, the crop production during the last decades the ARC has released a number of technologies for building the resilience of crop production systems against climate change and that were include, Improving farm management practices and adaptation at National/Institutional level

Sudan has implemented many projects and programs in the field of climate change and adaptation but the scale of implementation remains far below the actual needs of the country.

(ii)Adaptation efforts of developing countries for recognition;

In addition to official government efforts, development partners, NGOs, and CSOs play a great role in the sectors. DPs, NGOs, and CSOs play can play a role in mobilizing external financing, providing technical assistance, and knowledge transfer. Although coordination mechanisms are established, exchange of information remains weak, which leads to duplication of efforts or limited government oversight once sectors infrastructure are constructed (post-construction O&M support).

The private sector plays a role in the sectors that is currently limited to the sales of ad-hoc services and inputs (such as transport, spare parts, fuel, etc.). The few companies that are involved in the sectors contribute ineffectively to the

sector. Some development agencies are engaged with local rural private enterprises to aid O&M services for the sector, but little data is available on their contribution.

(iii)Cooperation on enhancing adaptation at the national, regional and international level, as appropriate;

Resources Mobilisation (RM) is crucial for the successful delivery and impact of the national sectors stratiges. The unit will lead the RM effort with strong support from the Ministry of Finance and the office of the Ministers and its various resource mobilisation organs. The required RM covers financial aspects, institutional cooperation, and staffing (e.g., secondments). Complementary funding will be sought from an array of sources (other Sudanese government ministries, private sector and farmer organisations, NGOs, multilateral development banks and Green Funds, bilateral aid organisations, service providers, think-tanks, and research and academia).

(iv)Barriers, challenges and gaps related to the implementation of adaptation;

Barriers to build climate resilience of the sectors

- Economic and financial Barriers
- Capacities, Lack of technical skills
- Policy and regularity barriers
- Social barrier:
    1. Lack of public environmental awareness and commitment
    2. Refusal of the construction of structures
    3. Construction of massive structures may reduce land available for agriculture
    4. Diverging preference of the beneficiaries on techniques may exist.
    5. Conflicting interests between up-stream and down-stream communities.

Challenges

The development challenges complicating the provision of sectors for humans, livestock, and key institutions (such as schools and health facilities) are considered in the context of supply side and demand side dimensions. Supply side challenges include

A. Inadequate access to water
B. Lack of enabling policy, institutional arrangements, and human resources for water
C. Limited investment, financing, and internal revenue generation for cost recovery
D. Limited focus on the sustainability of service delivery
E. Human Resource Development and Capacity Building
F. Impact of climate change and climate variability
G. Limited and missed opportunities in the use and application of appropriate technology, research, and development and engagement of the private sector
H. Limited attention to the gender and inclusion aspects of water supply services

(v)Good practices, lessons learned and information-sharing;

Recent successes in resource mobilization in 2019, the Ministry of Irrigation and Water Resources (MoIWR) secured 1 million Euros from the Netherlands Ministry of Foreign Affairs dedicated to enhancing the capacity of professionals and practitioners in managing irrigation schemes and water harvesting facilities. In the same year, with a US$250,000 grant obtained from the Food and Agricultural Organization (FAO), the Ministry began engaging in remote sensing supported field operations in the Gezira Scheme to identify bright spots and promising irrigation water management practices while defining upscaling pathways. Demonstrated successes of this grant has led to a US$100,000 top-up from FAO in 2020 to pilot test some of the identified good and best irrigation and farming practices at one minor canal level (1500 Ha). The engagement of the World Bank team throughout the drafting process of the strategic plan has also opened opportunities for US$50 million investment to technically and institutionally rehabilitate some 150,000 Ha medium size pump irrigation schemes. A proposal has been submitted in 2020 and initial responses are encouraging. Recently, the MoIWR engaged with the International Research for Agriculture in the Dry Areas (ICARDA), a member of the Consultative Group on International Agricultural Research (CGIAR), and partners CIHEAM-Bari and PROCASUR in matters related to knowledge management and capacity building.

(vi)Monitoring and evaluation;

The purpose of monitoring and evaluation is to: 1) ensure the production of quality deliverables; 2) ensure that ongoing activities are responsive to what is working and what is not; and 3) maximise eventual impact on the cost-effectiveness and sustainability of the proposed interventions.

A detailed program and project-level monitoring and evaluation plan will be developed in the first year following approval of the projects. Performance indicators will be identified to measure the level of contribution of the project output to its expected outcome and impact. Each indicator will be identified with a baseline and target to be achieved at each key milestone and at project completion. Periodic project monitoring reports and a project completion report will be the source of data for the level of achievement in each indicator.

The contribution projects as a whole will be evaluated against the progress made towards achieving the desired impacts, starting in 2023 and then every two years, through an independent ad-hoc evaluation committee.

(h)Gender-responsive adaptation action and traditional knowledge, knowledge of indigenous peoples and local knowledge systems related to adaptation, where appropriate;

Poverty is the main variable, and that the issue of women's vulnerability to climate risks rotates round the central role of power relations and levels of access to resources. This differentiated power division of roles are key to understanding men's and women's vulnerability, their exposure to risk, their coping capacity to recover to climate hazards. Exposure to risk is influenced by existing income inequalities, restricted mobility, and practices associated with understandings of 'appropriate' behavior of men and women.

It is widely accepted that the distribution of vulnerability to climate hazards and environmental degradation is not equal across societies. However, people of both sexes are threatened by droughts, floods, and outbreaks of pests and diseases. Climate affects the livelihood of the society both male and female equally but does not affect the gender-power relationships and division of labor in the community. In rural societies, the males are responsible for producing food while the females have to look after children, fetch water, cook for the family, collect firewood and grow vegetables and staple crops in the backyard of their houses and cottages. It is with these responsibilities women are affected by climate effects. The degradation of the natural resources can increase both women's workload and their vulnerability, as their access to already scarce resources decreases. They collect less firewood and have to go long distances for bringing water during droughts.

Women are now shouldering new responsibilities due to increased droughts, migration of spouses out of the village, death of men in civil conflicts. More female-headed households are increasing in number ranging between 10% and 25% of the total number of households in the countryside. The role of women headed households increased to about 30% due to continued migration of men, employment in the army, loss in civil wars. Drought IDPs women are burdened by additional tasks. Having lost assets and means of livelihoods they have to exert effort and work for income generation to guarantee the minimum requirements of food subsistence for the survival of the family.

The increasing important role of women in farming, animal raising, marketing and trading especially during crises and conflicts is not well conceived by the community. The symbolic representation of women in committees is a positive step towards mainstreaming and observing the perspective of gender role in the community. They must be increasingly integrated with environmental and developmental activities.

The gender dimensions are not taken into consideration seriously. The adaptive capacity of women to environmental degradation depend largely on the extent to which they can draw on their resources and assets. Women have least resources and least capacity to adapt and are the most vulnerable.

Women adaptation is insignificant and have seldomly being enhanced. Extremely limited support has been provided by NGOs in form of small vegetable and poultry farms in the Red Sea State, digging shallow water hand-pump wells for easy access to drinking water in most states, establishing limited women-community forests in Sinnar and other parts of the country. Provision of economically improved traditional ovens and distribution of LGPs to reduce women cutting of forest trees for fire wood were also attempted but with limited success.

Women also have credit fund termed as “Al Sandoug “which is effectively a small revolving fund from household savings to meets purchases of costly basic needs shared by a group of persons.

3. list of stakeholders involved

Technical Committee:

- Water Sector: Eng. Abbas Khalid
- Agriculture Sector:
  Lobna Abdulrahim Khogaly
  Dr. Suaad Ibrahim Abdullah Gamaleldin
- Coastal Zone: Dr. Awatif Abdelgadir
- Health Sector: Dr. Asia Azrag
  Dr. Fiaha Ahmed Abdullah

National Consultant for Sectors:

- Water Sector: Prof. Tarig El Gamri
- Agriculture Sector: Dr. Salah Tambal

4. Other duties and responsibilities during the Consultation.

- Work as resource person with the NDC technical committee (TC), and to specifically undertake the technical tasks of data collection, analysis and drafting of the updated NDC.
- Review current NDC, relevant literature, collect relevant climate change and development data,
- Work with members of the TC relevant institutions to review national climate change reports, relevant sectoral development strategies and plans to define the priority contributions
- Present the priority contributions
- Support the organization of high level