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Subject: Sudan's updated First NDC, Interim Submission

This submission by the Government of Sudan is being made in response to the call under Articles 3, 4.2, 4.6, Art.4.11 of the Paris Agreement and in particular decision 4/CMA.1, para 7 of the 24th Conference of the Parties

This submission has been prepared by the Higher Council for Environment and Natural Resources (HCENR) and is being submitted on behalf of the government of Sudan.

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An interim Submission: Sudan's updated First Nationally Determined Contribution (NDC)

Introduction:

Sudan is highly committed to its climate change obligations and has prepared and submitted its First NDC to the UNFCCC Secretariat in Oct 2015. Sudan NDC was in line with Art. 4 of the Paris Agreement (PA), follows the guidance for Least Developed Countries (LDCs) under Art 4.6 of the Paris Agreement, which stipulates that LDCs may prepare and communicate strategies, plans and actions for low greenhouse gas emission development.

Sudan's NDC 2015 includes ambitious contributions, in line with Art.3 of the PA, on both climate change mitigation and adaptation. However, after the entry into force of the PA and the adoption of work programme for its implementation (Katowice, Dec 2018), Sudan established a national process for updating its NDC in response to the calls under Art.4.11 of the PA and in particular decision 4/CMA.1, para 7 of the 24th Conference of the Parties. The objectives were to update and resubmit an enhanced First NDC in line with Art 4.6 of the PA and relevant CMA decisions, and developing the necessary institutional infrastructure, capacities, funding strategies for the NDC implementation, integration and reporting as required under the PA. Efforts aimed at transforming the NDC from a communication document into an action plan implementable within the timeframe for First NDCs (2021-2030).

Given the urgent need for assessing the aggregated ambition of the collective global efforts included the updated NDCs of all Parties, Sudan is pleased to submit information on its updated contributions for consideration by the UNFCCC secretariat. Sudan's final updated First NDC will be endorsed by the Cabinet of Ministers and submitted in due course. The submission of an interim updated NDC is also meant to satisfy requirements for accessing climate finance.

The mitigation component:

Sudan is committed to pursue a low emission and resilient sustainable development in the energy, forestry and land use sectors. Sudan's updated NDC on mitigation as shown in the Tables below aim at contributing to increasing the ambition of the global mitigation efforts in the 2021-2030 period, in line

with the objectives of the PA. These contributions are planned to ensure deviation from the current BAU trajectory in the development of the energy and forestry sectors.

Sudan updated mitigation contributions are considered fair and ambitious given its obligations under the UNFCCC and PA. These updated contributions are in line with the national development planning processes, objectives, priorities and circumstances in the energy, forestry and land use sectors.

Sector	Contributions	BAU	Targets (2021-2030)	Cost M USD
Energy: Transformation of the electricity sector towards low-emission power generation:	Utility scale grid connected Solar and wind power plants	For the whole energy sector by 2030: 33,181,563 tCO ₂ e For the electrical energy sub-sector by 2030: 10,223,896 tCO ₂ e	<ul style="list-style-type: none"> 2140 MW Emission avoidance of 3,574,580 tCO₂e 	1872 M
	Stand alone and mini-Grid covering: <ul style="list-style-type: none"> Residential agriculture industrial 		<ul style="list-style-type: none"> 796 MW Emission avoidance of 1,086,360 tCO₂e 	846 M
	Hydro-generation improvement of the system: Rewinding of two generators units and increasing generation to 42GWh/year		<ul style="list-style-type: none"> 36.896 GWh 26,221 tCO₂e 	5.5 M
	Energy Efficiency <ul style="list-style-type: none"> Grid losses in transmission & distribution 		<ul style="list-style-type: none"> 1213 GWh 857,506 tCO₂e 	• 210 M
	<ul style="list-style-type: none"> Promotion of use of efficient appliances in residential 		<ul style="list-style-type: none"> 2295 GWh 463,759 tCO₂e 	• 5.00 M
	Transport: <ul style="list-style-type: none"> Inner-city private cars model switching to bus in Khartoum Blending fossil fuel by 10 biofuel and promotion of fuel efficiency Good trucks, switching to rail transport 	Same as the energy sector above	6,449,582 tCO ₂ e	1000 M

Sector	Contributions	BAU	Targets (2021-2030)	Cost USD
Forest:	Restoration and sustainable management of forests: Restoration and sustainable management of degraded reserve forest and the Gum Arabic, for mitigation adaptation and benefits	<p>For whole forest sector</p> <p>By 2030: 29,450,936 tCO₂e emissions</p>	<ul style="list-style-type: none"> 1.7 million ha estimated to result in removals of 35,000,000 tCO₂ 	120 M
	Carbon removal: Afforestation and restoration of degraded land of 10% of rainfed and 5% of irrigated, agriculture schemes, for mitigation adaptation and benefits			
	Blue carbon: Restoration and conservation of Mangrove forests in Red Sea State, for adaptation and mitigation benefits			
	Implementation of the National REDD+ Strategy: Reducing deforestation and forest degradation in Blue Nile, Gadarif and Sinnar States (First Emission reduction programmes, mitigation and adaptation benefits)	<p>FRL period (2006-2018): 935,057 tCO₂e/year net emissions</p>	<ul style="list-style-type: none"> A/R and forest restoration of an area of 512,736 ha Estimated to result in removal of 12,333,267 tCO₂ Biomass energy saving targeting over 300,000 HH, estimated to result in removals of 2,333,503 tCO₂ 	42 M
Forest/Energy	Reducing biomass (fuelwood) energy consumption	(Significant share if not all of this BAU emissions related to biomass energy use are included in the forest	<ul style="list-style-type: none"> LPG 10% of urban population. Estimated emission avoidance of 1,137,405 tCO₂ Improve stoves to replace wood stove in 20% of rural population. 	11.4 M
				41 M

		sector BAU)	Estimated emission avoidance of 19,439,790 tCO ₂	
Waste	<ul style="list-style-type: none"> Composting 60% of organic and recycling 15%, of the total waste Establishment of landfills in all large urban areas of Sudan Integrated solid waste management Waste water treatment, sludge to biogas for electricity generation 	6,394,907 tCO ₂ e	1,278,822tCO ₂ /year based on year 2025 estimate	240 M

Adaptation Component:

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 actions 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 the Sudan NAP in 2016.

Since the INCD (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 the NDC will be informed by the ongoing work including the currently underway NAP Readiness project (2021-2022), that gives emphasis to enhancement of the level of precision of climate change data/information (for assessment of CC impacts and vulnerability in the medium and long-term), capacity building and strengthening national institutions. The third national communication that is currently being finalized, conducted assessment of current and projected climate change vulnerability/impacts on the agriculture sector (farming system and livestock). The findings of these studies underlined the importance of preparedness for facing anticipated vulnerabilities/impacts, through implementation of adaptation measures that build resilience in the vulnerable sectors.

The NDC will update measures for sectors that are at high risk from the current and projected impacts of climate change, namely: agriculture, water, health and the coastal zone. The aim is to promote sustainable development that improves adaptive capacity and limit growth of GHGs emissions through integration of climate change issues and concerns into national policies, strategies and development plans.

Sector	Contribution description	Cost
Water	- Implementation of “Zero Thirst” programme that targets increasing water resilience in vulnerable areas, through supply of drinking water (for both human and livestock) to all vulnerable states/localities in Sudan, in accordance with the information base of the water atlas. The aim is to achieve sustainable utilization of ground water, increased water resilience of households in vulnerable rural areas, and supply water to schools, health facilities and livestock.	10000 M
	Improve resilience/Risk reduction to prevent loss of lives and assets in areas prone to floods through: <ul style="list-style-type: none"> - Improvement of preparedness and mapping of areas vulnerable to risks of flooding - Establish early warning system - Enable forecasting of extreme weather events including through: <ul style="list-style-type: none"> ➤ 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 	
	Sustainable water management and establishment of monitoring systems for climate sensitive ground and surface water sources including Nile Stations. <ul style="list-style-type: none"> - Smart IT used in the Nile, upscaled to all major catchments - National Map for potential water resource use and recharge zoning - Monitoring station for seasonal rivers (non-Nile) to be managed by a competent institution - Treatment plant/compact units - Household or compound networks 	
	Water management for irrigation purposes targeting vulnerable farmers, livestock: <ul style="list-style-type: none"> - Rehabilitation of existing dam systems - Introduction of modern, climate friendly, sustainable irrigation systems - 	
Agriculture	Increase resilience of vulnerable crop farming systems to climate change to improve socio-economic conditions, reduce poverty and contribute to achieving SDGs, through: <ul style="list-style-type: none"> - 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 	
	Enabling environment for building climate resilient development in the agriculture and related sectors: <ul style="list-style-type: none"> - Establishing and Implementation of climate change enhancing policies - Improve climate monitoring and early warning systems 	

	<ul style="list-style-type: none"> - 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 Crop research and Improvement 	
	<p>Preparedness of irrigated cropping systems (e.g., Wheat and Faba beans) to increase their resilience to projected climate change impacts particularly the projected increase in temperature:</p> <ul style="list-style-type: none"> - 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 	
	<p>Building resilience of the Range-Livestock Sectors, through:</p> <ul style="list-style-type: none"> - 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 cattle and sheep nutritional status and productivity: - 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 - others - Capacity building and Training 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 	
	<ul style="list-style-type: none"> - Improved livestock production system and improvement of livestock feeding system through: 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 improvenutritive value and animal feeding system and enhancing animal health services 	
	<p>Restoration of degraded Rangeland</p> <ul style="list-style-type: none"> - 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 	
	<p>Enhanced preparedness of livestock sector to increase its resilience to projected climate change impacts on distribution of animals' breed:</p> <ul style="list-style-type: none"> - 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 	

	<p>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,</p> <ul style="list-style-type: none"> - 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. 	
	<p>Empowerment of women facing increased occurrence of severe droughts and degradation of natural resources, scarcity in water and loss of livelihood sources :</p> <ul style="list-style-type: none"> - Women empowerment and promotion of gender mainstreaming approach in all interventions. - Women saving groups, women income and food opportunities (household garden), diversified livelihood sources. 	
Health	<p>Building resilience in the health sector:</p> <ul style="list-style-type: none"> - 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 	
Coastal zone	<ul style="list-style-type: none"> - 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 	

The preparation of the contributions presented above have been conducted through the NDC technical committee and was subjected to consultations with all relevant stakeholder institutions. The updating of the contributions was informed by a number of reports and studies became available since the submission of the NDC 2015. Those include studies commissioned for the purpose of the NDC updating conducted by national and international consultants and experts, data and studies conducted by the Third National communication and first biennial update reports. To mention a few of the data and studies conducted by climate related institutions and projects:

- A study analyzing the mitigation potential in the priority sectors and their social, economic, environmental impacts, including implications for poverty reduction and sustainable development.
- Data collected by the technical committee members and national consultants on CTU and baseline information of the sectors included in the updated NDC
- GHGs inventory and mitigation reports prepared for Sudan's Third National Communication and First Biennial Update Report, both planned to be submitted in 2021.
- Vulnerability and adaptation assessment of agriculture and water sector study of the Third National Communication.
- National REDD+ strategy, currently under validation
- Forest Reference Level prepared by the national REDD+ programme, the UNFCCC completed its technical assessment and published in 2021
- Strategies and plans of the energy, water, agriculture sectors
- 2020 Sudan's programme for stability and economic development

A complete version of the updated First NDC with the required information that facilitate its clarity, transparency and understanding (CTU) including updated national circumstances, and improved cost estimates including for adaptation component, will be communicated after obtaining the government endorsement.