WMO OMM
World Meteorological Organization
Organisation météorologique mondiale
Organización Meteorológica Mundial
Всемирная метеорологическая организация
المنظمة العالمية للأرصاد الجوية
世界气象组织

WEATHER CLIMATE WATER
TEMPS CLIMAT EAU

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Ref.: 02129/2023-L7 MS/RSO

Our ref.: 02129/2023/MS/RSO 15 February 2023

Annexes: 2 (available in English only)

Subject: Formal approval of the Climate Risk and Early Warning System (CREWS) East Africa project titled *Strengthening Hydro-Meteorological and Early Warning Services in the East Africa Region towards the Early Warning for All Plan*

Action required:
(1) Nomination of representatives to attend the Project Steering Committee (PSC) Meetings
(2) Confirmation/nomination of a technical project focal point(s) for coordinating the implementation of activities throughout the project

Dear Sir/Madam,

I have the pleasure to inform you that the project titled *Strengthening Hydro-Meteorological and Early Warning Services in the East Africa Region towards the Early Warning for All Plan* (CREWS East Africa), including Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda, has been formally approved by the CREWS Secretariat for funding on the 23 January 2023.

The project aims to scale up Early Warning Services (EWS) in East Africa and improve coverage of impact-based EWS across Lake Victoria and the surrounding communities. Principally, the project structure and activities are designed to support National Meteorological and Hydrological Services (NMHSs) and disaster risk management authorities to provide EWS (Project Document in Annex 1).

The project will run for a total of four years from January 2023 until January 2027. The World Meteorological Organization (WMO) will serve as the lead implementing entity and will be supported by two implementing entities, the World Bank and the United Nations Office for Disaster Risk Reduction (UNDRR).

As a first step, and for WMO to better coordinate project activities with your institution, I would kindly request you to nominate a technical project focal point(s), in order to work on the delivery of project activities. Furthermore, with regards to the Project Steering Committee (PSC), I would be grateful if you could nominate a senior official from your institution as a representative in these events. The PSC member will form the functions outlined in the Draft Terms of Reference for the Project Steering Committee (Annex 2). Kindly note that it is preferable to have a PSC nominee different from the project focal point(s).

Finally, I would like to inform you that WMO will be organizing a formal project launch event. More details of this event will follow this correspondence in terms of a meeting location, agenda, etc.

To: Permanent Representatives of Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda with WMO (limited distribution)

cc: Ms Agnes Kijazi, Director of the Regional Office for Africa

I should be grateful if you could send your reply to Mr Moyenda Chaponda (mchaponda@wmo.int), Project Manager, Project Management and Implementation Division with a copy to Ms Agnes Kijazi (akijazi@wmo.int), Director, Regional Office for Africa by **22 February 2023**.

Yours faithfully,

Dr Wenjian Zhang
for the Secretary-General

Ref.: 02129/2023-L7 MS/RSO

CREWS Project Presentation Note to the Steering Committee		
Project Title	Strengthening Hydro-Meteorological and Early Warning Services in the East Africa Region: CREWS East Africa	
Document Reference	CREWS/RProj/12/East Africa	
Geographic coverage	East Africa: Kenya, Tanzania, Uganda, Rwanda, Burundi and S. Sudan	
Timeframe	2023 – 2027 (48 months)	
Total CREWS Contribution	7,000,000	
Lead Implementing Partner	World Meteorological Organization (WMO)	
	a. Execution	3,624,805
	b. Fees (13%)	471,225
	c. Total	4,096,030
Additional Implementing Partners	World Bank (WB)	
	a. Execution	720,000
	b. Fees (10%)	72,000
	c. Total	792,000
	United Nations Office for Disaster Risk Reduction (UNDRR)	
	a. Execution	1,869,000
	b. Fees (13%)	242,970
	c. Total	2,111,970
Project Recipient/ Beneficiary	Regional East African Community (EAC) WMO Regional Centres: IGAD Climate Predication and Applications Center (ICPAC), Regional Specialized Meteorological Centre (RSMC) Nairobi, RSMC-Dar Es Salaam and Regional WIGOS Center for East Africa (co-hosted by Kenya and Tanzania) National Burundi: Institut Géographique du Burundi (IGEBU) Kenya: Kenya Meteorological Department (KMD) Rwanda: Rwanda Meteorology Agency (Meteo Rwanda) South Sudan: South Sudan Meteorological Department (SSMD, under the Ministry of Transport), Ministry of Water Resources and Irrigation and Ministry of Humanitarian Affairs and Disaster Management Tanzania: Tanzania Meteorological Authority (TMA) Uganda: Uganda National Meteorological Authority (UNMA)	

Additional Operational Partners	East African Community (EAC)	
Main objective(s)	To scale up Early Warning Services (EWS) in East Africa and improve coverage of impact-based early warning services across Lake Victoria and surrounding communities to support the EAC EWS Vision 2025.	
Initial state of play - project rationale	a. Vulnerability, exposure to risks, disasters impacts (on people and economy)	East Africa has a diverse terrain and climate with a wide range of vegetation landscapes, biodiversity and human occupations. There has been a substantial increase in climate and weather-related impacts which further exposes the region to a slew of natural hazards such as floods, droughts, landslides, severe weather events. For example, in 2020, East Africa recorded precipitation above the long-term 1981–2010 average, southern parts of Kenya and Lake Victoria, indicating a high spatial variability in that subregion (WMO, No 1275). These intense rainfall events occurred against a backdrop of 'failed' rainy seasons in East Africa which saw consecutive below average rainfall over the past few years. This indicates a shift towards increased variability in weather and climate conditions in the region. Furthermore, in 2020 extensive flooding affected many parts of East Africa, with Kenya being one of the worst affected countries where there were 285 deaths reported as a result[1]. Rapid urbanization continues to present challenges within East Africa, as the region is one of the most rapidly urbanizing countries in the world[2]. This continues to have a profound effect on the disaster risk profile within East African countries, given the growing concentration of people and assets in high-hazard areas. Lake Victoria heavily influences the weather and climate conditions within the Region. It is bordered by Uganda, Kenya and Tanzania; however, it is part of a larger watershed region which includes Burundi and Rwanda. Lake Victoria generates its own micro-climate and is one of the most convectively active regions on Earth. It generates severe thunderstorms, which are an important weather hazard, with intense and often heavy rainfall, high and gusty winds, high waves, lightning and hailstorms, and waterspouts on the lake. These risks are particularly high for vulnerable groups including fisherfolk and inhabitants of the islands on the lake who rely on marine transport (there are an estimated 610,000 island inhabitants). For these groups, surveys find very high fatality rates and analysis indicates that more than one thousand people die each year from drowning in the lake, due to weather related hazards. In turn, these fatalities affect a large number of dependents. These adverse weather conditions also disrupt the navigation of larger transport vessels and occasionally lead to fatal accidents. These impacts are important, because of the planned expansion of water transport, as a new regional transport corridor to reduce the heavy burden on road transport. The LVB supports approximately 25% of the surrounding population. It hosts Africa's largest inland fishery, producing about one million tons

[1] Centre for Research on the Epidemiology of Disasters (CRED), International Disaster Database (EM-DAT), www.emdat.be
[2] Africa's Urbanisation Dynamics 2020: Africapolis, Mapping a New Urban Geography

		of fish annually, employing over 200,000 fisherfolk and generating over US$ 500 million annually in exports. Over 30 million people live near the shoreline, with 1,400 landing sites or beaches from which 50,000 boats operate. Lake Victoria and the surrounding area are subject to major weather-related shocks, leading to loss of life and major economic damages for shoreline communities. These impacts are projected to increase with climate change and there is a strong consensus for regional, operational warning systems to protect the safety of those exploiting the natural resources of the LVB. **Kenya** is highly vulnerable to the impacts of climate change. Climate hazards have caused considerable losses across the country's different sectors in recent years. The main climate hazards include floods and drought which cause economic losses estimated at 3% of the country's Gross Domestic Product (GDP). More than 80% of the country's landmass is arid and semi-arid land (ASAL) with poor infrastructure, and other developmental challenges. The arid and semi-arid lands are also more prone to harsh weather conditions, making the communities within this region vulnerable to natural hazards, mainly droughts. Seasonal floods may affect various parts of the country especially along the flood plains in the Lake Victoria basin and the Tana River. Landslides and mudslides occur during the long rainy season from March to May, which usually affects the western Nyanza and north Rift Valley provinces. Climate risks pose serious threats to Kenya's sustainable development goals[3]. With the largest economy in East Africa and a population of 48.5 million, Kenya serves as the regions' financial, trade and communications hub. The country's economy is largely dependent on rainfed agriculture and tourism, each susceptible to climate variability and change and extreme weather events. Increasing interseasonal variability and declining rainfall in the main rainy season have impacted cereal production in recent years. Recurrent droughts and floods— likely to be exacerbated by increasing temperatures, heavy rainfall events and sea level rise— lead to severe crop and livestock losses, famine and displacement. For example, the 2008–2011 drought caused $12.1 billion in losses and damage[4]. **Uganda** is exposed to a variety of natural hazards (droughts, flooding, landslides, heat waves). Flooding, particularly in low-lying areas of the country, presents the largest risk. Each year, floods impact nearly 50,000 people and over $62 million in GDP. Uganda experiences both flash floods and slow-onset floods, which are common in urban areas, low-lying areas, areas along riverbanks and swamplands[5]. Average temperatures in Uganda have increased by 1.3°C since the 1960s. Precipitation for the country is highly variable, but overall, Uganda has experienced a statistically significant reduction in annual as well as seasonal rainfall. Therefore, droughts have increased in Uganda over the past 60 years. Specifically, over the past 20 years, western,

[3] https://climateknowledgeportal.worldbank.org/country/kenya/vulnerability
[4] https://www.climatelinks.org/sites/default/files/asset/document/2018_USAID-ATLAS-Project_Climate-Risk-Profile-Kenya.pdf
[5] https://climateknowledgeportal.worldbank.org/country/uganda/vulnerability

		northern and north-eastern regions have experienced more frequent and longer-lasting drought conditions[6]. Droughts affected close to 2.4 million people between 2004 and 2013, and drought conditions in 2010 and 2011 caused an estimated loss and damage value of $1.2 billion, equivalent to 7.5% of Uganda's 2010 GDP. Agriculture, health, water resources, wetlands, and forests are the key sectors that are vulnerable to climate change in Uganda. Temperature rise and an increase in the frequency and intensity of extreme droughts and floods can reduce crop yields and cause a loss in livestock, which will have important implications for food security. **Rwanda** is highly vulnerable to impacts from climate change through its high dependence on rain-fed agriculture, as well as need to improve its road networks, health sector and water resource management. Floods occur regularly in Rwanda from heavy rains and are often associated with El-Niño Southern Oscillation (ENSO)[7]. Droughts are a recurring natural disaster, which are frequently associated with La Nina (cold phase), and affect Rwanda, often leading to famines, loss of animals, depletion of water resources, increased incidences of meningitis and other diseases, and loss of income. Overall, the country's four climactic seasons are represented through the long rainy season: March to May, and short rainy season: September to November. These seasons alternate with the long dry season: June to August, and short dry season: December to February. Increased seasonal variability and longer-term climate change are likely to exacerbate the country's existing vulnerabilities from high poverty levels, food insecurity, as well as potential for internal displacement and conflict along its western, northern and southern borders. Food security and progress of the agricultural sector is of primary concern as the majority of the country's agriculture is rain-fed and produced by small-holder farmers[8]. **Tanzania** is prone to risks from extreme weather events such as increased seasonal variation in rainfall and temperature, and frequent and prolonged droughts and floods[9]. Trend analysis results for the period 1961 – 2013 show a statistically significant increasing trend in mean annual maximum and minimum temperature throughout the country. Tanzania already experienced frequent and severe droughts. The country has had six major droughts over the past 30 years. With projected changes in climate, a larger proportion of the country's annual precipitation is anticipated to fall in heavy rainfall events[10]. Tanzania's agriculture, livestock, human health, water, and ecosystems are vulnerable to climate changes. Increasingly unpredictable rainfall, shifting agro-ecological zones, and increased dry periods could reduce production of certain crops. Furthermore, changes in climate are also predicted to increase the prevalence of malaria, the leading cause of

[6] https://climateknowledgeportal.worldbank.org/country/uganda/climate-data-historical
[7] https://climateknowledgeportal.worldbank.org/country/rwanda
[8] https://climateknowledgeportal.worldbank.org/country/rwanda/vulnerability
[9] https://climateknowledgeportal.worldbank.org/country/tanzania
[10] https://www.climatelinks.org/sites/default/files/asset/document/tanzania_climate_vulnerability_profile_jan2013.pdf

		death in Tanzania. Water is another key sector that would be significantly affected by climate changes. Impacts are expected to include changes in runoff in river basins, leading to changes in downstream water availability and timing, amounts of water pollution, and disturbances of stream ecosystems[11]. **Burundi** is exposed and vulnerable to climate-related hazards, most notably droughts and floods. Droughts repeatedly strike Burundi accounting for 67.8% of the distribution of natural hazards that occur in the country. They have devastating impacts on key economic sectors and can affect a large proportion of the population such as the one experienced in 2004, which affected over 2 million Burundians. Torrential rains have caused massive flooding throughout the 20th century for Burundi, especially in the 1960's when the level of Lake Tanganyika increased by 4 meters causing districts in Bujumbura and Gatumba to flood. And in 2002, floods caused by heavy rain forced many people from their homes. Storms have affected thousands of people in the first decade of the 21st century with 15,500 people being affected in 2004 alone. While the rainy season seems to be decreasing in the northeastern regions of Burundi, they have experienced torrential rains, lightning, and thunder during the rainy season, increasing their vulnerability to loss of livestock, food insufficiency, decreased agricultural output, bush fires, and loss of human life[12]. Burundi is a low-income economy and 80% of the population is employed in agriculture and it is one of the most densely populated countries in Sub-Saharan Africa. Therefore, Burundi is vulnerable to the impacts of climate change from changing climate patterns such as increased rainfall and heat, as well as catastrophic situations, which impact the country's development efforts and its key economic sector[13]. **South Sudan** faces a number of hazard risks and including floods and drought. Flooding mainly occurs between July and September, when heavy rains fall in most parts of the country, leading to the flooding of the Nile River tributaries. During the flooding season, many parts of the country are left under water. Droughts are very common in South Sudan due to the hot and dry conditions experienced during the dry season[14]. The occurrence of floods and drought is a critical issue to the economy of South Sudan, given that approximately 80% of the total population, which is at estimated 11.2 million (2020) people, lives in rural areas and works in agriculture. Climate variability is likely to negatively impact agriculture, while projected increases in rainfall intensity may increase the risk of floods and the spread of waterborne diseases such as malaria and bilharzias[15].
	b. Status of the EWS, DRM institutions and	**<u>Regional level</u>**

[11] https://www.climatelinks.org/sites/default/files/asset/document/tanzania_climate_vulnerability_profile_jan2013.pdf
[12] https://climateknowledgeportal.worldbank.org/country/burundi/vulnerability
[13] https://climateknowledgeportal.worldbank.org/country/burundi
[14] https://climateknowledgeportal.worldbank.org/country/south-sudan/vulnerability
[15] https://climateknowledgeportal.worldbank.org/country/south-sudan/vulnerability

	NHMSs, actors / players present	At the regional level, the IGAD Climate Prediction and Applications Centre (ICPAC)[16] is the Regional Climate Centre accredited to the WMO, based in Nairobi (Kenya). It provides climate services to 11 countries including Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda, among others. It provides services that address agriculture and food security, climate forecasting, disaster risk management, water resources and capacity development. In October 2021, it launched the Disaster Operations Center, which includes a situation room for monitoring major hazards and provide regional early warnings for drought, floods, extreme rainfall, food insecurity, or pests like the desert locust. ICPAC has a long track record as an active executing agency in development projects. Also, at the regional level, there are two accredited Regional Specialized Meteorological Centres (RSMC) that provide guidance over the following three days on severe weather such as heavy rain, strong winds, large waves (coastal areas of western Indian Ocean and Lake Victoria) and dry spells, through the Severe Weather Forecasting Programme (SWFP). The RSMC in Nairobi provides guidance for the whole of Eastern Africa and the RSMC in Dar Es Salaam provides guidance for the Lake Victoria basin only. The demonstration (pilot phase) of SWFP in Eastern Africa began with a technical planning workshop in Nairobi in October 2010 with participation of six countries in the region, including Burundi, Ethiopia, Kenya, Rwanda, Tanzania and Uganda.[17] In May 2013, South Sudan also joined the subproject which then moved to its full demonstration phase in September 2013 with participation of seven countries. In later years, several training workshops were organized to develop capacity of the NMHSs on NWP products' interpretation and use in severe weather forecasting and delivery of warning services. The Regional WIGOS Centre (RWC) East Africa is jointly hosted by Kenya and Tanzania and encompasses all the EAC countries, DRC excluded which joined officially the EAC in April 2022. KMD and TMA attend to different and complementary functions of the RWC, which aims to advance the implementation of WIGOS within the EAC region, to provide regional coordination and technical support to Members in the region. In this regard the primary, mandatory functions of the RWC are to support the Members in the EAC region with the management of metadata in OSCAR/Surface and to assist with following up on quality issues identified via the WIGOS Data Quality Monitoring System. **<u>National level</u>** In **Kenya**, the main body providing weather and climate services is the **Kenya Meteorological Department (KMD)**, which operates under the **Ministry of Environment and Forestry**. The **Directorate of Climate Change (DCC)** is also under the Ministry of Environment and Forestry. The directorate was established under Climate Change Act of 2016, and

[16] https://www.icpac.net/
[17] https://community.wmo.int/swfp-eastern-africa

		is mandated to provide vision, leadership, guidance and coordination on matters relating to climate change in the country. The **Ministry of Water & Sanitation and Irrigation (MoWSI)** is the key institution responsible for the water sector in Kenya. The **Water Resources Authority (WRA)** operates within the MoWSI and is a technical institution tasked with managing the National Monitoring and Information System, and thus is responsible for the provision of hydrological services in Kenya. The **National Drought Management Authority (NDMA)** is a public body established by the National Drought Management Authority Act, 2016. The NDMA's mandate is to exercise overall coordination (including with other national agencies) over all matters relating to drought risk management and to establish mechanisms, that will end drought emergencies in Kenya. The **National Disaster Management Unit** is tasked with maintaining command structure, budget and Standard Operating Procedures (SOPs) based on best practices. The current plan and SOPs are aligned to the strategic objectives of the **Ministry of Interior** and Coordination of National Government and protects social, economic and political pillars of our country. It also provides a clear leadership, command, control and coordinated approach to disaster mitigation, prevention, preparedness, response and recovery. The SOPs within the plan provides a strategic, operational and tactical guide for National Disaster Management Unit, government agencies and private partners during emergency incidents in the country. In **Uganda**, the facility for early warning and the coordination of emergency and crisis response and recovery action is the **National Emergency Coordination and Operations Centre (NECOC)**, which was established in October 2014, under the Office of the Prime Minister's Department for Disaster Preparedness and Management. The purpose of the NECOC is to contribute towards the functionality and characteristics that make creation of an integrated and multi-sectoral system approach to planning, preparedness and management of disasters that is fundamental to sustained productivity and socio-economic growth. The **Ministry of Water and Environment (MWE)** Plans and coordinates all water and environmental sector activities, with overarching responsibility for setting national policies and standards, regulating water resources, and determining priorities for water resources development. **The Directorate of Water Resources Management (DWRM)**, is housed within the MWE, and Responsible for developing and maintaining national water laws, policies, and regulations; managing, monitoring, and regulating water resources through permitting; **Integrated Water Resources Management (IWRM)** activities. However, the **Directorate of Water Development (DWD)**, is responsible for operational hydrology in Uganda, along with planning, implementation, and supervision of water and sanitation service delivery. The **Ministry of Water and Environment (MWE)** is mandated to lead in formation of legislation, policy, setting standards, coordination and back up technical support in relation to water and environment sub sectors. Furthermore, the MWE aims to ensure the "*functionality and*

		usage of meteorological information to support sector specific early warning to combat the effects of climate change and disaster risks". Therefore, the **Uganda National Meteorological Authority**, is a semi-autonomous government authority under MWE, and is the authoritative voice for weather and climate services in Uganda. The **Ministry in charge of Emergency Management (MINEMA)**, has mandate of taking lead in formulation, coordination, control, direction of disasters management and mobilization of appropriate resources accordingly in order to promote disaster awareness culture in **Rwanda**. This is in line with the National Strategy for Disaster Risk Reduction (SFDRR) of Rwanda, in which MINEMA leads the process of implementation, with the full engagement of all line ministries and institutions, to develop DRR capacities and the integrate disaster risk reduction into sustainable development in line with SFDRR and its priorities. **Rwanda Meteorology Agency (RMA)**, which is accountable to the **Ministry of Environment (MoE)**, is responsible for meteorological and climate services, and the provision of early warning services as they relate to weather conditions and the climate. The **Rwanda Water Resources Board (RWB)** is responsible for water resource management in Rwanda, including the collection of hydrological data, modelling and forecasting tools for water supply and demand and flood management, and is also situated within the MoE. In **Tanzania**, the **Disaster Management Department (DMD)**, in the Office of the Prime Minister coordinates disaster management activities. They act as the central planning, coordinating and monitoring institution for the prevention, mitigation, preparedness, response and post disaster recovery, considering all potential disaster risks. The Disaster Management Act, 2015, sets out a comprehensive legal framework for disaster risk management. The **Ministry of Water and Irrigation** has the responsibility for water resource management. Furthermore, the **Lake Victoria Basin Water Board** is responsible for operational hydrology, whilst weather and climate services information is the responsibility of **Tanzania Meteorological Authority (TMA)**. Coordination between DMD, the **Ministry of Water and Irrigation** and TMA has been strengthened in recent years, thanks to initiatives which focus on information and data exchange[18]. **Geographical Institute of Burundi (IGEBU)** is the national focal point of United Nations Framework of Climate Change Convention (UNFCCC) in **Burundi** and coordinates all adaptation and mitigation activities in the country. It is a directorate general under the **Ministry of Water, Environment, Land Management and Urban Planning** in charge of hydrology, hydrogeology, water resources assessment, climate monitoring in real time, mapping and survey issues at national level. The mission of IGEBU is to promote geographical activities in Burundi, namely cartography, topography, meteorology, and those relating to water resources. Within IGEBU, the **Directorate of Agrometeorology**

[18] https://www.undrr.org/publication/africa-road-map-improving-availability-access-and-use-disaster-risk-information-early

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Draft Terms of Reference for the Project Steering Committee (PSC) for the Project "Strengthening Hydro-Meteorological and Early Warning Services in the East Africa Region: CREWS East Africa" – To be endorsed by PSC members

Background

1. Climate Risk and Early Warning Systems (CREWS) Initiative

Announced by the French Minister of Foreign Affairs in Sendai in March 2015, the Climate Risk and Early Warning Systems (CREWS) Initiative was officially launched at the COP21 in Paris as part of the Solutions Agenda. The Initiative aims to raise USD 100 million by 2020 to strengthen multi-hazards early warning systems (MHEWSs) in Least Developed Countries (LDCs) and Small Island Developing States (SIDS). CREWS implementing partners are the World Bank (WB), World Meteorological Organization (WMO) and United Nations Office for Disaster Risk Reduction (UNDRR), through a Special Program managed by the WB's Global Facility for Disaster Reduction and Recovery (GFDRR). WMO provides Secretariat services, and WB serves as Trustee (see http://crews-initiative.org/en for more information).

The CREWS-financed project titled "**Strengthening Hydro-Meteorological and Early Warning Services in the East Africa Region: CREWS East Africa**" project aims to strengthen and streamline regional and national systems and capacities related to weather forecasting, hydrological services, multi-hazard impact-based warnings and service delivery for enhanced decision-making. It is implemented jointly by all three implementing partners and in close collaboration with the National Meteorological and Hydrological Services (NMHSs), National Disaster Management Organisations (NDMOs) and other relevant ministries. The project consists of five outcomes, namely:

1. Institutional and human capacities in regional and intergovernmental organizations to provide regional climate, weather and hydrological services to LDCs and SIDS increased

2. Strengthening impact-based Early Warning Services and targeted climate services in Kenya, Tanzania, Rwanda and Uganda

3. Strengthening national capabilities in Burundi

4. Strengthening national capabilities in South Sudan

5. Improved integration of gender and vulnerable groups across the EW-EA value chain

2. Project Steering Committee (PSC) Members

The PSC will be led by the national institutions, including National Meteorological and Hydrological Services (NMHSs) and National Disaster Management Offices (NDMOs), and also be comprised of representatives of the implementing partners of the project, namely WB, WMO and UNDRR. Other national and regional bodies can be invited as observers and will be determined by the PSC members.

3. PSC Terms of Reference

The PSC will provide oversight and direction on the project with the aim of strengthening the NMHSs and NDMOs in the two countries. Specifically, the PSC will consider options to

overcome in-country and regional barriers to implementation; identify and recommend incentives to advance strong coherence, complementarity, collaboration and coordination within and between projects; and reflect on progress towards achieving key milestones, which includes reviewing good practice and lessons learned from concrete country examples. The PSC will also ensure strong alignment regional and national initiatives to ensure complementarity.

The PSC will perform the following functions:

a. Lead in anchoring the project to relevant regional and national institutions, and ensuring alignment with relevant frameworks, strategies and priorities, to ensure ownership and sustainability of investment;

b. Ensure alignment with key national and regional strategies and priorities in SeA, in order to raise visibility of the projects, and maximize their benefits for the countries;

c. Assist in resolving implementation issues, policy conflicts and priority settings

d. Assess project progress and ensure that project delivery is in line with the agreed project timelines and budget

e. Ensure coordination with other related programmes and projects implemented by other UN agencies and development partners

f. Review, advise and endorse project's annual implementation workplan and budget

g. Work with WMO and its partners to secure national and regional level leadership support for projects and initiatives aimed at addressing the needs and priorities.

4. Role of the PSC Members

The roles of PSC members includes:

a. Understand the goals, objectives and the desired outcomes of the project;

b. Liaise with project partners to highlight national and regional requirements for strengthening EWS;

c. Understand and represent the interests of the NMHSs' and stakeholders of the CREWS East Africa countries;

d. Ensure that project funding decisions made are feasible and respond to issues, prioritization, risks and proposed changes to project activities;

e. Report on the progress made within their institution/country;

f. Actively participate in meetings through attendance, open discussion and review of project annual progress report, Monitoring and Evaluation, and sustainability plan; and

g. Review and endorse the report and/or minutes from the steering committee meetings. The process for the review should be completed within two weeks from the date of receipt of the draft report and/or minutes.

5. PSC Members

Institution	Name & Title	Email

		and Hydrometeorology is responsible for the provision of weather and climate services, along with hydrological monitoring and forecasting. In **South Sudan**, the agency producing weather forecasting services is the **South Sudan Meteorological Department (SSMD)**, which operates within the South Sudan Civil Aviation Authority (SSCAA) under the **Ministry of Transport**. the **Ministry of Environment and Forestry (MoEF)** is responsible for addressing the challenges of climate change over the medium and long term. Therefore, the MoEF is the lead agency and responsible for the coordination, formulation and implementation of the countries National Adaptation Plan (NAP), developed in 2021. The Climate Change Working Group (CCWG) was established in 2019, which is a mechanism for ensuring the technical review of proposals and alignment with national priorities and policies. The network provides a forum for approximately 80 members from line ministries, development partners, NGOs, research and academic institutions and private sector stakeholders to actively participate, exchange ideas and discuss lessons learned and best practices on how to improve their work in response to climate change. Over the last few years, the MoEF has been working with UNEP to define the roles and responsibilities of the CCWG with respect to overseeing the NAP process, and also determining the roles and responsibilities of priority ministries in the NAP process. The **Ministry of Humanitarian Affairs and Disaster Management (MHADM)** is responsible for coordinating humanitarian assistance to the needy, responding to disasters, reducing the risk to hazards and directing disaster risk management programmes. The MHADM has developed a National Disaster Risk Management Policy and is preparing a National DRM Bill, which will provide the guiding legal and policy frameworks for national and subnational disaster management activities when these are approved by the Cabinet [19]. **Ministry of Water Resources and Irrigation (MWRI)** is responsible for managing and developing the water resources of South Sudan and oversees the implementation of policies, guidelines and the development of master plans and regulations. The Ministry is composed of directorates that implement adaptation-measuring projects for water management in response to climate variability and change and collect climatological and meteorological data essential for water resources conservation and management. The most significant directorates include the Directorate of Hydrology and Survey, Directorate of Water Resources Management and the Directorate of Irrigation and Drainage.
	c. Projects and programs dealing with EWS and hydromet under	**<u>Recently Completed Projects</u>** The **High Impact Weather Lake System (HIGHWAY)** project was a 4.5m GBP project, funded under the Weather and Climate and Information Services for Africa (WISER) programme, by the Foreign and Commonwealth Development Office (FCDO). The aim of the project

[19] https://unfccc.int/sites/default/files/resource/South-Sudan-First-NAP%20.pdf

	implementation or preparation	was to increase access to and use of co-designed and sustainable early warning systems to inform regional, national, sub-national and community level planning and decision-making in the East African region to improve early warning services for the five million plus people living in the Lake Victoria. Therefore, the HIGHWAY Project developed a regional early warning system to alert fisherfolk and others travelling in small boats about high impact weather on Lake Victoria. It laid the foundations for a much broader early warning system that will eventually serve the whole of East Africa. In addition, HIGHWAY supported the establishment of regional cooperation between national meteorological services within the framework of the East African Community to harmonize marine forecasts and early warning services around Lake Victoria. Building on the achievements so far, the HIGHWAY Project assisted the East African Community (EAC) to formulate a Vision 2025 Early Warning Strategy to establish a framework for coordinating severe weather warnings throughout its six member states – Burundi, Kenya, Rwanda, South Sudan, Tanzania and Uganda – over the next five years and has been approved by the EAC ministers. To ensure the sustainability of this Regional EWS, the HIGHWAY project developed a 'Sustainability Plan' to inform project partners and wider stakeholder groups of the costs and benefits of investing in Regional EWS. The sustainability plan was used in the development of this CREWS East Africa project. The WISER support to ICPAC **(W2-SIP)** provided for the development, uptake and use of sub-seasonal, seasonal and long-term timescale products and services for regional applications. ICPAC were supported through the project and the project resulted in ICPAC's move to an objective forecasting approach has been a huge leap forward, supporting the development of a new range of customised seasonal services delivered by NMHSs in the region. Allied to this, the project enabled stakeholders to become much better equipped at interpreting and using climate services and promoted a shift in the thinking of climate information producers from the usual supply-driven to userdriven climate services through application of innovative co-production practices. Under Global Framework for Climate Services (GFCS), the Korea Meteorological Administration (KMA) has been providing support to the **Burundi Hydro Meteorological Department (BHMD)**. The main aim of the project was to strengthen BHMD forecasting and Information Technology (IT) systems to better respond to climate variability and change. The four main objectives of the project were reinforcement of computing capacities, capacity development of BHMD to provide user oriented weather and climate products, improvement of the capacity of stakeholders to access, take up, utilize and demand weather and climate information for decision making at national level, and enhancement of the capacity of BHMD for dissemination of climate information and seasonal forecast. The project has resulted in improved knowledge and awareness of climate information, communication channels, access, uptake, utilization, and

		dissemination of climate information and services. Through technical support provided by KMA, BHMD have been supported with new tools, trainings and website development etc. Therefore, the CREWS East Africa project will build upon the outcomes of this initiative and support provided, specifically targeting the enhancement of the forecasting and waning capabilities of BHMD. Since 2019, UNDRR has been supporting the development and implementation of the *Africa Road Map for Improving the Availability, Access and Use of Disaster Risk Information for Early Warning and Early Action*. Tanzania was one of the pilot countries in which an Early Warning System (EWS) Baseline Analysis was conducted. The baseline consisted of evaluating the UR Tanzania's monitoring of hydrometeorological capacity and the warning communication and dissemination capacities. The baseline drew key recommendations among them the need to improve the country's monitoring and forecasting services (provided by the Tanzania Meteorological Authority) and the operationalization of capacity of the EOC in order to provide a 365/24/7 round the clock service aimed at implementing fail-safe systems and standardized procedures for the issuing of warnings but also to develop communication and dissemination capacities and within the context of to improving preparedness and response capacity, including in the Context of Transboundary Risk Management. The Road Map builds on previous work to assess exposure and vulnerability of countries to flood and drought risk, with quantitative assessment of loss and damage to different sectors. The road map is implemented under the political leadership of the African Union in cooperation with ACMAD, regional Economic Communities, Member States and several stakeholders. The strategic framework resulted by the road map has been approved in the ministerial session which took place in the context of the African Regional Platform for DRR, in November 2021. The Multi Hazard EWS conference equally identified priorities and implementation modalities of the strategic framework. Furthermore, UNDRR has been supporting the implementation of recommendations of the Nairobi Declaration on Disaster Risk Reduction, adopted by African Minister following the November 2021's African Regional Platform on DRR. The Nairobi Declaration calls for the development of multi-hazard and impact-based early warning systems among its priorities. The Declaration further emphasizes the need for multi-hazard and impact-based early warning systems for early action and for effective transboundary risk management and the enhancement of MHEWS and the provision of timely and appropriate early action.**Projects Under Implementation** **Regional projects:** The WMO is implementing the **Severe Weather Forecasting Program** covering 80 countries. It aims to strengthen the capacity of WMO Members to deliver improved forecasts and warnings of severe weather in order to save lives and livelihoods and protect property and infrastructure. In the East Africa region, Ethiopia is a project participant (Somalia and Sudan are not included). The project has supported

		NMHS in the region to improve forecasts for severe weather events that include heavy rain, strong winds, and dry spells. There is an intention that Sudan and Somalia would be included in future projects. The **Intra ACP Climate Services and Related Applications Programme,** supported with EUR 85 million from the EU, is fostering sustainable development in the region by addressing the existing gaps and mainstreaming climate services into policy processes at regional, national, and sub national levels. The main implementing partner is ICPAC and is supporting a number of activities. First, it supports stakeholder-driven identification of region-specific priority needs and products via Regional Frameworks for Climate Services and National Frameworks for Climate Services and user stakeholder national and regional consultations. Second, it supports the provision of expert advice on country-level delivery of services, validation of the results of the use of the products generated, and the associated socio-economic benefits. Third, it is promoting the operational exchange of data and products between NMHSs at country level and WMO Regional Climate Centres. Fourth, it is equipping Regional Climate Centres with tools and capacities to produce and deliver tailored climate services. Last, it is promoting the exchange of knowledge and best practices across the regions, and support with content development for the Intra-ACP Climate Services Annual Fora. The **Agricultural Climate Resilience Enhancement Initiative (ACREI)** is a $6.8 million Adaptation Fund project supporting agriculturalists and agro-pastoralists in selected communities in Ethiopia, Kenya and Uganda to enhance their resilience to climate-related hazards. The project is implemented by WMO, FAO and ICPAC and links climate information to adaptation actions through enhanced climate information generation, capacity building of extension services and financing community adaptation actions. This includes packaging seasonal forecasts and co-producing climate services with farmers. Furthermore, the project is supporting the installation and operation of automatic weather stations in the project locations. The **FINKERAT** project is a cooperation and development project funded by the Finnish Government between Finland, Kenya, Rwanda and Tanzania. The FINKERAT project aims at improving the resilience of the beneficiary countries to climate change and to mitigate its impacts. The project strengthens the capacity of the designated institutions to provide and end-users to uptake enhanced weather forecasting, early warning and air quality services. The project will potentially benefit about 200 million East-African citizens. In the project, the Finnish Meteorological Institute (FMI) will support the modernization and customization of weather forecasting, early warning and air quality services for the end-users of the partner organizations, achieved with the installation and configuration of systems for weather forecasting, early and air quality modelling developed and currently operated by the FMI, including supporting hardware and equipment. Additionally, FMI will build capacity to ensure that the systems are managed in a sustainable and cost-

		efficient manner after the project. The project's stakeholder group includes national government institutions, UN actors and academic organizations, among others. The Finnish Red Cross and the national Red Cross societies are involved in the development of weather and early warning services tailored for communities in vulnerable situation. The project has started in early 2022; the duration is four years until the end of 2025. The project is articulated in three main outputs which include on the one hand bilateral cooperation and development activities between the FMI and the sister institution and the end-users in each country, and on the other hand activities which involve all the partners together at regional level engaging other countries in the EAC region and Ethiopia. The project total budget is 2,5 Million EUR and the partner institutions are the Kenya Meteorological Department (KMD), the Rwanda Environment Management Authority (REMA), the Rwanda Meteorology Agency (Meteo Rwanda) and Tanzania Meteorological Authority (TMA). The FINKERAT project as such share's common scopes with this CREWS project proposed for the EAC region, hence providing room for concrete synergies and complementarities. The International Development Association (IDA) funded **Nile Cooperation for Climate Resilience** (P172848) is an ongoing investment of $30 million. It started in 2021 and will run to 2025. It is continued support to the Nile Basin Initiative (NBI), and it will be implemented by East African Community through the Lake Victoria Basin Commission, the Nile Basin Discourse, and the Nile Equatorial Lakes Subsidiary Action Program (a coordination Unit Eastern Nile Regional Technical Organization). The objective is to improve mechanisms for cooperation on water resources management and development in the Nile Basin. As it relates to the hydromet and early warning systems, it will promote Basin-wide information services for climate-resilient investment planning. It will do this by developing a regional cloud-based Nile Basin Data and Analytic Services platform, modernizing technical skillsets and capacity building of key NBI stakeholders, and improving the NBI's institutional information infrastructure. It will also advance the joint development of basin-wide flood and drought forecast models and information dissemination platforms. This will include the development of a new basin-wide flash flood early warning system. ENTRO will be supported to enhance its riverine Flood Forecast and Early Warning (FFEW) system, and to develop and operationalize a basin-wide drought monitor. Two EU funded Horizon 2020 projects are also addressing early warning and hydromet services in the region. **CONFER**[20], which runs from 2020-2024 is focusing on climate adaptation through the co-production of Climate Services in East Africa and the Greater Horn of Africa. ICPAC is one of the project partners, and the project will directly engage through the GHACOF. **Down2Earth**[21] focuses on the Horn of

[20] https://confer-h2020.eu/
[21] http://down2earthproject.org/

		Africa Drylands, and aims to address the challenges of water scarcity and food insecurity by developing and disseminating community relevant climate services. ICPAC and SWALIM are partners in the project, along with the University of Addis Ababa. The WMO coordinated **FOCUS-Africa** project, which is also funded under the EU H2020 programme, is also developing tailored climate services for the agriculture, infrastructure and energy sectors in Tanzania, though overall focus of the project is on the SADC region for which Tanzania is also a member. UNDRR is continuing the implementation of the African Road Map and has established strong partnership with several donors and implementing partners. UNDRR is coordinating coherent implementation of multiple projects to support the implementation of the Road Map. The projects contribute to the implementation of the Road Map at the continental, regional and national level in a harmonized way and include a component for the establishment of a network of African Expert Centers to be paired with other international expert centers. The initiative aims at further building the capacity of the African ones and jointly deliver tools, services and capacity building to African institution. Through the funding of the Government of Italy, UNDRR supported the strengthening of capacity of ICPAC to deliver operational data through the establishment of a situation room at the disaster operation center of ICPAC and the creation of quality climate data sets. Currently, under the CREWS-horn of Africa "Greater Horn of Africa – Strengthening early warning and early action systems for meteorological, UNDRR and other CREWS IPs are working towards increasing the capacity of ICPAC as a facility providing effective EWS in the EAC region and beyond. **National Projects:** **Kenya** The **Kenya Climate Smart Agriculture Project (KCSAP)** is a Government of Kenya project jointly supported by the World Bank. KCSAP is being implemented over a five-year period (2017-2022) under the framework of the Agriculture Sector Development Strategy (ASDS) (2010-2020) and National Climate Change Response Strategy (NCCRS, 2010). KCSAP will cost a total of $ 279 million with $ 250 million financing from the World Bank and a Government contribution of $ 29 million. The Ministry of Agriculture Livestock Fisheries and Cooperatives is the main implementing Agency at the national level. KCSAP Development Objective is to increase agricultural productivity and enhance resilience /copying mechanisms to climate change risks in the targeted smallholder farming and pastoral communities in Kenya, and in the event of an Eligible Crisis or Emergency, to provide immediate and effective response. The project will benefit about 522,000 households of smallholder farmers, agro-pastoralists, and pastoralists directly, 340,000 households benefiting from the county-level and public-private partnership investments and over 600 micro-small-and-medium enterprises.

The **Enhancing community resilience and water security in the Upper Athi River Catchment Area** project, is a funded by the Green Climate Fund (GCF) and has a total value of $ 10 million. The project aims to increase water security and strengthen communities' resilience to climate change in Kenya's Upper Athi River Catchment area. This will involve integrated water resources management and investment in water supply infrastructure in four vulnerable counties. Interventions include hydrological and meteorological information management; installation and rehabilitation of water infrastructure; and strengthening planning and regulatory frameworks for water resource management.

Tanzania

Funded by Norad, **GFCS Adaptation in Africa Phase II** enhanced the capacity of the Tanzania Meteorological Authority (TMA) to better anticipate and respond to extreme weather events and climate change. Focus of Phase II was on improved climate services delivery for agriculture and food security, health, and disaster risk reduction. As part of the GFCS APA support TMA have developed a national framework for climate services (NFCS), which highlights *modernization of infrastructure achieved to support delivery of efficient and reliable services* and *quality weather and climate forecasts and information produced and delivered to meet stakeholders' needs* as key goals. TMA, through the Korea Meteorological Administration (KMA) funding, have also been supported to improve agrometeorological service provision across all components of the GFCS, particularly interaction with users, capacity development, agro-climatic information services and observations and monitoring. The project is helping TMA to interact with their stakeholders and increase their capacity and awareness on use of climate information, while also supporting TMA to solicit feedback to better understand user needs and challenges regarding the services and products provided by TMA.

The **Tanzania Agriculture Climate Adaptation Technology Deployment Programme (TACATDP)** programme is a GCF led initiative. The programme has a total value of $ 200 million and aims to strengthen resilience of Tanzania's agriculture sector by facilitating access to agriculture climate adaptation technologies. This will be achieved by establishing a lending and de-risking facility that will make these technologies affordable to local farmers and agricultural enterprises, accompanied by technical assistance and support from government authorities. The project will also strengthen awareness of climate threats and risk-reduction processes among government, industry actors and the financial sector.

The **Simiyu Climate Resilient Project** is a 5-year (2019 – 2024) GCF funded project which aims to Safeguard water supply and farming conditions in the Simiyu Region of Tanzania. Through the project, the government's community-based adaptation planning will be strengthened, and the climate resilience of water supply infrastructure, sanitation services and agricultural practices will be

improved. A community-driven approach will ensure the targeting of the most vulnerable in both the urban and rural population, whilst improving the implementing capacities of local and central government structures.

The Korea Meteorological Administration (KMA) is funding the project "**Enhancing the capacity in provision and utilization of weather and climate services in Tanzania**" worth about 100,000 CHF. As part of global efforts in the implementation of the Global Framework for Climate Services (GFCS), the Korea Meteorological Administration (KMA) has been providing funding to support the improvement of climate services in Eastern Africa since 2013. This project aims at improving the capacity in provision and utilization of demand driven weather and climate services to support and enhance the resilience of vulnerable people and sectors to climate variability and change. The project will address the following gaps: i) Rapidly changing technology in data processing combined with limited capacity in processing, packaging and dissemination of weather and climate information and products; ii) Low awareness on TMA products leading to low uptake and use; iii) The need for improved agrometeorological services provision.

The European Commission is financing the development project "**Full-Value chain Optimised Climate User-centric Services for Southern Africa (FOCUS-Africa)**", which aims to deliver tailored climate services in the Southern African Development Community (SADC) region in four key sectors: agriculture and food security, water, energy, and infrastructure. The full-value chain of climate services will be demonstrated by piloting eight case studies in six countries involving a wide range of end-uses and beneficiaries. The case studies will illustrate how the use of climate science, forecasts and projections can maximize socio-economic benefits to specific national private and public sectors in the region. Pathways to scale-up the pilot cases are included for the whole Africa continent through the Regional Climate Fora. The United Republic of Tanzania, being one of the SADC region countries, is included in the beneficiary countries of the project.

Rwanda

The **Strengthening Climate Resilience of Rural Communities in Northern Rwanda** project is GCF funded. The project has a value of $ 33.2 million and is expected to run for a total of 6 years, from 2019 – 2025. The focus of the project is on increasing the climate resilience of vulnerable communities in nine sectors of Rwanda's Gicumbi District. It will restore and enhance ecosystems in degraded watersheds and increase the capacity of communities to sustainably manage forest resources. It will follow an integrated landscape management model.

The **Rwanda Climate Services for Agriculture** project was a four-year initiative (2016-2019) that sought to transform Rwanda's rural farming communities and national economy through improved climate risk management. The project covered 30 districts and has used the PICSA

approach to train agricultural extension staff, NGOs and other intermediaries to integrate climate services into their work.

The **Landscape Approach to Forest Restoration and Conservation (LAFREC - P131464)** project, which ran from 2014 to 2020, was financed by the GEF and LCDF by grants totaling $9.5 million, which sought to, among other aims, boost climate resilience in a degraded landscape. The project financed increase hydromet monitoring capabilities. Support from the ACP-EU Natural Disaster Risk Reduction program enabled the establishment of a flood early warning system in a flood prone basin, the Sebeya Catchment, as well as technical support to the national meteorological and hydrological authorities.

The **Second Rwanda Urban Development Project Phase II (P165017),** together with additional financing (P177247) is primarily focused on urban planning and upgrading, but in order to strengthen flood risk management, hydrometeorological monitoring capabilities are being strengthened in Kigali, the capital city.

Uganda

The **Drought and Flood Mitigation Service (DFMS)** project, led by RHEA Group, was created to help decision-makers in Uganda mitigate the impacts of droughts and floods and enable senior officials to take better-informed decisions around water, environment and agricultural management in Ugandan society. DFMS provides this information through access to robust meteorological, hydrological, and other Earth observation information. UNMA were involved in the project's implementation.

South Sudan

The WB project, **Enhancing Community Resilience and Local Governance Project Phase II** aims to improve access to services, strengthen flood resilience, and enhance institutional capacity for local service delivery and integrated disaster risk management at the national and sub-national levels, in South Sudan. The five-year project (2022 – 2027) is implemented by the Government of South Sudan on behalf of the Ministry of Finance and Planning (MoFP) and the Local Government Board (LGB), in coordination with MoWRI and MHADM. The project supports physical investments in flood risk reduction and provides institutional strengthening support to strengthen capacities at the national and sub-national levels for DRM and emergency preparedness and response (EP&R).

FAO in collaboration with the Ministry of Agriculture and Food Security of South Sudan with funding from the United Kingdom through the Foreign, Commonwealth & Development Office (FCDO) launched the has launched **Ziraa Tanna**, a series of talk shows on climate information and agriculture practices that will be broadcasted by local and national radio stations all across South Sudan. Each episode of Ziraa Tanna, Our Farm in Juba Arabic, provides farmers with key weather updates and guidance on proper management of agriculture, livestock, and fisheries in South Sudan. The radio programmes also give tips on the actions that

farmers, cattle keepers and fisherfolk should undertake to reduce risks to their livelihoods and maximize their productivity.

Under its **Global Risk Assessment Framework (GRAF)** initiative, UNDRR has deployed an international DRR expert into the United Nations Country Team (UNCT) in South Sudan to support shared risk analytics across development and humanitarian actors. In collaboration with the Humanitarian Country Team (HCT), specifically the Inter-Cluster Coordination and Information Management Working Groups, UNDRR has been requested to facilitate common access to and use of risk information by UN and national partners as a means to inform risk surveillance and improve the disaster risk knowledge-base through the systematic collection and aggregation of risk and hazard data. A Risk Working Group was endorsed by the UNCT in April 2022 to coordinate this multi-partner collaboration. Collection of risk information was initiated in May 2022 and will be collated against the Hazard Definition and Classification Review endorsed by the International Science Council and UNDRR in 2021 to improve standardization of hazard data across over 300 hazards in the taxonomy. Risk information will be uploaded into an open-access Risk Information Exchange (RiX), www.rix.undrr.org (currently in beta-form), with a national landing page to be created for South Sudan to facilitate national end-user access to high quality multi-hazard risk data.

Strengthening the capacity of government and communities in South Sudan to adapt to climate change is a GEF-funded Climate change adaptation development project of about 9 million USD for a duration of 60 months. The primary objective of the project is to increase the resilience of vulnerable communities in two states in South Sudan to the observed and predicted impacts of climate change. This objective will be achieved through a series of complementary interventions that, among others, will increase the capacity of the government to implement climate change adaptation interventions and upgrade the national meteorological network and support the production of short-range forecasts. These interventions are designed to generate sustained benefits beyond the project's lifetime, with a focus on capacity-building, community ownership, and knowledge generation and dissemination. The project implementing agency is UNEP; the project executing organization in South Sudan is the Ministry of Environment and Forestry (MoEF), which has officially confirmed its support to WMO participation in the execution of the activities of the project, among others. The project was approved by the GEF Secretariat in December 2019; however, the execution is yet to start.

Burundi

The **Building Resilient Communities, Wetland Ecosystems and Associated Catchments in Uganda** is a GCF project. The project has an estimated lifespan of 8 years, running from 2017 – 2025 and has a total value of $ 44.3 million. The aim of the project is to assist the Government of Uganda take climate change effects into account in

managing wetlands. Climate effects include increased climate variability and extreme weather events, such as droughts, floods, high temperatures and violent storms.

The **Climate proofing food production investments in Imbo and Moso basins in the Republic of Burundi** is a GCF funded project which aims to build farmers' resilience to climate change in the upper, middle, and lower Imbo and Moso catchments and to increase agricultural productivity and food security through adoption of better agroecosystem management practices to conserve soil and water resources. The project is estimated to run from 2020 – 2026 and has a total funding of 31.7 million.

Pipeline Projects

Under the **Global Risk Assessment Framework (GRAF)** and the new **Centre of Excellence for Disaster and Climate Resilience (CoE)**, UNDRR and its partners will improve national early warning systems for prevention and anticipatory action by piloting impact-based forecasting in two countries, including South Sudan. Harmonized country-specific risk information -- such as topography, flood and landslide hazard maps, populations at risk, geo-located critical infrastructure and other social vulnerabilities and exposures -- requires access to risk information. UNDRR and its partners will encourage coordination between national meteorological and hydrological services, disaster management authorities and development and humanitarian agencies to improve sharing of risk information for harmonized approaches to impact-based forecasting.

Burundi has potential for leveraging additional financing for future World Bank investments in EWS. The preparation of the "Urban Resilience Project (P177146)" is at an advanced stage. The project is expected to finance activities related to early warning, disaster risk management, which includes the strengthening of national systems and capacity related to weather forecasting, hydrological services, and service delivery for enhanced decision-making.

In **Rwanda,** the World Bank is preparing the "Volcanoes Community Resilience Project" (P178161), which seeks to boost climate resilience and natural resource management in the country's Volcanoes region. One component of this project will address flood risk management and in particular, advance flood early warning systems, building the LAFREC project (see above). This will include a focus on monitoring and forecasting capabilities, as well as dissemination and response. The project is expected to be approved in late 2022.

In **South Sudan**, the World Bank is preparing the "South Sudan Climate Resilient Flood Management Project" (P179169), which aims to improve climate resilient water resources management and enhance community resilience to floods in select river basins in South Sudan. Among others, the project is expected to be finance investments in flood risk reduction and provide capacity building support for flood management. Expected approval is in May 2022.

	d. Describe the multiplier /leveraging potential of the CREWS investments	There is a significant leveraging potential in East Africa through ongoing and planned investment projects by the CREWS Implementing Partners and other Development Partners. As such, the proposed CREWS project will support the design and implementation of forthcoming investments, and consists of national activities and regional coordination mechanisms to foster knowledge exchange and increase access to early warning services, including enhancing the existing marine weather information and expanding the sectoral coverage (to other sectors impacted by severe weather). Furthermore, planned investments from the WB include, *Urban Resilience Project* in Burundi, *Volcanoes Community Resilience Project* in Rwanda (Around USD 5M investment is expected for EWS), and the *South Sudan Climate Resilient Flood Management Project*.
	e. Describe measures to ensure coherence with existing initiatives	The CREWS implementing partners, WMO, WB and UNDRR, will bring their expertise and draw on key engagements within the countries covered under the project and further engagement across the region. As this project progresses, this strong engagement will ensure continuity and further enhance the outcomes from these projects, especially through capacity development, institutionalization, and development of standards, for sustained benefits at local, national and regional level. In addition, coherence with existing initiatives will be ensured by leveraging existing coordination mechanisms at the national and regional levels. For example, the project will ensure collaboration with existing WMO network of regional centres such as RCC ICPAC, RSMC Nairobi and RSMC Dar Es Salaam and RWC East Africa. Thus, regional centres will have an important role in the project by providing capacity development and technical support and promotion of strengthened operational exchanges of data and products between NMHSs. As discussed in previous sections, through ongoing and recently completed initiatives such as ACREI and the WISER 2 programme, WMO has had strong engagement with the participating countries in recent years through the development of the Regional EWS Vision 2025. Furthermore, the project activities are designed with ongoing initiatives in mind and aim to ensure maximum complementarities between projects. Additionally, the WMO team consists of individuals from the WMO Office for Eastern and Southern Africa (ESA) in Nairobi, Kenya, who have strong relationships with the government counterparts in the relevant ministries. These government counterparts have been directly consulted on this proposal to ensure alignment. The project activities have been designed considering the FINKERAT project recently started, which, as earlier mentioned, shares some scopes at the regional and national levels, though limited in this case to three countries only of the EAC region, notably Kenya, Rwanda and Tanzania. In this regard the project has been design not to duplicate but on the contrary to leverage on the FINKERAT objectives. This has made possible to optimization of funds for the developing activities in

		the countries not covered by FINKERAT, e.g. Burundi, South Sudan and Uganda. The proposed project is therefore aimed to enhance the capacity of Burundi, South Sudan and Uganda and elevate them to the standard needed for the implementation of a regional EWS framework across the whole EAC region. Furthermore, the FMI project manager of FINKERAT is currently seconded to the WMO ESA office in Nairobi till mid-July 2024. In addition to this, the proposed CREWS activities will be implemented by the respective WB task teams who are involved in the Investment Project Financing (IPFs) mentioned above to ensure the coherent support across CREWS and IPFs. Over the past few years UNDRR has been supporting the African Union Commission, the ACMAD, Regional Economic Communities and African Member States, for the development and implementation of the Africa Road Map for Improving the Availability, Access and Use of Disaster Risk Information for Early Warning and Early Action, including in the Context of Transboundary Risk Management. The African Road Map identifies activities and practical recommendations aiming to improve the availability, accessibility and use of risk information at the continental, regional, national and local scales, for the African Union Commission (AUC), the Regional Economic Communities (RECs) and four countries - Angola, Ethiopia, UR Tanzania, Zambia - as well as key African stakeholders in the field of DRR. The road map focuses on impact-based Early Warning Systems, and in this context looks to enhance the capacity for data exchange and coordination among national, regional and continental actors. The road map contains a baseline analysis on the status of Early Warning Systems and use of disaster risk information in the target countries, as well as at the continental and sub-continental (regional) levels. The analysis highlights strengths and challenges in four components of Early Warning Systems: Disaster Risk Knowledge, Monitoring and Forecasting, Communication and Dissemination, and Preparedness and Response. The consolidated baseline analysis was compiled in three phases. First, a desktop review was compiled for each country to support both a draft of the baseline and the organization of country missions where key stakeholders were interviewed using a common survey. After the country missions, a first version of the baseline was compiled and presented for discussion in a multicounty workshop. The revised baseline was consolidated with the help of national DRR focal points and used to develop the recommendations and the road map. Final recommendations were consolidated through a round of national workshops attended by key stakeholders. The present final road map document was presented and endorsed at a multi-country workshop in January 2020, attended by the directors of the respective national DRR authorities, the RECs and AUC. The final part of each country analysis in the road map, as well as for the supranational level, includes a list of recommendations for each of the four Early Warning System components (disaster risk knowledge;

		detection, monitoring and forecasting; warning dissemination and communication; preparedness and responsibility capacities) and traces an optimal process for the country. This is done for each of the countries, as well as for the continental and sub-continental level, and includes common policies for transboundary risk management. The road map builds on the results of a pilot demonstration on the use of the open-source platform MyDEWETRA for exchanging data and information among different national stakeholders, as well as regional and continental institutions. Therefore, recommendations also include a section on the adoption of an integrated IT system for improving availability and accessibility to risk information and Early Warning in general. The implementation of the road map led to the development of a strategic framework which has been endorsed in the Ministerial Session within the African Regional Platform in November 2021. It further identifies priority and modality of implementation of the road map. Other countries in the region are expected to benefit from the baseline methodology adopted under the Africa Road Map approach in assessing countries' monitoring of hydrometeorological capacity and the warning communication and dissemination capacity. In relation to South-Soudan, UNDRR is working with key actors in the country, in particular the Humanitarian Country Team (HCT) for the establishment of common access aimed at improving disaster risk knowledgebase in the country. A Risk Working Group is in place to coordinate this multi-partner collaboration. The outcome is the deployment of an open-source Risk information platform to support Risk Information Exchange.

Project design	a. Project components and activities	The activities presented in this section are designed to address capacity gaps within EAC countries and are developed based on findings within section B: Status of the EWS, DRM agencies and NHMSs, actors / players present. The project design involved extensive consultation with the national and regional level stakeholders and the activities were developed based on the feedback received through these consultations. The project was designed considering synergies with the FINKERAT project, with the aim of avoiding duplication and leveraging on the FINKERAT activities and objectives. **COMPONENT 1: INSTITUTIONAL AND HUMAN CAPACITIES IN REGIONAL AND INTERGOVERNMENTAL ORGANIZATIONS TO PROVIDE REGIONAL CLIMATE, WEATHER AND HYDROLOGICAL SERVICES TO LDCs AND SIDS INCREASED** ***Regional Subcomponent 1: Improving regional services to support countries to provide effective EWS*** **a)** ***Improving the quality and availability of observational data in the EAC region and the exchange at international level.*** The project will provide financial and technical support to the recently established regional WIGOS centre in East Africa. This

		includes the development and execution of a coaching programme to enhance capacities within the centres. In addition, activities will be executed aiming at developing recommendations on potential / impending challenges, including rehabilitation of all malfunctioning instrument/equipment and equipping respective stations with all the required instruments. Considering the challenges experienced by partner countries to exchange observational data internationally and the WIS 2.0 framework, the project will pilot the implementation of the WIS2 in a box solution. The WIS2.0 is a coordinated global infrastructure responsible for telecommunications and data management functions in the 21st century owned and operated by WMO Members, which is ready to be rolled out. The WIS2 in a box solution consists of a turnkey opensource solution, available free of charge, fully compliant with WIS2 specifications deployable on premises or in the cloud on the WIS2 system. Furthermore, this activity is critical for supporting SOFF interventions, as strengthening the regional capacity to exchange data internationally will support SOFF interventions in the region. **b)** ***Joint regional training on access and use of data according to SOPs established in the context of the MHEWS framework.*** Joint trainings allow for testing and fine tuning of SOPs for exchange and analysis of data and information relevant for impact based EWS and triggering of Early anticipatory actions. UNDRR replicate the methodology successfully implemented in other ongoing initiative, which consists of exposing participants to a common risk scenario (real case study) analyze how this had been dealt by the different stakeholders to identify gaps and possible solution relying on joint resources and capacity. **c)** ***Scale up of good practices and processes (from selected member states) for the identification of appropriate anticipatory actions, including definition of triggers for the activation.*** Good practices identified in the previous UNDR-led activities will be incorporated and enhanced under this project to support the deployment of an effective people-centered EWS in the region, that include the identification of appropriate anticipatory actions, including definition of triggers for the activations. **d)** ***Comprehensive understanding of user needs that will allow the definition of tailormade systems and set of information, ultimately allowing the implementation of timely and appropriate Anticipatory actions.*** 1) Building on the assessment/analysis delivered in 2021 by FAO/TUFT University conduct an in-depth study/analysis in at least 2 countries, in order to define existing frameworks and tools, as well institutional arrangements. 2) the study will be validated through in countries workshops, and finally shared with IGAD to inform other member states.

		e) ***Enhancing regional capacity to produce and deliver short-term and severe weather forecasts.*** This activity is aimed at improving the performance of the NWP models which run RSMC Nairobi and Dar es Salaam, whose outputs are used to produce the short-term and severe weather guidance for the EAC region, thus leading to improved quality of such products produced on a daily basis for use of the EAC members. The improved performance of the NWP model will be achieved by initializing the regional NWP model operated at the RSMCs with the ECMWF raw dataset through dedicated licenses and improved processing with new hardware. Verification of the short-term and severe weather guidance carried by RSMCs (with possible support of WMO) and reported regularly supports the verification of increased quality of the products. In addition to this, the project will support the organization of SWFP workshops and corresponding attendance of participants from the NMHSs involved in the project. The workshops will target operational forecasters and public weather services (PWS) staff of the NMHSs and leverage on the short-term and severe weather forecast guidance produced by the RSMCs in the region. The process will also include capacity building of service providers towards effective user engagement. These workshops will be co-financed by the FINKERAT project. One of the mandatory duties of the NMHSs members of the SWFP-Eastern Africa is to arrange regular evaluation/ verification of the forecasts and warnings at NMHS/NMC, and to ensure case studies are conducted by the NMHS/NMC and submitted to the RSMCs as appropriate. The increased budget in this activity will support capacity building to the NMHS through the RSMCs for improving the capacity of members to implement the evaluation/verification of their forecasts and warning, since RSMCs are currently providing regular evaluation/verification of the Severe Weather Guidance on which the NMHS based their weather products and early warnings, and can therefore share know-how, experiences and best-practices. Refreshment on CAP system and implementation at country level will be also implemented in addition to the regular activities on the subject included of the SWFP workshops. In addition, the increased budget will be utilized to support knowledge and skills sharing within NWP experts of the NMHS in the EAC region, therefore complementing the financial support provided by the FINKERAT project with the same objective. f) ***Develop hydrological status assessments and outlook demonstration products for two transboundary catchments in LVB (HydroSOS).*** Develop and customize an automated system of tools for data acquisition and processing while

integrating it with observed data to develop and update pilot HydroSOS products. The customized system of tools will be applied to the sub-basins agreed by the countries:

a. Kagera River (the largest inflow tributary into Lake Victoria), covering Uganda, Tanzania, Rwanda, and Burundi; and
b. Sio, a shared basin between Kenya and Uganda.

g) ***Socio-economic cost benefit study***

a. Finally, a socio-economic cost benefit (SEB) study has been included in the project to support investment decisions. Therefore, it will typically involve analysis of benefits and costs and a comparison of benefits and costs using the net benefits (benefits minus costs) or benefit–cost criteria. At the seventy-fifth session of the Executive Council (EC-75) which was held from 20 to 24 June 2022 in Geneva, EC welcomed the proposal of the WMO Secretariat to develop a SEB Toolbox and a SEB Toolbox Training Package as important instruments for strengthening the capacity of Members to conduct socioeconomic benefit studies and assessments (Decision 5.4(2)/1 – Initiatives to Advance Socioeconomic Assessments of Weather, Climate and Water Services). Creation of a SEB Toolbox aims at facilitating the practical application of metrics, methods and approaches to the evaluation of social and economic benefits of meteorological and related services, including guidelines and recommended practices for key users particularly from LDCs, SIDS and weather- and climate-sensitive economic sectors. Capacity building aims at developing a SEB Toolbox Training Package to provide easily accessible training resources to help NMHSs acquire understanding of a Toolbox application. CREWS East Africa will be a pilot and contribute towards the development of the SEB Toolbox, by working with the different members to develop methodologies for SEB.

Regional Subcomponent 2: Strengthening regional coordination and cooperation for effective EWS and climate services

a) ***SOPs aligned to the MHEWS framework piloted in Kenya and Uganda.*** The draft SOPs developed by institutions already involved in phase 1 of the MHEWS programme will be presented to beneficiary countries of the project and request for feedback for their further tuning and adaptation to specific country contexts gathered and mainstreamed in the living document.

b) ***Establish regional platform for coordination of Anticipatory Actions in Kenya and Uganda.*** Kenya and Uganda will establish a platform of practitioner/stakeholders that will, through a consensus-based analysis inform the

		implementation of the Early/Anticipatory Action (E/AA. 1) define/map core group of stakeholders (E/AA Technical Group) at country level and establish the E/AA Technical Groups in at least 2 countries. 2) support the development, institutionalization and use/implementation on an E/AA framework (from actions to information), which will define, based on the possible response options, the timing and quality of the information required to trigger funding and implementation. **c)** ***Increase collaboration across NMHS's through regional platforms that support the delivery of the regional EWS Vision 2025.*** This activity will support regional cooperation to foster dialogue between relevant East African NMHSs, the East African Community (EAC) and the Lake Victoria Basin Commission (LVBC) with a view to co-designing an Early Warning System to enhance basic and marine safety warnings and dissemination to various users in the region. To achieve these, it would be necessary to have a Regional Cooperation Platform, define each institution's roles and responsibilities, propose data storing and sharing policies as well as reach agreement on which institution is best placed to host the Regional EWS. **d)** ***Development of strategic priorities and / or recommendations for the implementation of the EWS Vision 2025 in line with the Concept Note.*** This activity is linked to the one above, through the project funding is set aside for an individual to coordinate collaboration between EAC members and develop a funding proposal for the region. ***National Component 1: Strengthen impact-based Early Warning Services and targeted climate services in Kenya, Tanzania, Rwanda, Uganda, Burundi and South Sudan*** a) ***Strengthening National Risk Data Ecosystems in Kenya, Tanzania, Rwanda and Uganda.*** Improve usage and standardization of hazard information aligned to the 2021 Hazard Classification and Taxonomy, developed by the International Science Council and UNDRR, including the adoption of a common hazard terminology for integration into early warning systems. Aggregation of national risk data and information will support national authorities toward continuous improvement of multi-hazard early warning systems and improve harmonization among development and humanitarian actors. Improved application of risk data can also support enhanced early warning system targeting and anticipatory action system design. ***National Subcomponent 1.2: Enhanced capacity of NMHSs to provide forecasts and warnings*** ***a)*** ***Upgrade the Weather and Climate Data Management System at Meteo Rwanda.*** The project will support the upgrade of the Weather and Climate Data Management

		System. This will help Meteo Rwanda to generate and distribute weather information to different end users on different timescales. b) ***ECMWF EcChart licenses renewed, and relevant training provided to the NMHSs.*** The provision of ECMWF chart licenses will ensure access to ECMWF data for improved forecasting, now-casting and short-term weather predictions. c) ***Upgrade NMHSs Public Weather Services infrastructure (Uganda and Tanzania).*** Upgrades made to the NMHSs Public Weather Services infrastructure will help in wider dissemination of Weather and climate service for early warnings and to improve on the visibility of UNMA and TMA. d) ***Increased capacity to access and use data exchanged through the continental MHEWS for impact-based EWS.*** Installation of open source platform to exchange and analyze DRR data and information for multipurpose application. Data will be gathered by responsible authority/institutions and integrated in the open source platform for their further analysis. Products will be shared according to the agreed data sharing policy, through the MHEWS continental network. This activity also includes elements of training. e) ***Assessing the Uganda National Meteorological Authority (UNMA) capacities and gaps in relation to weather forecasting and early warning.*** The project will fund the development of an updated, detailed and comprehensive assessment on weather and early warning capacities at UNMA, including recommendations for its enhancement to improve the quality of the services and to better meet the needs and requirements of stakeholders and end-users. The assessment is expected to address the entire NMHS value chain, to include cross-sectorial aspects, e.g. research and operations, and take into account internationally recommended practices and protocols like CAP and open-source systems, and take advantage of other on-going development initiatives in the region, like for instance the FINKERAT project. f) ***Improving the capacity of UNMA to generate, customize and disseminate weather and early warning services.*** Based on the recommendations of the assessment of UNMA weather and early warning capacity, this activity aims to operationalize systems that support and enhance the generation, customization and dissemination of weather and early warning services in Uganda. This activity includes capacity building of UNMA staff for the efficient and sustainable utilization of the systems and provision of the services. g) ***Upgrade of tele-conferencing facilities (Uganda and Tanzania).*** Support will be provided to upgrade of tele-conferencing facilities for the mandatory daily regional weather conferencing to reach consensus on the regional severe weather guidance.

		h) ***Development of targeted impact-based early warning products (Rwanda).*** Technical assistance would support the development of guidelines and a roadmap for establishing impact-based early warning services in Rwanda, focusing on the area of heavy rainfall, flood risk and the potential for landslides. i) ***IBEWS service for Uganda, Kenya, South Sudan and Burundi, extending the pilot regions established in HIGHWAY, extending to new user groups in Uganda and facilitating knowledge transfer.*** Refresh on principles, processes etc. for production and delivery of the forecast that were developed in HIGHWAY. Bring together working groups, building on a coproduction approach used during the implementation of the HIGHWAY project, to include representatives from the fishing communities, NMHS, disaster risk management and NGO (ActionAid / Red Cross Kenya). Development training / comms plans with NMHS and NGOs to extend into regions. Implement this in additional counties / districts in Kenya and Uganda with support from a local NGO. SS and Burundi will be engaged through cross learning and in-region support to the development of IBEWS services. Also, facilitate training of SS and Burundi on IBEWS principles and processes based on outcomes of NHMS scoping / needs assessments. Engage with E Africa SWFP to support training across region in development and implementation of IBEWS services. ***National Subcomponent 1.3: Knowledge products and awareness programmes developed*** a) ***Public awareness of weather and use of daily marine weather forecast and ad hoc severe weather warnings by fishermen, transporters and lake communities (Kenya and Uganda).*** Promote public awareness of weather and use of daily marine weather forecast and ad hoc severe weather warnings by fishermen, transporters and lake communities working together with NMHSs, local partners (including media) and communities. b) ***Development of improved community disaster contingency plans and revised communication protocols (Rwanda).*** This activity will support communities to develop contingency plans and to help formulate approaches for disaster communication. This will be done in the context of heavy rains, flooding and landslides, and will complement activities under an aforementioned World Bank financed project that is under development. c) **Facilitating access by national end-users to the best available risk-science, as well as harmonized hazard, climate and risk information**, is integral to this CREWS proposal. To this end, in addition to South Sudan where UNDRR engagement is already underway, roll-out of the Risk Information Exchange (RiX) will be extended to Kenya, Tanzania, Uganda, Rwanda and Burundi, at a cost of approximately $120,000 per

country. Roll-out to national end-users of RiX includes training of hydromet departments and other national end-users such as researchers and non-government EWS and DRR practitioners to improve risk data literacy, and to facilitate the development and/or refinement of nationally-led roadmaps to improve risk information ecosystems and address risk knowledge gaps in the context of multi-hazard early warning systems.

NATIONAL COMPONENT 2: STREGTHENING NATIONAL CAPABILITIES IN BURUNDI

National Subcomponent 2.1: Institutional development

a) ***Assessment of hydromet monitoring network, early warning infrastructure and institutional capacities (national and state level) and the development of a roadmap for EWS/hydromet services strengthening. Stocktaking/mapping of stakeholders (including development partners and donors), and of existing / pipeline projects.*** Develop an updated, detailed and comprehensive assessment of weather and early warning capacities at IGEBU, including recommendations for its enhancement to improve the quality of the services and to better meet the needs and requirements of stakeholders and end-users. The assessment is expected to address the entire value chain, to include cross-sectorial aspects, e.g. research and operations, to take into account internationally recommended practices and protocols like CAP and open-source systems, to consider the technical and operational environment and to explore synergies with other systems and on-going development initiatives in the region.

   A prioritized investment plan will be developed based on the assessment and recommendation, with technical specifications for high priority system components, which could potentially be financed by the WB project currently under preparation.

b) ***Improving the capacity of IGEBU to generate, customize and disseminate weather and early warning services.*** Based on the recommendations of the assessment of IGEBU weather forecasting and early warning capacity, this activity aims to operationalize systems that support and enhance the generation, and where possible also customization and dissemination, of weather forecasts and early warning services in Burundi. This activity includes capacity building of IGEBU staff for the efficient and sustainable utilization of the systems and provision of the services, therefore potentially including among others IT specialists, software engineers and senior managers, in addition to operational weather forecasters. The activity includes stakeholders' engagement in the view of implementing pilot products/services based on the principles of "co-development" and "co-production". The activity will therefore include stakeholders' meetings, which

will also contribute increase the visibility and recognition of the NMHS as the governmental agencies mandate for providing weather forecasting and early warning services in the country.

c) ***Upgrade of tele-conferencing facilities (Burundi).*** *Support will be provided to upgrade of tele-conferencing facilities for the mandatory daily regional weather conferencing to reach consensus on the regional severe weather guidance.*

d) ***Strengthening National Risk Data Ecosystems in Burundi.*** Support the Directorate of the Civil Protection to improve usage and standardization of hazard information aligned to the 2021 Hazard Classification and Taxonomy, developed by the International Science Council and UNDRR, including the adoption of a common hazard terminology for integration into early warning systems. Aggregation of national risk data and information will support national authorities toward continuous improvement of multi-hazard early warning systems and improve harmonization among development and humanitarian actors. Improved application of risk data can also support enhanced early warning system targeting and anticipatory action system design.

NATIONAL COMPONENT 3: STRENGTHENING NATIONAL CAPABILITIES IN SOUTH SUDAN

National Subcomponent 3.1: Institutional development

a) ***Assessment of hydromet monitoring network, early warning infrastructure and institutional capacities (national and state level) and the development of a roadmap for EWS/hydromet services strengthening. Stocktaking/mapping of stakeholders (including development partners and donors), and of existing / pipeline projects are also envisioned.*** This activity aims to produce the first comprehensive assessment of the country's hydromet network status and ongoing/planned activities to rehabilitate it and expand it. Existing reports suggest that there are only 5 manually operated hydromet stations in the country. The activity is expected to include: (1) an audit of these stations, to assess their performance and potential for improvement; (2) a mapping of all stakeholders at national and subnational levels involved in hydromet monitoring and early-warning (3) an assessment of any technological systems that gather and analyze data from the existing monitoring network; (4) a comprehensive mapping of existing early-warning communication protocols/channels horizontally (i.e., among national institutions) and vertically (i.e., from national to sub-national agencies and communities and vice-versa) and (5) an assessment of planned activities and projects (including development partners and humanitarian actors). This will provide the basis for the development of an investment plan

		to build the hardware and software to deliver hydromet services in South Sudan. **b)** ***Strengthen hydrological monitoring for target areas (design of monitoring network and integration in existing monitoring system; capacity building for monitoring and O&M of monitoring network).*** This activity prepares a plan to install hydromet networks in the target areas. It provides a platform to inform future investments aimed at expanding the country's hydromet network and also manage it sustainably. The activity builds upon the previous activity, exploiting synergies with the work of other development partners and targeting areas which have been assessed as requiring coverage. **c)** ***Improving the capacity of South Sudan to generate, customize and disseminate hydrometeorological EWS services.*** Based on the recommendations of the assessment of SSMD weather forecasting and early warning capacity, this activity aims to operationalize systems that support and enhance the generation, and, if possible, also customization and dissemination, of weather forecasts and early warning services in South Sudan. This activity includes capacity building of SSMD staff for the efficient and sustainable utilization of the systems and provision of the services, therefore potentially including among others IT specialists, software engineers and senior managers, in addition to operational weather forecasters. This activity includes stakeholders' engagement in the view of implementing pilot products/services based on the principles of "co-development" and "co-production". The activity will therefore include stakeholders' meetings, which would also contribute increase the visibility and recognition of the NMHS as the governmental agencies mandate for providing weather forecasting and early warning services in the country. **d)** ***Develop pilot actions for community-level, impact-based flood early warning.*** This activity will engage in at least one of the project's five target counties for flood risk reduction investments to explore modelled and observed flood impacts at the local level and develop pilot actions for community-based FEW. The activity will seek to mobilize in local community knowledge of seasonal flood hazard, exposure and vulnerability, and to better understand community flood preparedness and response from past events to inform the preparation of targeted FEWs. **e)** ***Upgrade of tele-conferencing facilities (South Sudan).*** Support will be provided to upgrade of tele-conferencing facilities for the mandatory daily regional weather conferencing to reach consensus on the regional severe weather guidance. **f)** **Improve access to and use of standardized climate and risk information** to accelerate shared risk analytics for

development and humanitarian planning and action. The activity will establish a South Sudan Risk Information Exchange (RiX) to strengthen the national risk data ecosystem by improving coherence and harmonization of hazard, climate, loss, vulnerability and exposure data and make the consolidated evidence-base more readily accessible through an open-source risk data aggregation.

g) ***Strengthening National Risk Data Ecosystems in South Sudan.*** Support the Ministry of Humanitarian Affairs and Disaster Management (MHADM) to improve usage and standardization of hazard information aligned to the 2021 Hazard Classification and Taxonomy, developed by the International Science Council and UNDRR, including the adoption of a common hazard terminology for integration into early warning systems. Aggregation of national risk data and information will support national authorities toward continuous improvement of multi-hazard early warning systems and improve harmonization among development and humanitarian actors. Improved application of risk data can also support enhanced early warning system targeting and anticipatory action system design.

NATIONAL COMPONENT 4: IMPROVED INTEGRATION OF GENDER AND VULNERABLE GROUPS ACROSS THE EW-EA VALUE CHAIN

National Subcomponent 4.1: Gender-sensitive and vulnerable people inclusive (incl. those with disabilities, children, migrants, marginalized minorities, etc.) guidance and capacity building programmes provided.

a) ***Integration of gender sensitivity and inclusion of vulnerable groups within the Regional EWS Vision 2025.*** A guidance document on mainstreaming gender and vulnerable groups in EWS will be developed to guide the inclusiveness of gender and vulnerable groups. This document will be used to ensure inclusiveness of gender and marginalized and most at-risks groups throughout the project. The document will focus on multiple hazards such as floods, drought etc. Furthermore, trainings will be provided as part of respective, capacity development programmes covering gender-sensitive impact-based forecasting and warning services, gender and disability sensitive risk communication and inclusive early action, contingency and response plans. The guidance will draw on the lessons learned from the implementation of the FINKERAT project, which includes the development of weather and early warning products tailored in cooperation with the national Red Cross societies for vulnerable communities of Kenya, Rwanda and Tanzania. This activity will also build on similar work happening through a CREWS project in the Pacific, including on the development of gender and disability indicators.

	b. Work plan	See attachments 1, 2 and 3

Organization and operating procedures	a. Institutional framework	The project will be jointly implemented by WMO, WB and UNDRR supporting the NMHSs and NDMOs of Kenya, Tanzania, Uganda, Rwanda, Burundi, S. Sudan, respectively, in collaboration with other relevant stakeholders at the local, national and regional level. A project governance mechanism will be set up to ensure delivery on time, budget and with the expected quality results. Hence, a Project Steering Committee (PSC) will be led by national stakeholders with support from CREWS implementing partners and relevant regional stakeholders. The PSC will ensure quality of governance, and the effective delivery of project activities on time, on budget and within the expected quality results. The PSC will play an oversight role including: a) Definition of roles, responsibilities and contributions of project stakeholders; b) Review of implementation progress; c) management of project risks; c) Guidance and recommendations including for developing synergies and leveraging opportunities with other initiatives in the countries and region; and d) Alignment with the existing coordination bodies of the SWFP. The PSC will provide oversight and direction on the project activities. The main functions would include ensuring alignment with relevant frameworks, strategies and priorities in the region along with assessing the project progress. The PSC will also be used as a mechanism to engage with key regional institutions such as the EAC, ICPAC, LVB etc., among others, to enhance collaboration at the regional level and to promote sustainability of the activities planned within this project. The proposed PSC will meet once a year and will consist of actors who play a key role in the project development and execution. Furthermore, the PSC will act as a channel to keep the relevant ministries informed of the developments and achievements made within the project. A draft of the detailed Terms of Reference for the PSC is provided in Attachment 4.
	b. Monitoring and evaluation system	A Monitoring and Evaluation plan is expected to be developed by an expert who will work with the partners to set measurable beneficiary indicators and deliver a framework upon which the project performance can be predicted, measured and improved. The projects logical framework (Attachment 3) will be used to monitor progress and achievements against the indicators for each of the outputs. The implementing partners will jointly conduct an internal bi-annual review of the progress, highlights, risks and take corrective actions, as required. These bi-annual reviews will be in accordance with CREWS Monitoring and Evaluation System and the outcomes will be recorded within official reports published by the CREWS Secretariat.

		In addition to the bi-annual reviews, formal project reviews will take place including an external evaluation, conducted mid-way through the project timeline, and at the end of the project to examine the projects performance and provide guidance as necessary. These evaluations will include review of outputs, risks and progress achieved.
Project viability and sustainability	a. Main identified risks	**Overall risks: Medium** **Project implementation risks** (low/medium): The prevalent situation on account of the Covid-19 pandemic may compromise the timelines and project inception and implementation, especially where travel (local and international) is required. *Mitigation measures*: Some of the activities may be conducted virtually, however, activities that are implemented at site may still be impacted. Furthermore, a risk management and contingency plan will also be put in place at the start of the project. **Political instability** (medium): Across the region, political instability has led to armed conflicts and government changes. There is the potential for these risks to escalate during the project's implementation. *Mitigation measures*: Political situation in the region will be closely monitored and discuss early on potential impacts on the projects and remedies if the situation is deteriorating. The project will also work closely with regional entities, which could provide backup functions to provide services for national entities in case a country situation forces them to discontinue the services. Where the implementation of activities in one county become strenuous, the project's Steering committee may decide to transfer the undisbursed funds to other activities in another country. **Environmental risks** (medium): Natural hazards such as severe weather, floods and drought have the potential to cause delays in project implementation. *Mitigation measures*: To mitigate this risk, flexible adjustment of the sequence of activities as well as regular project reviews are required. As the project mainly provides technical assistance no large civil works are anticipated and hence, will not generate any negative environmental impact. **Commitment from participating countries** (low): Given that the project builds upon previous initiatives in East Africa and was developed using the Early Warning Systems Vision 2025, which was endorsed by the beneficiary countries, the risk of commitment from participating countries is low. However, the complex structure of the various departments involved in the project along with the potential administrative complications may impede implementation. *Mitigation measures*: Partners will establish and maintain its strong communication lines with the countries and the different stakeholders through its regional and national networks/offices. This

		will be realised through the nomination of focal points, who will create a systematic communication channel with the stakeholders to ensure that they are informed of needs, developments and progress. Additionally, through the support of the PSC, institutional and operational challenges may be addressed by establishing a high-level framework for cooperation among the participating countries and agencies. **Human resources / capacity risks** (medium): The capacity of the NMHSs and NDMOs and sub-national DRM authorities to support the project activities on top of their regular activities is a risk that can impact the project outputs. For instance, some Members in the region lack human resources. Some of the training requirements of the staff can be supported through the project. However, the issue of inadequate staff may not be fully addressed through the project, though efforts will be made to provide guidance to the Institutions on a long-term hiring strategy. *Mitigation measures:* Through close collaboration, the partners will provide support and training to the NMHSs and NDMOs to manage any extra demand brought upon by the project.
	b. Critical assumptions	The success of the project hinges on the following critical assumptions: • Strong political commitment from governments of the participating countries; • Cooperation among/between and support from the WMO network of NMHSs, Regional Centres, and partners; • An increase in public awareness to hydro-meteorological hazards and a desire to build resilience; • Agreement among partners and stakeholders on their complementary roles within the four components of people-centred EWSs (Disaster risk knowledge; Detection, monitoring, analysis and forecasting of the hazards and possible consequences; Warning dissemination and communication; Preparedness and response capabilities) (and the early warning – early action, which focuses on reducing risks, especially vulnerabilities and minimizing disaster impacts); • Agreement among the stakeholders on the objectives along with a clear understanding of the initiatives implemented.
	c. Judgment on the project sustainability	The project will focus on, among others, institutional capacity building and producing tangible outputs with convincing narratives so that decision makers would be aware of the tangible benefits of hydromet and early warning services. In addition, the project activities have been co-designed based on inputs from multiple entities within both target countries and relevant actors in the region who are involved in various initiatives that target early warning services, early action and preparedness. The

		sustainability of the outcomes achieved through this project, will be ensured through: (i) Transferring and ensuring country ownership during the project development and execution through active engagement of the key stakeholders. (ii) The project aims to provide guidance to and improve visibility of the project beneficiaries (national institutions), to promote the relevant initiatives and support with mobilization of additional resources (financial, human, technological) from National Governments and other donors to sustain the benefits of the project outcomes. (iii) The projects PSC and WMO Regional Associations will support with putting in place the appropriate mechanisms for sustaining the progress made in the project. In addition, a sustainability plan driven by the PSC will be developed over the lifetime of the project. This plan will not only focus on sustaining the tools and the hardware but also address ways of sustaining knowledge and capacity within the region.

Attachment 1: Budget Breakdown (USD)

Activities	Lead IP	WMO	WB	UNDRR	Total
CREWS Regional Component: Institutional and human capacities in regional and intergovernmental organizations to provide regional climate, weather and hydrological services to LDCs and SIDS increased					
Regional Subcomponent 1: Improving regional services to support countries to provide effective EWS		***795,000***	***-***	***477,000***	***1,272,000***
Improving the quality and availability of observational data in the EAC region and the exchange at international level	WMO	250,000			
Joint regional training on access and use of data according to SOPs established in the context of the MHEWS framework	UNDRR			135,000	
Scale up of good practices and processes (from selected member states) for the identification of appropriate anticipatory actions, including definition of triggers for the activation	UNDRR			214,000	
Comprehensive understanding of user needs that will allow the definition of tailormade systems and set of information, ultimately allowing the implement timely and appropriate Anticipatory actions	UNDRR			128,000	
Enhancing regional capacity to produce and deliver short-term and severe weather forecasts	WMO	395,000			
Develop hydrological status assessments and outlook demonstration products for two transboundary catchments in LVB (HydroSOS)	WMO	150,000			
Regional Subcomponent 2: Strengthening regional coordination and cooperation for effective EWS and climate services		***510,000***	***-***	***342,000***	***852,000***
SOPs aligned to the MHEWS framework piloted in Kenya and Uganda	UNDRR			100,000	
Establish regional platform for coordination of Anticipatory Actions in Kenya and Uganda	UNDRR			242,000	
Development of strategic priorities and / or recommendations for the implementation of the EWS Vision 2025 in line with the Concept Note	WMO	110,000			
Increase collaboration across NMHS's through regional platforms that support the delivery of the regional EWS Vision 2025	WMO	100,000			
Socio-economic cost benefit study	WMO	300,000			
National Component 1: Strengthening impact-based Early Warning Services and targeted climate services in Kenya, Tanzania, Rwanda and Uganda, Burundi and South Sudan					
National Subcomponent 1.1: Improve access to data at the national and regional level to strengthen capabilities of NMHSs for scaling up EWS activities				***480,000***	***480,000***
Strengthening National Risk Data Ecosystems in Kenya, Tanzania, Rwanda and Uganda	UNDRR			480,000	
National Subcomponent 1.2: Enhanced capacity of NMHSs to provide forecasts and warnings		***1,325,000***	***100,000***	***330,000***	***1,755,000***
Upgrade the Weather and Climate Data Management System at Meteo Rwanda	WMO	285,000			
ECMWF EcChart licenses renewed, and relevant training provided to the NMHSs	WMO	24,000			
Upgrade NMHSs Public Weather Services infrastructure (Uganda and Tanzania)	WMO	76,000			
Increased capacity to access and use data exchanged through the continental MHEWS for impact-based EWS	UNDRR			330,000	
Assessing the Uganda National Meteorological Authority (UNMA) capacities and gaps in relation to weather forecasting and early warning	WMO	50,000			
Improving the capacity of UNMA to generate, customize and disseminate weather and early warning services	WMO	300,000			
Upgrade of tele-conferencing facilities (Uganda and Tanzania)	WMO	90,000			
Development of targeted impact-based early warning products	WB		100,000		

(Rwanda)					
IBEWS service for Uganda, Kenya, South Sudan and Burundi, extending the pilot regions established in HIGHWAY, extending to new user groups in Uganda and facilitating knowledge transfer	WMO/ (UKMO)	500,000			
National Subcomponent 1.3: Knowledge products and awareness programmes developed		***85,000***	***100,000***	***-***	***185,000***
Public awareness of weather and use of daily marine weather forecast and ad hoc severe weather warnings by fishermen, transporters and lake communities (Kenya and Uganda)	WMO	85,000			
Development of improved community disaster contingency plans and revised communication protocols (Rwanda)	WB		100,000		
National Component 2: Strengthening national capabilities in Burundi					
National Subcomponent 2.1: Institutional development		***295,000***	***100,000***	***120,000***	***515,000***
Assessment of hydromet monitoring network, early warning infrastructure and institutional capacities (national and state level) and the development of a roadmap for EWS/hydromet services strengthening. Stocktaking/mapping of stakeholders (including development partners and donors), and of existing/pipeline projects	WMO/WB	25,000	100,000		
Improving the capacity of IGEBU to generate, customize and disseminate weather and early warning services	WMO	250,000			
Upgrade of teleconferencing facilities	WMO	20,000			
Strengthening National Risk Data Ecosystems in Burundi	UNDRR			120,000	
National Component 3: Strengthening national capabilities in South Sudan					
National Subcomponent 3.1: Institutional development		***305,000***	***420,000***	***120,000***	***845,000***
Assessment of hydromet monitoring network, early warning infrastructure and institutional capacities (national and state level) and the development of a roadmap for EWS/hydromet services strengthening. Stocktaking/mapping of stakeholders (including development partners and donors), and of existing/pipeline projects.	WMO/WB	25,000	100,000		
Strengthen hydrological monitoring for target areas (design of monitoring network and integration in existing monitoring system; capacity building for monitoring and O&M of monitoring network)	WB		150,000		
Improving the capacity of South Sudan to generate, customize and disseminate hydrometeorological EWS services	WMO/WB	250,000	70,000		
Develop pilot actions for community-level, impact-based flood early warning	WB		100,000		
Upgrade of teleconferencing facilities	WMO	20,000			
Strengthening National Risk Data Ecosystems in South Sudan	UNDRR	10,000		120,000	
National Component 4: Improved integration of gender and vulnerable groups across the EW-EA value chain					
National Subcomponent 4.1: Gender-sensitive and vulnerable people inclusive (incl. those with disabilities, children, migrants, marginalized minorities, etc.) guidance and capacity building programmes provided		***150,000***	-	-	***150,000***
Integration of gender sensitivity and inclusion of vulnerable groups within the Regional EWS Vision 2025	WMO	150,000			
Project Management Costs					
M&E (mid-term and final evaluations)	WMO	80,000			
PSC	WMO	50,000			
Communications	WMO	29,805			
Sub Total		**3,624,805**	**720,000**	**1,869,000**	
Project Support Cost		471,225	72,000	242,970	
Grand Total		**4,096,030**	**792,000**	**2,111,970**	**7,000,000**

Attachment 2: Timeline for implementation

	2023				2024				2025				2026			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Regional Subcomponent 1																
Improving the quality and availability of observational data in the EAC region and the exchange at international level	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Joint regional training on access and use of data according to SOPs established in the context of the MHEWS framework	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Scale up of good practices and processes (from selected member states) for the identification of appropriate anticipatory actions, including definition of triggers for the activation									x	x	x	x	x	x	x	x
Comprehensive understanding of user needs that will allow the definition of tailormade systems and set of information, ultimately allowing the implement timely and appropriate Anticipatory actions	x	x	x	x	x	x	x	x	x							
Enhancing regional capacity to produce and deliver short-term and severe weather forecasts	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Develop hydrological status assessments and outlook demonstration products for two transboundary catchments in LVB (HydroSOS)	x	x	x	x	x	x	x	x	x	x	x	x	x	x		
Regional Subcomponent 2																
SOPs aligned to the MHEWS framework piloted in Kenya and Uganda	x	x	x	x	x	x	x	x								
Establish regional platform for coordination of Anticipatory Actions in Kenya and Uganda				x	x	x	x	x	x	x	x	x	x	x	x	
Development of strategic priorities and / or recommendations for the implementation of the EWS Vision 2025 in line with the Concept Note							x	x	x	x	x	x	x	x	x	x
Increase collaboration across NMHS's through regional platforms that support the delivery of the regional EWS Vision 2025			x	x	x	x	x	x	x	x	x	x	x	x	x	x
Socio-economic cost benefit study	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
National Subcomponent 1.1																
Strengthening National Risk Data Ecosystems in Kenya, Tanzania, Rwanda and Uganda	x	x	x	x	x	x	x	x								
National Subcomponent 1.2																
Upgrade the Weather and Climate Data Management System at Meteo Rwanda					x	x	x	x	x	x	x	x				
ECMWF EcChart licenses renewed, and relevant training provided to the NMHSs	x				x				x			x				
Upgrade NMHSs Public Weather Services infrastructure (Uganda and Tanzania)					x	x	x	x	x	x	x	x				

Increased capacity to access and use data exchanged through the continental MHEWS for impact-based EWS	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Assessing the Uganda National Meteorological Authority (UNMA) capacities and gaps in relation to weather forecasting and early warning			x	x	x	x										
Improving the capacity of UNMA to generate, customize and disseminate weather and early warning services							x	x	x	x	x	x	x	x	x	x
Upgrade of tele-conferencing facilities (Uganda and Tanzania)					x	x	x	x	x	x	x	x				
Development of targeted impact-based early warning products (Rwanda)	x	x	x	x	x	x	x	x								
IBEWS service for Uganda, Kenya, South Sudan and Burundi, extending the pilot regions established in HIGHWAY, extending to new user groups in Uganda and facilitating knowledge transfer			x	x	x	x	x	x	x	x	x	x	x	x	x	x
Public awareness of weather and use of daily marine weather forecast and ad hoc severe weather warnings by fishermen, transporters and lake communities (Kenya and Uganda)			x	x	x	x	x	x	x	x	x	x	x	x		
Development of improved community disaster contingency plans and revised communication protocols (Rwanda)			x	x	x	x	x	x	x	x						
Assessment of hydromet monitoring network, early warning infrastructure and institutional capacities (national and state level) and the development of a roadmap for EWS/hydromet services strengthening. Stocktaking/mapping of stakeholders (including development partners and donors), and of existing/pipeline projects	x	x	x	x	x	x	x	x								
Improving the capacity of IGEBU to generate, customize and disseminate weather and early warning services									x	x	x	x				
Upgrade of teleconferencing facilities									x	x						
Strengthening National Risk Data Ecosystems in Burundi	x	x	x	x	x	x	x	x								
Assessment of hydromet monitoring network, early warning infrastructure and institutional capacities (national and state level) and the development of a roadmap for EWS/hydromet services strengthening. Stocktaking/mapping of stakeholders (including development partnersand donors),	x	x														

and of exisiting/pipline projects are also envisioned																
Strengthen hydrological monitoring for target areas (design of monitoring network and integration in existing monitoring system; capacity building for monitoring and O&M of monitoring network)	x	x	x	x												
Improving the capacity of South Sudan to generate, customize and disseminate hydrometeorological EWS services									x	x	x	x				
Develop pilot actions for community-level, impact-based flood early warning									x	x	x	x				
Upgrade of teleconferencing facilities	x	x	x	x												
Strengthening National Risk Data Ecosystems in South Sudan	x	x	x	x	x	x	x	x								
Integration of gender sensitivity and inclusion of vulnerable groups within the Regional EWS Vision 2025					x	x	x	x	x	x	x	x	x	x		

Attachment 3: Logical framework

Concise logical framework with results and indicators

Activity	Result	Indicators	Means of Verification	Baseline	Target	Lead Agency
CREWS Regional Component: Institutional and human capacities in regional and intergovernmental organizations to provide regional climate, weather and hydrological services to LDCs and SIDS increased						
Regional Subcomponent 1: Improving regional services to support countries to provide effective EWS						
Improving the quality and availability of observational data in the EAC region and the exchange at international level	Improved capacity of the Regional WIGOS Center (RWC) in East Africa in advancing the implementation of WIGOS within the region, providing regional coordination and technical support to Members	# of closed tickets in the Incident Management System Recommendations will be provided on potential / impending challenges, including rehabilitation of all malfunctioning instrument/equipment and equipping respective stations with all the required instruments	Progress reports issued by the RWC East Africa	To be defined at the beginning of the project	XX% of tickets are closed within 3 months from their opening	WMO
Joint regional training on access and use of data according to SOPs established in the context of the MHEWS framework	East African countries trained on SOPs in the context of MHEWS framework	Number of countries trained	Training reports	To be defined at the beginning of the project	ICPAC, and Member States	UNDRR
Scale up of good practices and processes (from selected member states) for the identification of appropriate anticipatory actions, including definition of triggers for the activation	Good practices identified and promoted	Number of good practices identified	Meeting outcome and training reports	To be defined at the beginning of the project	ICPAC, and Member States	UNDRR
Comprehensive understanding of user needs that will allow the definition of tailormade systems and set of information, ultimately allowing the implement timely and appropriate Anticipatory actions	User needs assessment reports finalized in two countries	Definition of user needs to enhance effectiveness of EWS for Early/Anticipatory action	Analysis report	To be defined at the beginning of the project	ICPAC and Member States	UNDRR

Enhancing regional capacity to produce and deliver short-term and severe weather forecasts	Improved quality of the regional short-range and severe forecasting guidance provided RSMCs	# of Regional Specialized Meteorological Centres (RSMCs) having annual license for ECMWF data to initialise WRF model during the project implementation # of new hardware procured to access and process the ECMWF raw data % increase in improvement in accuracy of short-term and severe weather forecasting guidance produced by RSMCs	Reports detailing the utilization of ECMWF dataset to initialise WRF License agreements between ECMWF and RSMCs Reports detailing the procurement, installation and operations of hardware Verification of the short-term and severe weather forecasting guidance for the region	Standard ECMWF datasets for WMO members free of charge Hardware for processing global NWP data in the process of being phased out Verification of short-term and severe weather forecasting guidance produced by RSMCs over the region indicated in the latest report made by RSMCs	ECMWF datasets for the initialisation of the WRF models available in the RSMCs New hardware dedicated to ECMWF data access and processing available at RSMCs Accuracy of short-term and severe weather forecasting guidance produced by RSMCs over the region increased in average by 5% after RSMCs tools enhancement	WMO
	Strengthened regional capacity to exploit the short-term and severe weather forecast guidance produced by RSMCs	# of staff from each of the NMHS trained on exploiting the short-term and severe weather forecasting guidance produced by RSMCs for delivering weather and warning forecasts, by leveraging on the SWFP principles	Training reports	NHMSs staff trained last in Feb 2021	Three SWFP workshops jointly organized with FINKERAT project	WMO
Develop hydrological status assessments and outlook demonstration products for two transboundary catchments in LVB (HydroSOS)	Detailed assessment identifying the priorities for the LVB along with a detailed roadmap for the implementation of operational subseasonal to seasonal hydrological forecasts in those catchments	# of recommendations provided by the report for the implementation of operational subseasonal to seasonal hydrological forecasts per catchment	Endorsement of the output report and roadmap by the LVB countries	TBD	TBD	WMO
Regional Subcomponent 2: Strengthening regional coordination and cooperation for effective EWS and climate services						
SOPs aligned to the MHEWS framework piloted in Kenya and Uganda	Implementation of the MHEWS strategic framework endorsed by the Ministerial and High-Level Session within the AFRP 2021, in Kenya and Uganda and link countries up to ICPAC	SOPs aligned to the MHEWS framework piloted in Kenya and Uganda	Reports	TBD	2	UNDRR

Establish regional platform for coordination of Anticipatory Actions in Kenya and Uganda	Coordinated and consensus-based definition of anticipatory actions, triggers' (EWS) and timing of both. For both flood and drought	Platform established and functional in informing stakeholders and decision making	Platform reports and alerts	TBD	TBD	UNDRR
Development of strategic priorities and / or recommendations for the implementation of the EWS Vision 2025 in line with the Concept Note	Improved collaboration in the region and scaling up on the EWS vision 2025	# of reports developed	Reports	0	1	WMO
Increase collaboration across NMHSs through regional platforms that support the delivery of the regional EWS Vision 2025	Commitment from NMHSs, EAC and LVBC to implement, support and sustain the Regional EWS Vision 2025	Regional platform established	Reports	0	2	WMO
Socio-economic cost benefit study	Socio-economic cost benefit study documenting analysis of benefits and costs and a comparison of benefits and costs using the net benefits (benefits minus costs) or benefit–cost criteria	A socio-economic cost benefit for countries supported under the project developed	Socio-economic cost benefit study	1	1	WMO
National Component 1: Strengthening impact-based Early Warning Services and targeted climate services in Kenya, Tanzania, Rwanda, Uganda, Burundi and South Sudan						
National Subcomponent 1.1: Improve access to data at the national and regional level to strengthen capabilities of NMHSs for scaling up EWS activities						
Strengthening National Risk Data Ecosystems in Kenya, Tanzania, Rwanda and Uganda	Improve aggregation of multi-hazard, exposure and vulnerability data for common use by national partners.	# of entries in Risk Information tool for Kenya, Tanzania, Rwanda and Uganda	Information entered in RIX	0	tbc	UNDRR
National Subcomponent 1.2: Enhanced capacity of NMHSs to provide forecasts and warnings						
Upgrade the Weather and Climate Data Management System at Meteo Rwanda	Upgraded system that generates and distributes weather information to different end users on different timescales	# of data formats handled by the system and # of information products generated and distributed using CDMS	Ease of accessibility and integration of different data	TBD	TBD	WMO
ECMWF EcChart licences renewed, and relevant training provided to the NMHSs	NMHSs have access to ECMWF chart licences	# of countries with ECMWF EC chart licences during the project implementation	Reports indicating the use of ECMWF ecChart in the forecasting process	TBD	6	WMO

Upgrade NMHSs Public Weather Services infrastructure (Uganda and Tanzania)	Improved production of TV and radio bulletins/ public service announcements and wider dissemination of Weather and climate service for early warnings and to improve on the visibility of NMHSs	# of improvements made to the PWS infrastructure	% increase in population with access to improved bulletins/public service announcements Feedback from end user on the effectiveness of announcements	TBD	TBD	WMO
Increased capacity to access and use data exchanged through the continental MHEWS for impact-based EWS	Open source software installed, and system linked up to the sub-regional and continental network in Kenya and Uganda	Systems installed and linked up to the continental MHEWS	Reports	TBD	2	UNDRR
	Operalisation of the open source software and link system up to the sub-regional and continental network, in Kenya and Uganda	Joint training on transboundary risk management	Reports	TBD	2	UNDRR
Assessing the Uganda National Meteorological Authority (UNMA) capacities and gaps in relation to weather forecasting and early warning	Assessment of UNMA weather and early warning capacity and recommendation for to the improvement of the capacity to produce and disseminate weather and early warning services, including the consideration of Impact Based principles.	Assessment report developed	Assessment report	0	1	WMO
Improving the capacity of UNMA to generate, customize and disseminate weather and early warning services	The systems for the production and dissemination of weather and early warnings are operational and staff are trained, also according to the needs identified in the assessment, including the consideration of Impact Based principles.	# of systems supporting the production and dissemination of weather and early warning services operational # of NMHS staff trained # of technical areas covered by the training	Weather and early warning systems operationalization reports Training reports with feedback from trainees	TBD	TBD	WMO
Upgrade of tele-conferencing facilities (Uganda and Tanzania)	Enhanced regional coordination and training using the teleconferencing facilities	# of new teleconferencing equipment provided	Feedback on the usefulness of the new teleconferencing facilities	TBD	TBD	WMO

Development of targeted impact-based early warning products (Rwanda)	Preparation of guidelines on the design of tailored impact-based forecasts, considering hydrometeorological thresholds and impacts by location and sector	Publication of guidelines	Reports	No	Yes	WB
IBEWS service for Uganda, Kenya, South Sudan and Burundi, extending the pilot regions established in HIGHWAY, extending to new user groups in Uganda and facilitating knowledge transfer (this aligns with 1.3 in the current LogFrame).	Increase access to IBEWS services	# of users aware / using services # of forecasters trained	User surveys	TBD	TBD (based on number of lake users)	WMO (with MO implementation support)
National Subcomponent 1.3: Knowledge products and awareness programmes developed						
Public awareness of weather and use of daily marine weather forecast and ad hoc severe weather warnings by fishermen, transporters and lake communities (Kenya and Uganda)	Communities with improved access to early warning information	# of community based EWS supported (their operation and complementary use with national system)	Reports	TBD	TBD	WMO
Development of improved community disaster contingency plans and revised communication protocols (Rwanda)	Improved ability of communities to respond to hydrometeorological hazards	Preparation of guidelines on how to develop communication protocols and community disaster contingency plans	Reports	TBD	TBD	WB
National Component 2: Strengthening national capabilities in Burundi						
National Subcomponent 2.1: Institutional development						
Assessment of hydromet monitoring network, early warning infrastructure and institutional capacities (national and state level) and the development of a roadmap for EWS/hydromet services strengthening. Stocktaking/mapping of stakeholders (including development partners and donors), and of existing /pipeline projects	Investment plans and bidding documents developed that document requirements for strengthening national EWS	# of investment plans developed	Existence of investment plan and bidding document	0	1	WB/WMO

Improving the capacity of IGEBU to generate, customize and disseminate weather forecasts and early warning services	The systems for the production and dissemination of weather forecasts and early warnings are operational and staff are trained	# of systems supporting the production, customization and dissemination of weather forecasts and early warning services operational # of NMHS staff trained	Weather and early warning systems operationalization reports Training reports with feedback from trainees	TBD	TBD	WMO
	Weather forecast and/or early warning products customised for selected stakeholders	# of weather forecast and/or early warning products customized for stakeholders # of stakeholders engaged in the weather forecast and/or early warning products customization	Stakeholders meetings reports Evidence of weather forecast and/or early warning products used by stakeholders	TBD	TBD	WMO
Upgrade of teleconferencing facilities	Enhanced teleconferencing facilities for communicating on EWS issues with partners and international community	# & type of teleconferencing equipment functional and being used	Feedback on the usefulness of the new teleconferencing facilities	TBD	TBD	WMO
Strengthening National Risk Data Ecosystems in Burundi	Improve aggregation of multi-hazard, exposure and vulnerability data for common use by national partners.	# of entries in Risk Information tool for Burundi	Information entered in RIX	0	tbc	UNDRR
National Component 3: Strengthening national capabilities in South Sudan						
National Subcomponent 3.1: Institutional development						
Assessment of hydromet monitoring network, early warning infrastructure and institutional capacities (national and state level) and the development of a roadmap for EWS/hydromet services strengthening. Stocktaking/mapping of stakeholders (including development partners and donors), and of existing/pipeline projects are also envisioned	Investment and capacity development plans and standard bidding documents for monitoring station installation	# of investment plans developed	Existence of investment plan and bidding document	0	1	WB/WMO

Strengthen hydrological monitoring for target areas (design of monitoring network and integration in existing monitoring system; capacity building for monitoring and O&M of monitoring network)	The design of the hydrological monitoring network for target areas is in place; Monitoring and O&M capacities in the Ministry of Water Resources and Irrigation (MoWRI) improved	# of designed hydrological monitoring networks; # of O&M and sustainability plans developed; # of MoWRI staff trained	Design report for hydrological monitoring networks; O&M and sustainability plan; # of MoWRI staff trained	0; 0; 0	1; 1; 20	WB
Enhancing observational data exchange at regional level	Increased amount of observational data from South Sudan available at regional level to enhance EWS	% of observations exchanged onto the GTS Pilot implementation of the WIS2 system	Statistics from RTH Nairobi Installation of WIS2box and training reports	TBD	TBD	WMO
Improving the capacity of South Sudan to generate, customize and disseminate hydrometeorological EWS services	Hydrometeorological forecasting and early warning infrastructure is improved and staff are trained, in line with the assessment carried within the same activity.	# of systems supporting the production and dissemination of hydrometeorological EWS services operational # of NMHS staff trained	Systems installation reports Training reports with feedback from trainees	TBD	TBD	WMO/WB
	Weather forecast and/or early warning products customised for selected stakeholders	# of weather forecast and/or early warning products customized for stakeholders # of stakeholders engaged in the weather forecast and/or early warning products customization	Stakeholders meetings reports Evidence of weather forecast and/or early warning products used by stakeholders	TBD	TBD	WMO
Develop pilot actions for community-level, impact-based flood early warning	Improved understanding of community-level flood impacts; Pilot actions for impact-based flood early warnings/advisories developed	# of pilot actions for impact-based flood early warnings/ advisories developed	Report on impact-based FEW, including proposed pilot actions	TBD	TBD	WB
Upgrade of teleconferencing facilities	Enhanced teleconferencing facilities for communicating on EWS issues with partners and international community	# & type of teleconferencing equipment functional and being used	Feedback on the usefulness of the new teleconferencing facilities	TBD	TBD	WMO
Strengthening National Risk Data Ecosystems in South Sudan	Improve aggregation of multi-hazard, exposure and vulnerability data for common use by national partners.	# of entries in Risk Information tool for South Sudan	Information entered in RIX	0	tbc	UNDRR
National Component 4: Improved integration of gender and vulnerable groups across the EW-EA value chain						

National Subcomponent 4.1: Gender-sensitive and vulnerable people inclusive (incl. those with disabilities, children, migrants, marginalized minorities, etc.) guidance and capacity building programmes provided						
Integration of gender sensitivity and inclusion of vulnerable groups within the Regional EWS Vision 2025	Warning messages that are gender sensitive and meet the needs of vulnerable groups including people with disabilities, children, marginalized groups etc.	# of Early Warning Initiatives, policy and plans by the countries that incorporate aspects of gender and disability	Documents/plans/guidance materials at national level	TBD	6	WMO

Attachment 4: Project Steering Committee - Draft Terms of Reference (under development) – To be endorsed by PSC members

Terms of Reference for the Project Steering Committee (PSC) for the Project "Strengthening Hydro-Meteorological and Early Warning Services in the East Africa Region: CREWS East Africa"

Background

1. Climate Risk and Early Warning Systems (CREWS) Initiative

Announced by the French Minister of Foreign Affairs in Sendai in March 2015, the Climate Risk and Early Warning Systems (CREWS) Initiative was officially launched at the COP21 in Paris as part of the Solutions Agenda. The Initiative aims to raise USD 100 million by 2020 to strengthen multi-hazards early warning systems (MHEWSs) in Least Developed Countries (LDCs) and Small Island Developing States (SIDS). CREWS implementing partners are the World Bank (WB), World Meteorological Organization (WMO) and United Nations Office for Disaster Risk Reduction (UNDRR), through a Special Program managed by the WB's Global Facility for Disaster Reduction and Recovery (GFDRR). WMO provides Secretariat services, and WB serves as Trustee (see http://crews-initiative.org/en for more information).

The CREWS-financed project titled "**Strengthening Hydro-Meteorological and Early Warning Services in the East Africa Region: CREWS East Africa**" project aims to strengthen and streamline regional and national systems and capacities related to weather forecasting, hydrological services, multi-hazard impact-based warnings and service delivery for enhanced decision-making. It is implemented jointly by all three implementing partners and in close collaboration with the National Meteorological and Hydrological Services (NMHSs), National Disaster Management Organisations (NDMOs) and other relevant ministries. The project consists of five outcomes, namely:

1. Institutional and human capacities in regional and intergovernmental organizations to provide regional climate, weather and hydrological services to LDCs and SIDS increased
2. Strengthening impact-based Early Warning Services and targeted climate services in Kenya, Tanzania, Rwanda and Uganda
3. Strengthening national capabilities in Burundi
4. Strengthening national capabilities in South Sudan
5. Improved integration of gender and vulnerable groups across the EW-EA value chain

2. Project Steering Committee (PSC) Members

The PSC will be led by the national institutions, including National Meteorological and Hydrological Services (NMHSs) and National Disaster Management Offices (NDMOs), and also be comprised of representatives of the implementing partners of the project, namely WB, WMO and UNDRR. Other national and regional bodies can be invited as observers and will be determined by the PSC members.

3. PSC Terms of Reference

The PSC will provide oversight and direction on the project with the aim of strengthening the NMHSs and NDMOs in the two countries. Specifically, the PSC will consider options to overcome in-country and regional barriers to implementation; identify and recommend incentives to advance strong coherence, complementarity, collaboration and coordination within and between projects; and reflect on progress towards achieving key milestones, which includes reviewing good practice and lessons learned from concrete country examples. The PSC will also ensure strong alignment regional and national initiatives to ensure complementarity.

The PSC will perform the following functions:

a. Lead in anchoring the project to relevant regional and national institutions, and ensuring alignment with relevant frameworks, strategies and priorities, to ensure ownership and sustainability of investment;

b. Ensure alignment with key national and regional strategies and priorities in SeA, in order to raise visibility of the projects, and maximize their benefits for the countries;

c. Assist in resolving implementation issues, policy conflicts and priority settings

d. Assess project progress and ensure that project delivery is in line with the agreed project timelines and budget

e. Ensure coordination with other related programmes and projects implemented by other UN agencies and development partners

f. Review, advise and endorse project's annual implementation workplan and budget

g. Work with WMO and its partners to secure national and regional level leadership support for projects and initiatives aimed at addressing the needs and priorities.

4. Role of the PSC Members

The roles of PSC members includes:

a. Understand the goals, objectives and the desired outcomes of the project;

b. Liaise with project partners to highlight national and regional requirements for strengthening EWS;

c. Understand and represent the interests of the NMHSs' and stakeholders of the CREWS East Africa countries;

d. Ensure that project funding decisions made are feasible and respond to issues, prioritization, risks and proposed changes to project activities;

e. Report on the progress made within their institution/country;

f. Actively participate in meetings through attendance, open discussion and review of project annual progress report, Monitoring and Evaluation, and sustainability plan; and

g. Review and endorse the report and/or minutes from the steering committee meetings. The process for the review should be completed within two weeks from the date of receipt of the draft report and/or minutes.

5. PSC Members

Institution	Name & Title	Email

Acronyms

AUC – African Union Commission

ACREI – Agricultural Climate Resilience Enhancement Initiative

ASDS – Agriculture Sector Development Strategy

BHMD – Burundi Hydro Meteorological Department

IGEBU – Institut Géographique du Burundi

CoE – Centre of Excellence for Disaster and Climate Resilience

CCWG – Climate Change Working Group

DCC – Directorate of Climate Change

DWD – Directorate of Water Development

DMD – Disaster Management Department (Tanzania)

DFMS – Drought and Flood Mitigation Service

EWS – Early Warning Services

EAC – East African Community

ENSO – El-Niño-Southern Oscillation

EP&R – Emergency Preparedness and Response

FFEW – Flood Forecast and Early Warning

FCDO – Foreign and Commonwealth Development Office

IGEBU – Geographical Institute of Burundi

GFCS – Global Framework for Climate Services

GRAF – Global Risk Assessment Framework

GCF – Green Climate Fund

GDP – Gross Domestic Product

HIGHWAY – High Impact Weather Lake System

HCT – Humanitarian Country Team

ICPAC – IGAD Climate Predication and Applications Center

IWRM – Integrated Water Resources Management

IPFs – Investment Project Financing

KCSAP – Kenya Climate Smart Agriculture Project

KMD – Kenya Meteorological Department

KMA – Korea Meteorological Administration

LVB – Lake Victoria Basin Commission

LAFREC – Landscape Approach to Forest Restoration and Conservation

LGB – Local Government Board

MHEWS – Multi-hazard Early Warning Systems

MINEMA – Ministry in charge of Emergency Management (Rwanda)

MoE – Ministry of Environment (Rwanda)

MoEF – Ministry of Environment and Forestry (South Sudan)

MoFP – Ministry of Finance and Planning (South Sudan)

MHADM – Ministry of Humanitarian Affairs and Disaster Management (South Sudan)

MoWSI – Ministry of Water & Sanitation and Irrigation

MWE – Ministry of Water and Environment

MWRI – Ministry of Water Resources and Irrigation (South Sudan)

NAP – National Adaptation Plan

NCCRS – National Climate Change Response Strategy

NDMA – National Drought Management Authority

NECOC – National Emergency Coordination and Operations Centre

NFCS – National Framework For Climate Services

NBI – Nile Basin Initiative

RECs – Regional Economic Communities

RSMC – Regional Specialized Meteorological Centre

RWC – Regional WIGOS Centre

RiX – Risk Information Exchange

RMA – Rwanda Meteorology Agency

RWB – Rwanda Water Resources Board

Meteo Rwanda – Rwanda: Rwanda Meteorology Agency

SWFP – Severe Weather Forecasting Programme

SSMD – South Sudan Meteorological Department

SOPs – Standard Operating Procedures

TACATDP – Tanzania Agriculture Climate Adaptation Technology Deployment Programme

TMA – Tanzania Meteorological Authority

DWRM – The Directorate of Water Resources Management

UNMA – Uganda National Meteorological Authority

UNCT – United Nations Country Team

UNDRR – United Nations Office for Disaster Risk Reduction

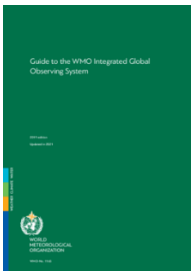
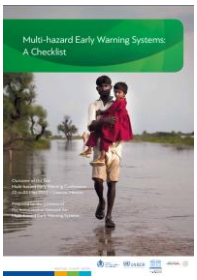
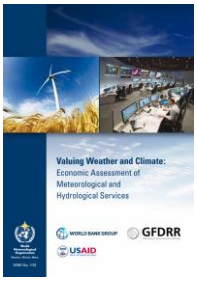
WRA – Water Resources Authority

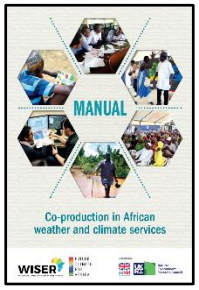
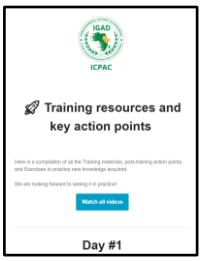
WISER – Weather and Climate and Information Services for Africa

WB – World Bank

WMO – World Meteorological Organization

Reference Materials

	WMO, Guide to the WMO Integrated Global Observing System". 2019 edition. Updated in 2019 https://library.wmo.int/doc_num.php?explnum_id=10962
	WMO Guidelines on Multi-hazard Impact-based Forecast and Warning Services Part II: Putting Multi-hazard IBFWS into Practice https://library.wmo.int/doc_num.php?explnum_id=10965
	Multi-hazard Early Warning Systems: A Checklist https://library.wmo.int/doc_num.php?explnum_id=4463
	Valuing Weather and Climate: Economic Assessment of Meteorological and Hydrological Services https://library.wmo.int/index.php?lvl=notice_display&id=17225#.YVGgw7gzZxQ
	Resolution 16 (Cg-18) - Guide(s) on the support of national meteorological and hydrological services to their national multi-hazard early warning procedures, coordination mechanisms, systems and services https://library.wmo.int/doc_num.php?explnum_id=9827#page=84

	Resolution 15 (Cg-18) - Strengthening multi-hazard early warning services in areas prone to all flooding types and severe weather https://library.wmo.int/doc_num.php?explnum_id=9827#page=80
	Resolution 15 (Cg-18) - Strengthening multi-hazard early warning services in areas prone to all flooding types and severe weather https://library.wmo.int/doc_num.php?explnum_id=9827#page=80
	Concept note for the implementation of the Regional EWS Vision 2025: “Early warnings without borders” https://filecloud.wmo.int/share/s/0JHowCMuSXu5JjM8HULi-Q
	The Socio-Economic benefits of the HIGHWAY project https://filecloud.wmo.int/share/s/U_wmDaZpT_GCnKdtOmZq_Q
	Co-production in African weather and climate services https://futureclimateafrica.org/coproduction-manual/downloads/WISER-FCFA-coproduction-manual.pdf
	ICPAC training resources on communicating climate information to end-users https://mailchi.mp/8f7f4c21b47b/webinarclimate-change-in-eastern-africa-6251668

	ICPAC, 2021. Report of the 58 Greater Horn of Africa Climate Outlook Forum. https://www.icpac.net/publications/report-of-the-58-greater-horn-of-africa-climate-outlook-forum/
	Africa Road Map for Improving the Availability, Access and Use of Disaster Risk Information for Early Warning and Early Action, including in the Context of Transboundary Risk Management https://www.undrr.org/publication/africa-road-map-improving-availability-access-and-use-disaster-risk-information-early
	Nairobi Declaration on accelerating the path to achieving the goals and targets of the Programme of Action for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in Africa https://afrp.undrr.org/sites/default/files/2021-11/ADOPTED-2021%20AfRP_Nairobi%20Declaration_2.pdf
	FINKERAT Project brochure
	Saving lives on Lake Victoria - High impact weather Lake System (HIGHWAY) project (youtube video)

Comment Matrix (synthesis of comments received from Experts nominated by CREWS Steering Committee Members)

Ref.	Comment	Response
	UKMO	
A.1	**Logframe Activity: Joint regional training on access and use of data according to SOPs established in the context of the MHEWS framework** SOPs were developed under HIGHWAY for delivery of IBEWS as well as between intermediary / user response. This activity needs to pick up where HIGHWAY left of. Can it be clearer that this, and the below, is related to the hazard centre. MHEWS can be considered a generic term for warning system, and there are a number of projects in Kenya and Uganda around MHEWS, IBEWS, FBEA, FEWS etc.	Indeed, the proposed activity will pick up from HIGWAY project and explore opportunities to integrate already achieved results in the broader impact based EWS at the continental level. SOPS wills focus on exchange and use of data exchanged through the continental network, in line with outcomes of the Ministerial declaration adopted at the African Platform for DRR in 2021.
A.2	**Logframe Activity: Scale up of good practices and processes (from selected member states) for the identification of appropriate anticipatory actions, including definition of triggers for the activation** Is this related to member states part of the project or also others?	The current project focuses on the identified Member States. However, the action contributes to the implementation of the continental road map and framework endorsed by the Ministerial declaration adopted at the African Platform for DRR in 2021. Similar initiatives are online and in the pipeline in other countries and RECs.
A.3	**Logframe Activity: Comprehensive understanding of user needs that will allow the definition of tailormade systems and set of information, ultimately allowing the implement timely and appropriate Anticipatory actions** A number of user needs studies were undertaken in HIGHWAY, so again would recommend this is consulted and built upon.	Synergies with HIGHWAY will be explored and results integrated as appropriate. The activity aims ad identifying user needs to trigger early and anticipatory mitigation actions, including in the context of transboundary risk management.
A.4	**Logframe Activity: Enhancing regional capacity to produce and deliver short-term and severe weather forecasts** Increase in accuracy (C10) would require research - is this in scope? Likewise, is there a plan to do verification of warnings / forecasts? If so, the budget is low for this kind of research. Nowcasting - learning from HIGHWAY was that true nowcasting is rarely used in the delivery of warnings and is reliant on a number of other things (obs, technology, infrastructure) that are challenges in this region. Whilst the pilot systems were implemented, it was difficult to integrate them into standard services that were issued on a routine basis such as the fisher IBEWS, and where ad hoc warnings were issued based on rapidly emerging severe weather, it was not possible to get these to the most vulnerable people - i.e. people out on the lake -	Increase in accuracy would be actually attained through additional ECMWF datasets and additional hardware, which are the results above and below, respectively. In this regard this indicator shall be relocated accordingly. However, no research is needed. The expected increase of the accuracy is required to be analyzed and reported by the RSMCs, who carry out regular verification of the short-range and sever weather guidance at least from those countries where observations are available. To be discussed with WMO Tech Depts whether additional training needed on verification. As per now-casting, the lesson learnt from HIGHWAY is extremely precious. However, there has been here a nuance, 'now-casting' has been replaced by severe weather forecasting over the short-term, meaning 1-3 days, which is what RSMCs provide.

	as they did not have access to the comms channels at that time. This may therefore be an area with scope to deprioritise. Delivery of training as part of the SWFP is a good way to gain reach into the NMHS for any of the lines that require forecaster training.	
A.5	**Logframe Activity: Joint regional training on acces and use of data according to SOPs established in the context of the MHEWS framework** Can it be clearer that this, and the below, is related to the hazard centre, providing that is the case? MHEWS can be considered a generic term for warning system, and there are a number of projects in Kenya and Uganda around MHEWS, IBEWS, FBEA, FEWS etc.	The continental programme on impact based EWS for early and anticipatory action including in the context of transboundary risk management, already established situation rooms at AUC, ACMAD, IGAD and is now expanding to ECOWAS, ECCAS and UR Tanzania. The situation rooms are interconnected through common open source platform and SOPs to exchange and analyze data and information. The project will introduce the SOPs in the beneficiary countries to exchange and use data and information available through the network.
A.6	**Logframe Activity: Establish regional platform for coordination of Anticipatory Actions in Kenya and Uganda** This budget seems quite generous, might there be scoped to extend the number of countries involved? It could be challenging to involve some countries not all in a 'regional' platform.	The project will strengthen the regional system. However, the project will target the active engagement of the identified stakeholders and partners and envisages the training on the job of the experts of the beneficiary countries only. The budget is in line with previous experience.
A.7	**Logframe Activity: Development of funding proposals for the implementation of the EWS Vision 2025 in line with the Concept Note** Is the goal to have a proposal, or the funding. If the former, $100k seems a lot, and the result is not what the indicator measures. If the latter, the indicator should reflect this (i.e. '$X of funding secured,' or 'Proposal developed, and funding secured to deliver').	Project management costs are included in this activity. The project officer will be responsible for the day to day management, overseeing procurement (for CAPEX 2 activities) planning and organisation of key meetings and workshops. Furthermore, the project officer will work on the development of new funding proposals (to support EWS 2025) and project sustainability strategies.
A.8	**Logframe Activity: Development of funding proposals for the implementation of the EWS Vision 2025 in line with the Concept Note** The Indicator should better reflect the activity, otherwise this reads as $100k for holding two meetings, which is generous, or the budget could be reduced accordingly.	Same as above. Furthermore, it is likely that this will be more than two meetings, however at this stage we are unsure of how many is required - therefore we prefer to just target two.
A.9	**Logframe Activity: Increased capacity to access and use data exchanged through the continental MHEWS for impact-based EWS** Any capacity development activity at the NMHS should be closely linked to the service development and outreach activity we have proposed below.	Noted.
A.10	**Logframe Activity: Assessing the Uganda National Meteorological Authority (UNMA) capacities and gaps in relation to weather forecasting and early warning**	This is very important to know. The methodology applied in this assessment will be discussed during the project inception phase. IBF/IBEWS principle shall also be considered in the assessment.

	The MO has a situation assessment tool that assesses NMHS capacity which might be useful here.	
A.11	**Logframe Activity: Improving the capacity of UNMA to generate, customize and disseminate weather and early warning services** As noted in discussion, this links with proposed 63 below; should be carefully coordinated, with same people involved in both elements.	This is a very important observation. As the activity in 63 is focused on extending the weather forecasts and EWS developed in this section to user groups in the mainland. Coordination between the two activities need to be established.
A.12	**Logframe Activity: IBEWS service for Uganda, Kenya, South Sudan and Burundi, extending the pilot regions established in HIGHWAY, extending to new user groups in Uganda and facilitating knowledge transfer** This is linked with lines above as noted. Activity will be needed for refresh on principles in both countries, and to engage county offices in Kenya for roll out. Uganda is likely to present more challenge than Kenya, as met services not decentralised to county level, which was a key implementing mechanism in HIGHWAY for Kenya with the county office taking the lead - in Uganda development of local networks needs to be done more explicitly by project. Note that Uganda field work likely to be delivered through local NGO (such as Action Aid Uganda) as before in HIGHWAY.	Noted.
A.13	**Logframe Activity: Public awareness of weather and use of daily marine weather forecast and ad hoc severe weather warnings by fishermen, transporters and lake communities (Kenya and Uganda)** This links with 63 below. Given the amount of time since the end of HIGHWAY, there will be a requirement to refresh principles, re-engage with key stakeholders etc. across this and 63.	Noted.
A.14	**Proposal: a. Project components and activities** Not sure where best to capture this, but experience has shown us that the capacity of weather/climate information service providers to engage with users effectively in a co-development process is often limited. Would it be possible to include capacity building of service providers towards effective user engagement? We shouldn't assume this already happens.	We agree, although not specifically mentioned within the activity description, this would be considered in the process. It has now been added.
A.15	**Proposal: a. Project components and activities** Just a thought - could we use GHACOF as a platform to introduce AA on seasonal timescales? I'm not sure there's much humanitarian engagement in GHACOF to date.	Thank you for the good suggestion, it is well noted.

A.16	**Proposal: a. Project components and activities** How will sustainability factor into this? Are AWS still susceptible to theft/poor maintenance in this region?	This activity has now been removed in light of SOFF support to the region.
A.17	**Proposal: a. Project components and activities** It could be worth considering how knowledge and experiences gained through this project can be shared with other regions (via RCCs such as SADC/Agrhymet).	Thank you for the great suggestion - we agree and will follow up on this.
	FMI comments	
B.1	**Proposal: concise logical framework with results and indicators** # Target is not a target, rather whom is target in the activity # It would be good to describe which organizations are the participants coming from to the joint training, and if from NMHSs and NDMOs.	Response to FMI (UNDRR) -
B.2	**Proposal: concise logical framework with results and indicators** # Target is not a target, rather whom is target in the activity # The description refers to "previous activities": is this the activity "Joint regional training on access and use of data according to SOPs established in the context of the MHEWS framework" above? # This description should include the methodologies how it is achieved. # Which "other" countries are meant here? The ones which are weaker within the ones tested in the previous activity?	Response to FMI (UNDRR) -
B.3	**Proposal: concise logical framework with results and indicators** # Target is not a target, rather whom is target in the activity # This is not a regional activity, but a national activity execute in two countries only	
B.4	**Proposal: concise logical framework with results and indicators** # What is the Phase 1 of the MHEWS programme? IS it outside this project? # This is not a regional activity, but a national activity execute in two countries only	Response to FMI -
B.5	**Proposal: concise logical framework with results and indicators** # What about the other countries? This activity covers the improvement of Uganda and Kenya only	Response to FMI -

	# This is not a regional activity, but a national activity execute in two countries only # How the climate information is fetched into the platform?	
B.6	**Proposal: concise logical framework with results and indicators** # How this activity going to be implemented? The figure per country 120,000 USD seems extremely high.	
B.7	**Proposal: concise logical framework with results and indicators** # Uganda's NHMS, i.e. UNMA, is a well-developed institution with capabilities to operate weather forecasting and early warning systems: in this regard the budget allocated does not seem sufficient. In Kenya, Rwanda and Tanzania, the FINKERAT project will cover this aspect, so that this CREWS activity could extend to Uganda what done in FINKERAT. In South Sudan and Burundi, the budget is smaller due to smaller capacity of the NMHSs. # Propose to increase of budget and allocation of funds from the activities " Establish regional platform for coordination of Anticipatory Actions in Kenya and Uganda".	
Tanzania/Rwanda/Kenya Comments		
C.1	**Logframe Activity: Improving the quality and availability of observational data exchanged at regional level** Tanzania – Improving the quality and availability of observational data should not only focus on closing pending tickets at a given station, rather explore and address all the potential /impending challenges, including rehabilitation of all malfunctioning instrument/equipment and equipping respective stations with all the required instruments. This will ensure sustainability in the quality and availability of observational data that will be exchanged at regional level.	Added additional 150k to budget and Indicator on development of recommendations. This is to try to scale up support for countries on explore and address all the potential / impending challenges, including rehabilitation of all malfunctioning instrument/equipment and equipping respective stations with all the required instruments. Give the budget of the project, this cannot be achieved this time around.
C.2	**Logframe Activity: Joint regional training on acces and use of data according to SOPs established in the context of the MHEWS framework** Tanzania – It is not clear what is aimed and how will it be implemented. The Issue of Early Warning is complex and Locally Specific. More clarity is needed on what is intended to be achieved. The focus here should not be only training on how to access, but also to ensure availability of risk data (e.g. mapping of vulnerabilities of community to weather and climate related hazards) which among key ingredients in enhancing MHEWS, including	

	impact-based forecast at small spatial scale. Furthermore, the source of the data to be accessed should be credible and the data quality should be ensured.	
C.3	**Logframe Activity: Scale up of good practices and processes (from selected member states) for the identification of appropriate anticipatory actions, including definition of triggers for the activation** Tanzania – More clarity is needed on the Aim and implementation approach. Another important good practice regarding MHEWS, A case of Tropical Cyclone Kenneth over Tanzania **"Multi-Hazard Early Warning System (MHEWS), a tool for Effective Ocean Prediction and Services" c**an be considered for strengthening and upscaling. It is published in the WMO website: https://public.wmo.int/en/resources/bulletin/Products_and_services/MHEWS_for_Ocean_Prediction	
C.4	**Logframe Activity: Comprehensive understanding of user needs that will allow the definition of tailormade systems and set of information, ultimately allowing the implement timely and appropriate Anticipatory actions** Tanzania – User needs should also consider effective EWS for enhancing preparedness on c**ommon hazards, exposure and vulnerabilities.** For instance, among the common hazards in Tanzania are prolonged dry spells, heavy rainfall, strong winds and large waves for fisherforks, and flooding. Rwanda – This should be done in all member states to integrate all user needs.	
C.5	**Logframe Activity: Enhancing regional capacity to produce and deliver short-term and severe weather forecasts** Tanzania – In addition to capacitating the RSMCs, the NMHSs need to be capacitated on the **"short-term and severe weather guidance products**" because they are the users of the products and have the authoritative voice on provision of EW Services at national level.	Comment noted. Furthermore, the objective of the Severe Weather Forecast Programme is not only to capacitate the RSMC, but also the NMHS on the "short-term and severe weather guidance products". Therefore, the workshops will be designed with this in mind, in order to provide capacity building support to the NMHSs.
C.6	**Logframe Activity: SOPs aligned to the MHEWS framework piloted in Kenya and Uganda** Tanzania – We can also consider improving the previously developed MHEWS SOPs based on the provided feedbacks and lessons learned in their implementation.	

C.7	**Logframe Activity: Development of funding proposals for the implementation of the EWS Vision 2025 in line with the Concept Note** Tanzania – Considering that this project aims at enhancing Climate risk and EWS over the entire EA sub region, we need to ensure that the funding proposal takes all EAC countries onboard to ensure no one is left behind in this regard.	Agreed, this is noted by WMO and any further funding proposals will consider all EAC member states.
C.8	**Logframe Activity: Upgrade the Weather and Climate Data Management System at Meteo Rwanda** Rwanda – Backup server to archive radar data (Rwanda). Kenya – Data Integration system for ingesting (pushing and pulling) various data sources including AWS, radiosonde, satellite imagery, radar data, lightning data, NWP model analysis and forecast fields from and to AMSS and GTS into the Regional Data Archival System using web technology for ease of data exchange (was captured in CAPEX 2 option 1 under item 3 for Kenya but is missing from the logframe). A standard software that supports File Transfer Protocol (FTP) be installed which includes the transfer of data files to the Data archival system, handling data requests and data sharing.	Response to Rwanda - the Climate Database Management System activity included in national subcomponent 1.2 covers backup server. Response to Rwanda - The scope of the project investment is limited to the Climate Database Management System, therefore not including external data archive system. This requirement of MeteoRwanda is noted; in this regard the FINKERAT project includes activities to assist MeteoRwanda identify appropriate solutions for data archiving. Response to Kenya - please refer to line 21. AWS integration system included in the activity description. In CAPEX 2 proposal, under option 1, system was only geared towards AWS integration system. A system for the integration of data received from different other sources, e.g. weather satellite, weather radar, NWP, etc. is procured for Rwanda. Lessons learned and best practices will be shared with Kenya.
C.9	**Logframe Activity: Upgrade NMHSs Public Weather Services infrastructure (Uganda and Tanzania)** Rwanda – Upgrade NMHSs Public Weather Services infrastructure (Rwanda). Kenya – Upgrade Public Weather Services infrastructure for Kenya. Widescreen Television System and other items that enhances studio production of 3D HD attractive graphics for use in production of videos that goes out for Youtube, social media, KMD website and the internet (Technical specifications are available if required).	Unfortunately, given the budget constrains these requests cannot be included. However, we will consider the request should some funding become available during implementation.
C.10	**Logframe Activity: Improving the capacity of UNMA to generate, customize and disseminate weather and early warning services** Rwanda – Improving the capacity of Meteo Rwanda to generate, customize and disseminate weather and early warning services.	This is covered in FINKERAT project for all FINKERAT target countries (Rwanda, Tanzania and Kenya) which does not include Uganda.
C.11	**Logframe Activity: Upgrade of tele-conferencing facilities (Uganda and Tanzania)**	Request accommodated for Rwanda and Kenya.

	Rwanda – Upgrade of tele-conferencing facilities (Rwanda) Kenya – Upgrade of tele-conferencing facilities in Kenya for Severe Weather Forecasting Program (SWFP) through enhancing web-cam facility, computing systems, good display units, UPS and capacity building.	
C.17	**Logframe Activity: IBEWS service for Uganda, Kenya, South Sudan and Burundi, extending the pilot regions established in HIGHWAY, extending to new user groups in Uganda and facilitating knowledge transfer (this aligns with 1.3 in the current LogFrame)** Kenya – Extend IBEWS services to new user groups along LVB including user needs and capacity building.	Noted, we will follow up with UKMO.
C.18	**Logframe Activity: Public awareness of weather and use of daily marine weather forecast and ad hoc severe weather warnings by fishermen, transporters and lake communities (Kenya and Uganda)** Rwanda – (i)Development of daily marine weather forecast and ad hoc severe weather warnings by fishermen, transporters and lake communities (Rwanda); (ii)Public awareness of weather and use of daily marine weather forecast and ad hoc severe weather warnings by fishermen, transporters and lake communities (Rwanda).	This will be included within the FINKERAT project.
CREWS Secretariat Comments		
D.1	**Proposal: Total CREWS Contribution** Budget indicated at pipeline is at USD 4M. Kindly clarify rationale behind the significant increase.	Critical focus given to Burundi and South Sudan. The NMHSs of Burundi and South Sudan have been experiencing critical challenges in the operations of observation, weather forecasting and early warning services, which is substantially affecting the capacity of the region in fully exploiting its capacity in this areas, even though resources are focused to the other countries in the region. Therefore, a prompt intervention is needed to support the development of Burundi and South Sudan, which is expected to substantially affect the development of the overall region and therefore to make more effective the development efforts dedicated in the other countries. Furthermore, this means the project can account for substantial support to countries like Burundi and South Sudan, therefore benefiting indirectly the overall regional capacity. The CREWS EA project has been designed in such a way to create synergies with the FINKERAT Project (funded by the Government of Finland, implementation started in Feb 2022) and WISER 3 (FCDO funded) and includes critical activities which are being supported (technically) by the UKMO and FMI, which led some budget increase.

		With the increase in the budget the project therefore has significantly higher leveraging potential as it is aligned with considerably more initiatives and work being conducted within the region; for example, the initial 4 million planned in the pipeline description did not include the World Bank and UNDRR input. Though this project and in line with other activities, UNDRR seeks to contribute to the implementation of an effective, impact-based and people-centered EWS for anticipatory actions, moving the focus from the event (or hazard) to the anticipated impact on people. Huge investment is therefore needed to scale up good practices and processes for the identification of appropriate anticipatory actions, including definition of triggers for the activation of the EWS. Thus, there is need for resources to strengthen impact-based Early Warning Services in the region in line with the UNSG call to spearhead new action to ensure every person on earth is protected by an EWS Furthermore, UNDRR has been requested to facilitate common access to and use of risk information by UN and national partners as a means to inform risk monitoring and improve disaster risk knowledge through the systematic collection and aggregation of risk and hazard data. UNDRR will collect detailed risk information to be uploaded into an open-access Risk Information Exchange (RiX) with a national landing page to be created for Kenya, Tanzania, Rwanda Uganda and South Sudan to facilitate national end-user access to high quality multi-hazard risk data
D.2	**b. Status of the EWS, DRM institutions and NHMSs, actors / players present:** Maria Lourdes Kathleen Macasil – The decision to include CREWS EA project countries will be made when? Will this coincide with the project's timeframe?	WMO will explore this possibility with the countries in the region within the project timeframe, the approach would be: 1. Include Somalia and Sudan in SWFP Eastern Africa technical discussions in order to understand if they can be incorporated / supported by existing regional centres 2. Depending on the outcomes of the technical discussion, either integrate countries in SWFP Eastern Africa or potentially have an SWFP for HoA countries
SOFF Comments		
A.1	**Project Design:** **a. Project components and activities** CREWS Secretariat were informed by SOFF that will finally be covering the Obs. component of the project so request for project team to remove them.	In place of previous plans for infrastructure investment, new activities now place more emphasis on providing capacity building for weather forecasting and early warnings, and increased support for service delivery and communication to members. Thus, the project will have more emphasis on utilising the outcomes of SOFF interventions for improved weather forecast

		and early warning service production and delivery. For example, Uganda, Burundi and South Sudan will now receive increased support in these areas. This also helps to ensure the project aligns with the ongoing FINKERAT project, which only targets and provides this support to Rwanda, Tanzania and Kenya. In addition to this, support will be provided to the EAC members to refresh the common alerting protocol (CAP). In addition to this, the CREWS East Africa project will now provide increased support to the regional WIGOS centres in East Africa for building capacity in the region on improving the international exchange of current observational data through the WIS2 system developed by WMO, which is ready to be used. Furthermore, strengthening the regional centres and the regional capacities will support SOFF interventions in the region. Finally, a socio-economic cost benefit (SEB) study has been included in the project to support investment decisions. CREWS East Africa will be a pilot and contribute towards the development of the SEB Toolbox, by working with the different members to develop methodologies for SEB. ***Kindly refer to information note Attached.***
Germany Comments		
E.1	**Project Design:** For BMZ, the project rational is clear and we appreciate the outlined alignment with relevant previous and current projects and initiatives. As BMZ is committed to gender equality, we strongly support the gender and vulnerable groups inclusivity of the project. We welcome that national ownership is strengthened by having national institutions lead the project steering committee.	Noted
E.2	**Project Design:** Just some little suggestions and questions: To which extent and on which project activities will an alignment with SOFF take place? So far, this seems not to be mentioned in the proposal but would be beneficial.	The activity titled *improving the quality and availability of observational data exchanged at international level (piloting WIS 2.0)* is the only activity with strong ties to SOFF. Information for how this compliments SOFF is included in the table in the Information note.
E.3	**Project Design:** Under component 1, an activity “exchange with organizations and projects that are working on risk data to ensure alignment” could be added. For example, the African Risk Capacity (where Burundi, Kenya, and Rwanda are members) provides free usage of various risk data via Africa RiskView; the WB’s Global Risk Financing Facility is initiating a project in Rwanda in which early warning data for climatic shocks will be	We will explore linkages and reach out for further information on these initiatives and how we can align our work through existing project activities

	used to trigger a bridge lending window for MSMEs including an insurance backstop; and the InsuResilience Solutions Fund has several relevant projects such as a crop insurance programm for smallholder farmers in Kenya (Jun 2021 - Jun 2023), the project "Increased resilience against drought and extreme rainfall for smallholder farmers" in Uganda (Sep 2021 - Sep 2023), and the project "Climate risk insurance for smallholder farmers" in Tanzania	
E.4	**Project Design:** Why is strengthening national capabilities (components 2 & 3) proposed only for South Sudan and Burundi? It would be helpful to explain the rationale with 1 to 2 sentences.	The specific national components for Burundi and South Sudan are designed for those countries as they have not received as much support through hydrometeorological initiatives as the other members of the EAC in recent years. For example, the HIGHWAY Project targeted Uganda, Kenya, Tanzania and Rwanda, and the more recent FINKERAT Project targets Kenya, Tanzania and Rwanda. Therefore, the Burundi and South Sudan components are designed to provide them the support they have not been receiving specifically doing the groundwork, understanding the context, situation and best way to support, and then working with the members on providing support for weather forecast and early warning service productions and delivery.
E.5	**Project Design:** There are different target countries suggested for the various activities under the regional and national subcomponents. Would it be possible in the Annex to include an overview of the planned activities per country? This would probably also be helpful for steering the project activities within each country.	Although some target countries are identified at the regional level, a detailed overview of all planned activities per country can be provided when the project work plan is developed which will take into account the specific interventions and budget per country at the regional level.
E.6	**Attachment 1: Budget Breakdown (USD)** The budget split up for national component 3 seems to be incomplete	The budget for National Component 3 has been fixed
EUMETSAT Comments		
F.1	From EUMETSAT, we fully share and support the objectives that are proposed in this project. We would like to bring to the attention of CREWS a few elements that could support some of the components of the proposed project. Nowcasting in support to Severe Weather Forecasting Programme The project SWIFT-Africa (https://africanswift.org/) recently installed the Nowcasting Software in several African countries (including Kenya) and trained forecasters. The Nowcasting software allows to monitor and predict (very short-range) severe weather features that cannot be adequately	WMO thanks EUMETSAT for the correspondence and for providing very critical information. These comments are very timely as WMO explores further support to the members in Eastern and Southern Africa through CREWS and potentially by other development donors and initiatives. We note the launch of the Meteosat Third Generation together with the commitment of African Member States through the Abidjan Declaration on new generation of meteorological satellite products signed in September 2018 in which the African Union Commission, the African Ministerial Conference on Meteorology (AMCOMET) and four African Regional Economic Communities (ECOWAS, IGAD, ECCAS and SADC),

	predicted by weather forecast model, despite the major advances in past decades. It fills the gap left by "short range" forecasts (below 6 hours) and can detect Rapidly Developing Thunderstorm and Convective Rain Rate (that can lead to flash floods). The Nowcasting software is operational and freely available. It is developed by a consortia of national weather services that include Spain, France, Sweden, Austria and Romania (see https://www.nwcsaf.org/ and https://www.eumetsat.int/features/nowcasting-winning-race-against-time) . This Nowcasting Software is one of the elements at the heart of the Southern Africa Several Weather Forecasting Programme (see https://community.wmo.int/swfp-southern-africa and https://ufa.eumetsat.int/userfiles/file/4-Kroese-EUMETSAT_Forum_Session3-%20RSMC_NWC_regional_approach.pdf). It should also become a central element in Eastern Africa as it will allow consolidating the outcomes of Weather Prediction models and increase robustness of early warning (very short range). Its relevance was recently demonstrated by KMD in the Lake Victoria region, where weather modelling is particularly challenging (https://ufa.eumetsat.int/userfiles/file/7-Lake%20Victoria-25022022(1).pdf) . The WMO has also recently drafted a document on "Guidelines for Nowcasting in Africa", with the support of various experts. This document provides key recommendations in this respect. Meteosat Third Generation The first satellite of the new Meteosat Third Generation will be launch in mid-December and will be positioned over Africa (https://www.eumetsat.int/meteosat-third-generation) . It will not only ensure continuity of observations of weather and climate from space over Africa, but also bring new sets of observations that are particularly impactful for (severe) weather forecast. In particular, the new Lightning Imager will detect lightings in Africa from space, as they occur, and provide forecaster with valuable information to monitor severe weather event (pseudo-radar). Furthermore, the increase spatial and temporal resolution of MTG imager (every 10 minutes at 1 km resolution) will also allow a better monitoring of various weather events. The	which have all acknowledged the opportunity for the new technology. The CREWS East Africa project builds to a large extent upon the results of the HIGHWAY project by expanding the geographical coverage and typology of end-user groups reached by the early warning services, therefore contributing to implement the Early Warning System (EWS) Vision 2025 developed within the HIGHWAY project and approved by the EAC Ministerial Council in June 2019. However, the project is mainly scoped to improve the capabilities of members stated in producing early warnings in the short-medium terms, i.e. roughly in the 12 hours -10 days range, while only a limited portion of the project is dedicated to the nowcasting range, in which the contribution of remote sensing information is critical. In this regard, the project includes activities aimed at sensitizing the members states on the added value provided by new generation satellites to nowcasting and associated early warning. Building on this, WMO has also recently developed a pipeline description for a potential CREWS Southern Africa Project. In such a project it is envisaged to improve members capabilities to benefit from satellite data to support Nowcasting and associated early warnings in the context of the Severe Weather Forecasting Programme. The logistical arrangement of this component would include the engagement of the RSMC Pretoria and the RSMC Nairobi to work together on the concept, which builds upon the new generation satellites, i.e. the Meteosat Third Generation, and the opportunities it will provide in terms of improved nowcasting and access to improved satellite data for enhanced regional Numerical Weather Prediction (NWP) . The drafted CREWS Southern Africa Pipeline was submitted to CREWS earlier this week, for inclusion into the Pipeline list for the CREWS Steering Committee to consider for proposal development. WMO is also involved in the WISER Southern Africa bid, led by the University of Leeds which includes support to member states in exploiting the benefits from new generation satellite in nowcasting. Therefore, the potential CREWS project for Southern Africa would not duplicate efforts but leverage this, to increase the level of support within Southern Africa (cover more members) and expand to East Africa. The project will link into the 3 planned SWFP events, brining experts who have experience in the satellite based nowcasting tools into one of the

	access to MTG in Africa was recently discussed at the 15th EUMETSAT User Forum in Africa. Although the MTG data are free of charge, one of the main challenge is the important increase of the volume of data, which will necessitate strengthening capacities of the Met services in Africa for accessing the whole MTG data set. EUMETSAT has taken actions to facilitate the access, and several technical solutions exists. But they need to be implemented. In view of the role of satellite data for server weather monitoring and forecast, it is recommended to consider the necessary strengthening of capacities in the NMHS of Eastern Africa to ensure continuity of access to satellite products in support to early warning. The MTG will replace the current MSG (second generation) by end of 2024, and transition to MTG is a must. And transition to MTG is an integral part of the actions included in the revised African Strategy on Meteorology. Access to satellite data for regional Numerical Weather Prediction (NWP) In 2020, a RARS station was installed at ICPAC. This station allow the access to meteorological polar orbiting satellites from the US, Europe and China, as they pass over the region and monitor key atmospheric parameters. The RARS antenna is an element of the WMO DBNET (https://community.wmo.int/activity-areas/wmo-space-programme-wsp/dbnet). These polar orbiting satellites play a key role in the Numerical Weather Forecast (short and mid-range, for which 75% of observational impact comes from satellite data). ICPAC is operating the RARS antenna but has not yet made the step to assimilate such data in their regional NWP. The data of the RARS antenna should also be put on the WMO GTS to allow Global NWP centre to access and assimilate it. Maintaining operation and dissemination of the data from this RARS station makes an important difference and can also be instrumental for Eastern Africa region to develop its own capacities in NWP.	sessions. This will be sharing of knowledge of MSG tools, building capacity and creating an appetite for what is expected in the future (with MTG). WMO will remain engaged with EUMETSAT for opportunities for collaboration .