

CREWS Project Presentation Note to the Steering Committee		
<b>Project Title</b>	Greater Horn of Africa – Strengthening early warning and early action systems for meteorological, hydrological and climate extremes	
<b>Document Reference</b>	CREWS/RProj/11/Horn of Africa	
<b>Geographic coverage</b>	Horn of Africa: Ethiopia, Somalia, Sudan	
<b>Timeframe</b>	2022 – 2026	
<b>Total CREWS Contribution</b>	US\$ 5,240,998	
<b>Lead Implementing Partner</b>	World Bank	
	a. Execution	2,243,000
	b. Fees	224,300
	c. Total	2,467,300
<b>Additional Implementing Partners</b>	World Meteorological Organization (WMO)	
	a. Execution	990,000
	b. Fees	128,700
	c. Total	1,118,700
	United Nations Office for Disaster Risk Reduction (UNDRR)	
	a. Execution	1,464,600
	b. Fees	190,398
	c. Total	1,654,998
	<b>Project Recipient/ Beneficiary</b>	Regional: IGAD Climate Prediction and Applications Center (ICPAC), Nile Basin Initiative, Eastern Nile Technical Regional Office (ENTRO) Ethiopia: Ethiopian Meteorology Institute (EMI), Ministry of Water and Energy (MoWE), Ethiopian Disaster Risk Management Commission (EDRMC) Somalia: Ministry of Energy and Water Resources, Ministry of Agriculture and Irrigation Services, Ministry of Humanitarian Affairs and Disaster Management, Somalia Civil Aviation Authority Sudan: Sudan Meteorological Authority, Ministry of Water Resources and Irrigation
	<b>Additional Operational Partners</b>	Red Cross (IFRC, Red Cross Climate Center and National Societies) as relevant
<b>Main objective(s)</b>	To enhance the capacities for regional and national entities to produce and use climate, weather, and hydrological services, including early warning systems.	

<p><b>Initial state of play - project rationale</b></p>	<p>a. Vulnerability, exposure to risks, disasters impacts (on people and economy)</p>	<p>The climate of the Greater Horn of Africa is driven by complex interactions between various features acting at local and global scales including the El Niño Southern Oscillation and Indian Ocean Dipole. The region is highly exposed to climate-related risks. These risks frequently materialize because of extremely variable and erratic rainfall combined with increasing temperatures, and in recent years, this has brought droughts and floods with greater frequency and intensity. For example, in late 2019, floods struck the Horn of Africa after prolonged rainfalls that was double the seasonal average (WMO, No 1253). The economies and livelihoods of countries in the region are highly dependent on rain-fed agriculture, which is sensitive to weather and climate variability. Climate extremes, mainly associated with rainfall, have resulted in increased livestock, crop, and human diseases, coupled with land degradation, which leads to reduced crop production and increased crop failures and livestock deaths. With global temperatures 1.5°C higher relative to the pre-industrial period, the impact of climate extremes is likely to increase economic costs for governments through diversion of development resources, food insecurity, malnutrition and loss of livelihoods in affected areas, especially arid and semi-arid areas of the region.</p> <p><b>Ethiopia</b> is exposed and vulnerable to climate-related hazards, most notably droughts and floods. Since 1960 mean annual temperature has increased by 1°C and the average number of hot days per year have also increased. Some rains have become increasingly erratic, and extreme weather events with intense precipitation have become more common. Droughts are a prevalent hazard with more than 19 periods of widespread and severe food shortages recorded in the past 100 years. On average about 1.5 million people are affected by drought each year, but this number can be substantially higher in dry years. Flooding poses a threat to large parts of the country. Lowland, highland, and urban areas alike are affected by recurrent flooding, especially during and following intense and sustained rainfalls in the June-September rainy season. It is estimated that floods annually affect about 250,000 people and damage about US\$ 200 million of buildings and US\$ 3.5 million of cropland. Floods are a recurrent hazard in many parts of Ethiopia, and there are indications that they have increased in frequency and intensity since the early 2000s. Between 2000 and 2010, damaging flood events were recorded in every year besides 2001 and affected 80% of <i>woredas</i> (districts) in all regions of the country. Severe flooding in the 2020 rainy season damaged physical assets and affected peoples' lives and livelihoods, with the Afar, Oromia, Gambella, Southern Nations, Nationalities, and People's Region, Somali and Amhara regions most severely affected. According to records by the National Disaster Risk Management Commission, 288 people died, over 1,000,000 people were affected and nearly 300,000 people</p>
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		<p>were displaced by these floods. A World Bank study<sup>1</sup> estimated that direct flood damage alone to roads, buildings and crops was US\$ 357.5 million. Climate-related shocks and disasters compound Ethiopia's development challenges and undermine progress in poverty reduction. They also create and exacerbate the challenges of human displacement. Unless underlying drivers are addressed, the current overlapping patterns of displacement triggered by conflict and disasters are expected to persist, and the number of people affected to rise.</p> <p><b>In Somalia</b>, the interlinkages between climate and environmental change, poverty, fragility, conflicts, severe food insecurity and political instability are pronounced. Cyclical floods and droughts are increasingly common features and their co-existence poses a lethal threat. With most Somalis dependent on agriculture (primarily livestock) and forestry, continued climate and conflict impacts wreak havoc with daily life. From 2016 to 2017 and again in 2019, protected droughts, combined with conflicts displaced more than 2.6 million people internally, and brought many to the brink of starvation. In late 2019 parts of Somalia experienced some of the worst flooding in the country's recent history. Moderate to heavy rains caused substantial flooding in low-lying areas along the Shabelle and Juba Rivers, resulting in several deaths and significant damage to infrastructure, crops, property, and livestock. The flooding affected more than a half million people across 17 districts in ten regions in the three states of Jubaland, Hirshabelle, and Southwest with 370,000 people displaced from their homes. In urban centers sewage and flood water mixed, widely contaminating the shallow wells that provide drinking water and leading to repeated outbreaks of cholera. Heavy rains and flooding also damaged infrastructure in existing settlements for internally displaced people. Economic losses as a result of the floods are projected to reach US\$ 206 million over the next five years. Heavy rainfall has at times contributed to the outbreak of locust swarms. In June 2019, desert locust swarms appeared in Somalia, having crossed the Gulf of Aden and the Red Sea from Yemen, carried aloft by a tropical cyclone. Above average rains from September to December 2019 provided the breeding conditions for these desert locusts. Swarms of locusts affected much of East Africa, and devastated large area of crops into 2020.</p> <p>Right now, Somalia is facing a severe and worsening drought crisis. Following a succession of below-average rainy seasons, the 2021 <i>Deyr</i> (October to December) rains failed, resulting in one of poorest cereal harvests since 1995. As of January 2022, the United Nations Office for the Coordination of Humanitarian Affairs report that over 3.2 million people in 66 out of the country's 74 districts are affected by drought<sup>2</sup>. Populations are on the move in search</p>
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<sup>1</sup> Flood damages were estimated using maximum damage figures for Ethiopia by the European Joint Research Centre (JRC): Huizinga, J., de Moel, H., Szewczyk, W. (2017). Global flood depth-damage functions. Methodology and the database with guidelines. JRC Technical Reports, EUR 28552

<sup>2</sup> <https://reliefweb.int/report/somalia/somalia-drought-situation-report-no3-20-january-2022>

		<p>of food, water and grazing land, resource conflicts have been reported, and diseases linked to inadequate water supplies are on the rise. It is projected that 4.6 million Somalis will face crisis-to-emergency-level food insecurity from February to May 2022. Seasonal forecasts also suggest that the next rainy season, beginning in April 2022, will be below average, which will continue to exacerbate the crisis.</p> <p>In <b>Sudan</b>, climate change has exacerbated the country’s social and economic challenges with increasing occurrences of floods and droughts due to growing inter-annual variability of precipitation. Low socio-economic development, inadequate infrastructure, and a high dependency on climate-sensitive sectors result in weak resilience to climate and other shocks, resulting in the country ranked close to the bottom of global climate adaptation risk indices. Despite the country’s arid and semi-arid climate, river flooding hazard is classified as ‘high’, meaning that potentially damaging and life-threatening riverine floods are expected to occur at least once every 10 years. On average 200,000 are people affected every year and floods have been the most frequently recorded hazard in Sudan between 1990-2014, comprising 73 percent of disasters, and are expected to increase in frequency. The occurrence of floods, and lack of water and sanitation access, are closely correlated with outbreaks of water-borne diseases such as typhoid, cholera, and leptospirosis, with reported cases peaking to more than 30,000 reported cases in 2017. Displacement and conflict have contributed to exponential growth of informal settlements in unsafe areas and in peripheries of major urban centers that are prone to floods, resulting in damages to homes and assets. Sudan’s water scarcity hazard is classified as ‘high’, meaning a risk to a severe drought every five year. Air temperatures have increased over the period 1960 – 2009, with temperatures in the 2000 – 2009 period between 0.8°C and 1.6°C warmer than they were in the 1960 – 1969 period. Droughts are the second most frequently recorded hazards between 1990-2014, comprising 15 percent of disasters. Droughts are expected to increase in frequency and length, impacting livestock, health, migration, and displacement.</p>
	<p>b. Status of the EWS, DRM institutions and NHMSs, actors / players present</p>	<p>At the regional level, the ICPAC is Regional Climate Centre accredited to the World Meteorological Organization. It provides climate service to 11 countries for the Greater Horn of Africa including Ethiopia, Somalia, and Sudan. It provides services that address agriculture and food security, climate and weather forecasting, disaster risk management, water resources and capacity development. Based in Nairobi, in October 2021, it launched its Disaster Operations Center. It has a long track record as an active participant in projects. These projects have included the three implementing agencies as partners.</p> <p>In Ethiopia, institutional arrangements for EWS and DRM have shifted in recent decades. A reshuffle of these actors and their</p>

responsibilities was carried out in September 2021, and the new mandates are not yet clear. **The Disaster Risk Management Commission (DRMC)** is the formal focal government institution responsible for coordinating disaster response, risk management, preventive measures, and recovery programs. The DRMC is structured under the Office of the Prime Minister as a part of ongoing efforts to streamline disaster and security related agendas in Ethiopia. The DRMC is mandated to coordinate across ministries at federal levels, and the respective institutional units have been established, but it faces a challenge in effective DRM mainstreaming across sectors due to insufficient institutional weight, while limited resources and capacities across the different levels of government inhibit the DRMC from providing the necessary ground support for disaster preparedness, response, and recovery. The **Ministry of Water and Energy (MOWE)** is responsible for “studying and implementing flood early warning services”. The technical capabilities for hydrological monitoring and forecasting are situated within MoWE. The **Ethiopian Meteorological Institute (EMI)** (formerly the National Meteorological Agency), which is accountable to the Ministry for Water and Energy, is responsible for meteorological and climate services, and the provision of early warning services as they relate to weather conditions and the climate.

In **Somalia**, the landscape for providing early warning services is fragmented. Four main actors are involved: the Ministry of Water, the Ministry of Agriculture, the Ministry of Humanitarian Affairs and Disaster Management, and the Somalia Civil Aviation Authority. Responsibilities and capabilities across these four institutions are not yet well-defined. In 2020, these four entities have come together to form the Hydromet Working Group, with the ambition to establish an integrated National Meteorological and Hydrological Services. The Somalia Water and Land Information Management (SWALIM) project is a program implemented by FAO which has been supporting the Federal Government of Somalia in the field of hydromet by supporting some monitoring, forecasting and data management capabilities. A plan has been developed to transfer the capabilities of SWALIM to the FGS. This process is being led by the Somalia Bureau of Statistics.

In **Sudan**, the main bodies involved in hydromet services, including flood early warning systems, are the Sudan Meteorological Authority, the Ministry of Irrigation and Water Resources (MoIWR), Ministry of Agriculture and Forestry, and the Ministry of Humanitarian Affairs. The Disaster & Emergency Risk Management Authority is a federal body with branches in the 18 States, and it has the responsibility for establishing guidelines and frameworks for early warning mechanisms. The Sudan Meteorological Authority (SMA) is subordinate to the Ministry of Irrigation and Water Resources (MoIWR). SMA has the mandate

to monitor all the meteorological activities in Sudan. The MoIWR is responsible for among other activities, flood early warning.

**Red Cross Red Crescent Movement (RCRC): The Red Cross Red Crescent Movement** is composed of the International Federation of Red Cross and Red Crescent Societies (IFRC), Red Cross National Societies and Reference centers such as the Climate Centre and Livelihood Centers among others. The RCRC Movement is a leading humanitarian actor in Sudan, Somalia, and Ethiopia. The national societies in Somalia, Sudan and Ethiopia provide a critical connection between regional and national scale initiatives, and community level preparedness and action. The Red Cross Red Crescent Climate Centre provides ongoing support to the IFRC and national societies to enhance their capacity in climate smart programming, Anticipatory Action, Forecast based Finance (FbF) and Early Action Protocols (EAP). The IFRC as the secretariat supports local Red Cross Red Crescent action in more than 192 countries globally.

The RCRC has been at the forefront of piloting and implementing Anticipatory Action in Africa to support communities to anticipate, prepare and act before disasters. RCRC has enabled this through providing technical support to Red Cross National Partners through the Climate Centre and IFRC, capacity building on the key components of Anticipatory Actions – Impact Based Forecasting, Triggers, Early Actions and Financing. RCRC has also worked towards bridging gaps and building capacity through simulation exercises, knowledge management and strengthening partnerships between key actors including working closely with the regional and country level technical working groups. In the Horn of Africa, the Ethiopia Red Cross Society has developed a Flood Early Action Protocol and is working to develop a similar protocol for droughts. Similar work is being pioneered in Sudan and Somalia. Additionally, the IFRC is finalizing engagements on anticipatory actions and supporting the NMHS to reach the last mile with the EWEA messages, in partnership with IGAD/ICPAC.

The IFRC in partnership with the relevant National Societies and supported by the Climate Centre, are well-placed to support elements of CREWS-financed activities described in this proposal. In particular, the IFRC and National Societies have a key role to play in ensuring a people centered approach to early warning and early action.

More specific areas of partnership include:

- Providing rich information and insights on community vulnerability and needs with respect to early warning/early action from the Enhanced Vulnerability Capacity Assessment (eVCA) exercises.
- Identifying priority gaps, and hotspots in the three countries for support and program implementation

		<p>related to a people centered approach and last mile communication.</p> <ul style="list-style-type: none"> <li>• Developing of, or scoping of, EAPs to compliment CREWS initiatives.</li> <li>• Training and capacity building in Impact-based Forecasting &amp; Anticipatory Action from community level through to regional. (e.g. IGAD/ICPAC, NMHSs, in country partners, DRM Agencies, National Disaster Operation Centers and communities)</li> <li>• Coordinate and Convening National Technical Working Groups and Dialogues Platforms for advocacy, learning, exchanges, key collaborations and partnerships.</li> <li>• Support the NMHSs in communicating People Centered Early Warning Early actions and related climate risks to the last mile.</li> <li>• Support Simulation exercise on key components of Early Warning Early Action with national entities and local communities.</li> <li>• Support post event learning and analysis of early action.</li> </ul>
	<p>c. Projects and programs dealing with EWS and hydromet under implementation or preparation</p>	<p><b><u>Projects Under Implementation</u></b></p> <p><b><u>Regional projects:</u></b></p> <p>The WMO is implementing the <b>Severe Weather Forecasting Program</b> 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.</p> <p>The <b>Intra ACP Climate Services and Related Applications Programme</b>, 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</p>

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 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**<sup>3</sup>, 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**<sup>4</sup> focuses on the Horn of 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.

#### **Ethiopia**

The **Agricultural Climate Resilience Enhancement Initiative** is a \$6.8 million Adaptation Fund project supporting agriculturalists and agro-pastoralists to implement Community Adaptation

<sup>3</sup> <https://confer-h2020.eu/>

<sup>4</sup> <http://down2earthproject.org/>



Practices, to climate proof extension services, and to enhance climate information generation. The program is supporting the improved dissemination of climate information through radio. It is also packaging seasonal forecasts and co-producing climate services for farmers. Furthermore, the project is supporting the installation and operation of automatic weather stations.

The IDA-financed **OneWASH** program (P167794) is a \$350 million investment in climate resilient Water, Sanitation and Hygiene (WASH) services and infrastructure. The program is financed through IDA and other donor funds. The program is implemented by the Ministry of Water and Energy, along with entities at national and local levels. While the major focus of the project is on WASH, a portion of the financing is supporting the Ministry of Water and Energy and the Ethiopian Meteorological Institute to improve basic hydromet services. The project is supporting these entities in areas that include data management, data rescue, modelling capabilities and the installation and operation of new monitoring equipment.

**Strengthening Ethiopia's Adaptive Safety Net** project is a large World Bank program (P172479). It seeks to (a) expand geographic coverage and enhance service delivery of Ethiopia's adaptive rural safety in drought prone communities, and (b) in case of an Eligible Early Response Financing, respond promptly and effectively to it. In terms of hydromet, a technical assistance supported a study into the design of a national early warning system, largely focusing on food security and social protection.

Finland is also implementing **Improving meteorological observation infrastructure and forecasting capabilities of the Ethiopia Meteorological Institute (EMI)** funded by Finnish Public Sector Investment Facility (PIF) to minimize the impact of frequent weather hazard by building EMI's capacity to predict and warn about extreme weather. The project plans to install a turnkey weather observation and forecasting solution for EMI and provide institutional support and major training component by FMI to sustain the project results in a longer term. Over the next 2-3 years. The project is, a soft-loan financing instrument administrated by Ministry for Foreign Affairs of Finland, and the project value is EUR 13 million.

#### Somalia

The **Somalia Crisis Recovery Project (SCRP)** finance by IDA (P173315) is an \$187.5 million support to the Federal Government of Somalia. It seeks to "support the recovery of livelihoods and infrastructure in flood and drought affected areas and strengthen capacity for disaster preparedness nationwide". The program is in response to recent devastating floods and droughts that have struck Somalia. One component focuses on "Long-term disaster preparedness" and includes physical investments in flood risk management. A subcomponent is dedicated to "supporting hydromet and early warning systems for the generation and dissemination of hydromet data". Other aspects include flood

hazard mapping and the establishment of a National Emergency Operations Center. SCRCP also plans to support the transition of FAO-SWALIM to FGS, which will be an integral part of hydromet/EWS in Somalia.

#### **Sudan**

The **Sudan Floods Damage Assessment and Recovery Support (P175505)** is an ongoing Technical Assistance that is helping Sudan to recover from extensive flooding in September 2020. The program has supported a rapid damage, loss, and recovery needs assessment, which assessed the impact of the 2020 seasonal floods for Khartoum and other affected areas in Sudan. The report provided an assessment of the damage, loss and recovery needs in the affected sectors and districts, priority recovery needs for each sector, and suggested recovery interventions. The project also implemented capacity building for the government officials engaged in emergency preparedness and response and disaster risk management.

In addition, Finland through the Finnish Meteorological Institute (FMI) is implementing a technical assistance project (600K EUR) called **“Improving the Adaptation to Climate Change by Enhancing Weather and Climate Services in Sudan”** which allows a twinning arrangement between FMI and SMA, building on their 10-years of continuous cooperation. The project aims to increase the quality and outreach of services of SMA to support the development of the Sudanese society in different socio-economic sectors and regions and improve SMA capacity to utilize cutting-edge tools for service delivery with the expected outcome of SMA being able to independently use and maintain new information sources and systems to deliver better and more timely weather and early warning services.

#### **Pipeline activities**

In **Ethiopia**, the World Bank’s **Integrated Disaster Risk Management Project (IDRMP)** (P176327) is a proposed investment of \$300 million. A component will address early warning systems and hydromet services. This component seeks to develop and operationalize impact-based flood early warning systems for three priority basins (the Awash Basin, the Omo Basin, and the Rift Valley Lakes Basin). In addition, the project will support efforts for forecast based financing, to allow the rapid deployment of resources in advance of an impending disaster.

In **Somalia**, the **Water for Agro-pastoral Productivity and Resilience / “Biyoole” Project** (P167826) aims to increase access to improved water sources. This will require detailed hydrological assessments based on monitoring and modelling.

In **Sudan**, the **Sudan Integrated Water Management project** (P177089) is a proposed grant of \$203 million. In addition to its primary objective of increasing access to water supply services, it

		<p>will also focus on strengthening the flood early warning system (FEWS) of the Nile and non-Nilotic (seasonal wadi) basins. This will include activities such as improving hydromet data analytics; expansion of FEWS; strengthening safety of small dams; and capacity building and hydrological studies. In addition, the United Nations Environment Program is preparing a proposal to the Green Climate Fund for Sudan called “<b>Strengthening Climate Services and Multi-hazard Early Warning for Resilience in Sudan</b>”, in which FMI is also included as one of the executing entities. SMA is the main beneficiary institute of the project.</p>
	<p>d. Describe the multiplier /leveraging potential of the CREWS investments</p>	<p>There is a significant leveraging potential (tentatively estimated as around 47.8 million USD) in the Greater Horn of Africa through ongoing and planned investment projects by the World Bank and other partners including 1) Somalia Crisis Recovery Project, 2) Integrated Disaster Risk Management Project in Ethiopia, 3) a Regional flood management project covering Ethiopia and Sudan 4) Intra-ACP Climate Services and Related Applications (ClimSA), and 5) Agricultural Climate Resilience Enhancement Initiative (ACREI), all of which have/will have substantive activities focusing on strengthening hydromet services and Early Warning Systems (EWS). 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 information to support water management, especially for groundwater resources.</p>
	<p>e. Describe measures to ensure coherence with existing initiatives</p>	<p>The implementing partners for this proposal are bringing their expertise and will draw upon their key engagements in the three countries and at the regional level. 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 benefit at local, national and regional level. Coherence with existing initiatives will be ensured by leveraging existing coordination mechanisms at the national and regional levels, while three IPs are coordinated closely through the formulation of a Project Management Team (see the “Organization and operating procedures” section for details).</p> <p>As has been described in previous sections, the World Bank has ongoing engagements in three countries. The World Bank team involved in this proposal are directly engaged in those other projects and therefore are designing project activities with ongoing initiatives in mind and ensuring maximum complementarities between projects. The World Bank also has a strong presence in the project target countries, and has strong relationships with the government counterparts in the relevant ministries. These government counterparts have been directly consulted on this proposal to ensure alignment.</p>

		<p>WMO will be mainly focused on regional activities in close collaboration with regional actors that include ICPAC. The project team at WMO have engaged with ICPAC in the design of the program and will maintain close contact throughout the duration of the project to ensure continued alignment of activities.</p> <p>UNDRR also has a strong engagement in the region, where it is working closely with the African Union, Regional Economic Commissions as well as national entities. Proposed activities are in line with the ministerial-endorsed 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.</p>
<p><b>Project design</b></p>	<p>a. Project components and activities</p>	<p>The project will leverage WMO’s network of regional centres, for example Regional Climate Centre (RCC) ICPAC and Regional WIGOS Centres Kenya and Tanzania. As a centre of excellence ICPAC develops and coordinates regional products and services including climate data, monitoring and prediction that support regional and national climate activities, and thereby strengthen the capacity of WMO Members in a given region to deliver better climate services to national and local-level users and partners. The Regional WIGOS Centres in Kenya and Tanzania are able to provide regional coordination and technical support to countries. Additional support from the regional centres includes capacity development support and promotion of strengthened operational exchanges of data and products between NMHSs at country level.</p> <p>Therefore, the regional and national components of this project are interconnected and not implemented in isolation. Support leveraged from the regional centres will be used to complement and strengthen the national level activities through the provision of technical support, capacity development etc. Likewise, the capacity of the regional centres and support they are able to provide will be enhanced through national activities and the willingness of countries to cooperate through data exchange and practices at the regional level.</p> <p><b>COMPONENT 1: STRENGTHENED REGIONAL CAPACITIES AND COORDINATION FOR CLIMATE, WEATHER, AND HYDROLOGICAL SERVICES</b></p> <p><b><i>Sub-component 1.1: Improving regional services to support countries to provide effective EWS</i></b></p> <p><b>(a) Strengthening the Regional User Interface Platform and Regional Climate Outlook Forum.</b> The project will provide financial and technical support to the Regional Climate Outlook Forum (Greater Horn of Africa COF or GHACOF) and seek to expand the range of attendees. A Regional User Interface Platform will be established to support knowledge exchange. One key aspect of this will be a regional platform for Public-Private Engagement potentially managed by ICPAC.</p>

		<p><b>(b) Enhancing capacity to produce, disseminate and communicate information services through National Climate Outlook Forums (NCOFs).</b> Resources will be provided to directly support the countries to organize NCOFs and to produce, disseminate and communicate climate information at the national level, while leveraging of ICPAC expertise wherever relevant. ICPAC will provide support to national NCOF processes by including a training of trainers approach through the GHACOF.</p> <p><b>(c) Developing Climate Services Toolkits (CSTs) tailored to the operational needs of NMHSs.</b> CSTs will be developed and tailored to the specific needs and requirements of each of the three participating countries. These CSTs will provide technical tools that enable NMHSs to extract, visualize and analyse climate data. CSTs will be customized for individual country's operational needs, while enabling synergies in instances where different countries focus on a similar sector (e.g agriculture) and timescale (e.g sub-seasonal forecasts). As a result, tools developed for one country could be adapted for use in a different country. The steps for development include (i) identification of relevant user sectors (ii) stocktaking of existing climate services and identifying the needs and gaps (iii) drafting of a roadmap which will act as a guide for the development of the CST (iv) development of the toolkit.</p> <p><b>(d) The improvement of technical and infrastructural capacity of ICPAC to access and utilize Long-Range Forecasts (LRF) and derive seasonal and sub-seasonal forecasts at sub-regional scales.</b> ICPAC has adopted a methodology to produce objective seasonal forecasts which requires accessing state-of-the-science multi-model ensemble for LRF from Global Producing Centres, as well as developing multi-model ensemble of LRF most suitable for the Greater Horn of Africa.</p> <p><b>(e) Building capacity to deliver operational data services to support operational LRF and climate monitoring.</b> At the regional level, ICPAC will be supported to expand their maproom facility and result in the creation of quality climate data sets.</p> <p><b>(f) Improving national abilities to access, process and analyze multi-model long-range climate information through a regional cascading mechanism.</b> ICPAC will be supported to downscale planetary scale decadal climate predictions. Working from a UK Met Office product, the WMO has established a planetary scale operational infrastructure and produces a forecast once a year since 2020. The support will provide processes to produce and analyze these downscaled forecasts at the regional level.</p>
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		<p><b>(g) Reviewing assessments of national capacities on WIGOS and WIS (observations and data exchange).</b> It is a priority to support the three countries to increase the availability of observational data that are available to the Global Basic Observing Network (GBON). The individual countries will be provided with support to ensure that they are able to provide data that are compliant with WMO standards. This component will also identify options for a regional WIGOS centre (either a new body or integrated with existing bodies) that will provide the mandatory functions needed. Further, it will be ensured that this activity is aligned with, and complement the potential future investments by the Systematic Observations Financing Facility (SOFF).</p> <p><b>(h) Technical assistance to support countries to conducting baseline and end-point assessments including County Hydromet Diagnostics.</b> NMHS will be provided with technical support on how to assess their full range of capacities as a provider of hydromet services. This support will contribute to demonstrating the contribution of CREWS support to improved services. This support will be directed towards NMHS at the start and towards the end of the financed project period.</p> <p><b>(i) Developing regional guidelines for producing early warning services that reach communities most at risks.</b> Technical assistance will be provided to prepare best-practice guidelines on increasing access to early warning services by the people most at risk. While this may reflect gender issues, it should also address factors that include poverty, education gaps, access to mobile communications, urban-rural divisions, minority ethnic groups and languages, and people with disabilities.</p> <p><b><i>Sub-component 1.2: Strengthening regional coordination and cooperation for effective EWS and climate services</i></b></p> <p><b>(a) Boosting flood preparedness and emergency response through the preparation and trialing of pilot flood contingency plans.</b> Technical assistance will develop a common methodology and approach for producing flood contingency plans at known flood hotspots. This activity will be connected with ongoing or proposed projects (e.g. the Integrated Disaster Risk Management Project in Ethiopia).</p> <p><b>(b) Strengthening data exchange between ICPAC member states to enhance capabilities in flood forecasting on transboundary rivers.</b> If feasible, countries will be supported to develop platforms for data exchange in transboundary regions. This component will require technical and institutional support to achieve this goal.</p> <p><b>(c) Operating the Situation room at ICPAC and enhancing knowledge exchange between national entities on good</b></p>
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		<p><b>practices in early warning systems.</b> The recently instigated situation / operations room, while being a significant step, requires increased human capacity for its operation. This will be supported through the secondment of experts and training.</p> <p><b>(d) Strengthening transboundary collaboration through joint training.</b> Experts from national entities will be supported on joint training activities on topics that include severe weather forecasting, data management, and flood forecasting.</p> <p><b>COMPONENT 2. STRENGTHENING IMPACT BASED EARLY WARNING SERVICES AND TARGETED CLIMATE SERVICES IN ETHIOPIA</b></p> <p><i>Sub-component 2.1: Reaching the last-mile. Communities with actionable EWS and ensuring early actions</i></p> <p><b>(a) Enhancing capacities of the end users to demand, understand and utilize climate and impact based early warning information, products and services.</b> Guided by the recently adopted Ethiopia’s National Framework for Climate Services, institutionalization of structured and continuous interactions between service providers and users will be supported, through which users are empowered to demand services and also capacitated to better understand and utilize services for their decision makings. Inclusiveness will be integral to this activity to ensure diverse needs and the requirements of users are properly communicated and understood by service providers.</p> <p><b>(b) Strengthening last mile dissemination.</b> Technical assistance will support the design of standard operating procedures using participatory approaches to strengthen and streamline dissemination of warning messages at the community level. Training activities will also be supported for stakeholders in the process.</p> <p><b>(c) Exploring opportunities for how hydromet and climate data and information services can support existing and emerging disaster risk financing mechanisms.</b> Design and rolling out of mechanism for the early distribution of financial resources ahead of potential disaster / publication of standard operating procedures for resource distribution, building on the on-going flood forecast based financing pilot by DRMC in collaboration with Red Cross.</p> <p><b>(d) Strengthening governance and operational coordination for impact-based early warning.</b> Support will focus on the design and development of Standard Operating Procedures for Impact-Based Forecasting and Warning, considering MEW, EMI and DRMC.</p>
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		<p><b><i>Sub-component 2.2: Developing demand driven climate and early warning information services</i></b></p> <ul style="list-style-type: none"> <li><b>(a) Developing pilots for impact-based warnings for hydrometeorological events.</b> Technical Assistance (TA) will support the design of components for pilot based early warning systems.</li> <li><b>(b) Technical support to assist in the design of new climate and weather service products.</b> This activity will result in a set of guidelines on the preparation of new climate services. Multi-stakeholder fora will be held to include private and academic sector and users in the co-production of climate services and sustainable business models for service delivery. As well as flood early warning, wildfire risk monitoring could be considered.</li> <li><b>(c) Integration of dam safety operations in flood EWS.</b> TA will interrogate the potential for flood EWS to be used operationally to improve the management of dams, for the purpose of reducing flood risk and also maximizing the benefits for hydraulic infrastructure.</li> <li><b>(d) Technical assistance to develop hydromet systems including, observation, data management and archiving, data analysis, forecasting in support of hydromet investment projects.</b> Support here will be directed to activities including the design of technical specifications for new monitoring stations, and the selection of tools that can be used for data analysis and forecasting, which will inform and support the system design and procurement envisioned under IDRMP (P176327).</li> </ul> <p><b>COMPONENT 3: STRENGTHENING NATIONAL CAPACITIES IN SOMALIA</b></p> <p><b><i>Sub-component 3.1: Develop and deliver priority public hydromet services</i></b></p> <ul style="list-style-type: none"> <li><b>(a) Capacity development for staff in priority technical areas (observation, data management and analysis, meteorological and hydrological forecasting).</b> The focus here is on training staff across all areas of hydromet services. The precise training plan will be developed based on a capacity and needs assessment in discussion with the government entities.</li> <li><b>(b) Strengthening the development and delivery of services to the priority farming and pastoralist communities.</b> This activity will support the design of services for remote communities, focusing on their specific needs for weather and climate information by using people-centered approaches. This will focus on areas such as the capacities for disseminating information and the necessary content of services.</li> </ul>
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		<p>(c) <b>Supporting the mainstream of gender responsive design in hydromet services.</b> Technical assistance will provide advice and new guidelines on how aspects of gender (and other under-represented groups) can be incorporated into the design of new services. This TA will make use of surveys and focus groups to jointly identify obstacles, needs and solutions.</p> <p>(d) <b>Supporting the jump-start of service provision through partnership.</b> This activity will explore the opportunities for a private entity to provide services in areas such as agrometeorological services. This will be based on an assessment of user needs and market analysis. While it is envisioned the development of services and needed partnerships is supported by development assistance during the initial phase, long term sustainability will be duly considered from the onset of the jump-start scenario.</p> <p>(e) <b>Supporting technical design of minimum basic observing, data management, forecasting and service delivery systems.</b> TA will focus here on supporting entities to design observing networks and to detail the technical specifications, to avoid the procurement of unnecessary equipment.</p> <p><b>Sub-component 3.2: Institutional development</b></p> <p>(a) <b>Institutional development of NMHS.</b> The establishment of a NMHS is an element of national strategy. TA will be provided to support areas that include the design of the concept of operations, and the support to detailing human capacity needs, policy, and budgetary requirements.</p> <p>(b) <b>Integration of hydromet systems.</b> This activity will support better coordination and a more integrated investment approach among development partners active in hydromet space in Somalia. This activity will also support aspects of the transition of SWALIM from FAO to the Federal Government of Somalia and its integration into the national hydromet system.</p> <p>(c) <b>Supporting operationalization of the National Emergency Operations Centre /Multi-hazard Early Warning Centre.</b> This activity will support the development of an operational plan for the centre, based on international best practice and dialogue with key stakeholders. It will develop an observation network, integrate data storage data centre and data system, deliver multi-hazard services (access to weather/climate, hydromet forecast, geohazard and marine hazard forecast information) and undertake in-depth risk assessment.</p>
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		<p><b>COMPONENT 4: STRENGTHENING NATIONAL CAPABILITIES IN SUDAN</b></p> <p><b><i>Sub-component 4.1: Strengthening community involvement in EWS</i></b></p> <p>(a) <b>Support community based EWSs and strengthen their complementarity with a national EWS.</b> Technical support will be provided to design community based early warning systems, focusing on hydrometeorological hazards. This will result in greater access to early warning information.</p> <p>(b) <b>Development of community contingency plans.</b> The contingency plans will be developed in consultation with communities and national experts. These plans will be disseminated to communities through workshops and capacity building activities.</p> <p><b><i>Sub-component 4.2: Strengthening flood early warning services</i></b></p> <p>(a) <b>Support to update and rehabilitate flood early warning system on Eastern Nile.</b> The flood early warning system (FEWS) of the Nile river system suffers from severe degradation resulting from years of underinvestment. TA will support the design and operationalization, and verification of a rehabilitated FEWS.</p> <p>(b) <b>Analytical work to support development of pilot FEWS for selected non-Nilotic wadi.</b> FEWS for wadi are mostly non-existent. TA will support the development of technical specifications for new FEWS.</p> <p>(c) <b>Improving interoperability of monitoring systems.</b> The project will support the specification, selection, installation, and customization of an appropriate data management platform.</p> <p>(d) <b>Strengthening of the hydro-meteorological monitoring network.</b> This will include the development of a roadmap for a fit-for-purpose monitoring network.</p> <p>(e) <b>Strengthening operational coordination between the Ministry of Irrigation and Water, Humanitarian Affairs Commission, Local Government and the new Emergency Operations Center.</b> Technical assistance will support the review and revision of standard operating procedures between these actors, clearly identifying their roles and responsibilities.</p> <p>(f) <b>Implement Risk Assessment for Floods, and Droughts.</b> Technical assistance at the National level in Sudan that will increase the use of scalable, systemic risk information in a humanitarian context to support resilient planning, strategic and operational decision-making. Also, it will help the Government of Sudan to drive more risk-informed decision-making and quantify future losses because of riverine floods and droughts, in the built environment and agropastoral sector in Sudan.</p>
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	b. Work plan	See attachments 1, 2 and 3

Organization and operating procedures	a. Institutional framework	<p>Regional and national stakeholders drive the coordination of CREWS activities through existing Project Management Unit (PMU) for Investment Project Financing, which this CREWS project will leverage (please see the details in the “leveraging potentials” section above), while the CREWS project will be jointly implemented by WMO, WB and UNDRR supporting the NMHSs (where they exist) and entities responsible for disaster risk management and other relevant ministries in Ethiopia, Somalia, and Sudan and regional bodies. Each implementing partner jointly with stakeholders will ensure delivery of quality results on time, and effective budget and project management. Coordinated implementation will be ensured through biannual meetings of a joint Project Management Team (PMT) consisting of the three implementing partners. Regional and national stakeholders will join these meetings as needed, in addition to playing a key leading role in their respective PMUs.</p> <p>The PMT will play a critical role including: a) review of implementation progress; b) management of project risks; and c) guidance and recommendations including for developing synergies and leveraging opportunities with other initiatives in the countries and region. The main functions would also include ensuring alignment with relevant frameworks, strategies and priorities in the region and countries along with assessing the project progress. The PMT will also be used as a mechanism to engage with key regional stakeholders. The PMT will meet bi-annually and also as needed in between. Furthermore, the PMT will keep the relevant stakeholders informed of the developments and achievements made within the project.</p>
	b. Monitoring and evaluation system	<p>The project logical framework will be used to monitor progress and achievements against the indicators for each of the outputs. The Project Management Team will be responsible for review of outputs, risks and progress achieved on an annual basis. These annual reviews will be in accordance with CREWS Monitoring and Evaluation System and will also comply with the systems set up by WMO, WB and UNDRR. To track the impacts of the project, beneficiaries including vulnerable groups (people with disabilities, women, elderly and minority groups) will be included in the feedback process. In addition to the annual review, WMO, WB and UNDRR will jointly prepare half-yearly progress report, highlight the risks and take corrective actions, as required. The outcomes of this half-yearly progress report will be presented to the CREWS</p>

		Steering Committee, following already established reporting procedures of CREWS projects.
<b>Project viability and sustainability</b>	a. Main identified risks	<p><b>Overall risks: Medium</b></p> <p><b>Coordination</b> (medium): There are multiple agencies and development partners involved in providing support and/or developing and disseminating hydromet services in the region, creating a coordination challenge.</p> <p><i>Mitigation measures:</i> The project will work closely with and reinforce already established coordination mechanisms in each country and at a regional level, and also communicate frequently and coordinate with all the identified partners during the implementation.</p> <p><b>Political instability</b> (high): 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.</p> <p><i>Mitigation measures:</i> 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.</p> <p><b>Sector Policies and Strategies:</b> (medium). There is the potential for each of the three national governments to change their sectoral policies and priorities, which would affect the implementation of project activities.</p> <p><i>Mitigation measures:</i> The on-the-ground activities are being implemented in parallel to ongoing projects where the Governments have been consulted extensively. The CREWS project design will largely address activities that are considered no-regret as much as possible.</p> <p><b>Social Risks</b> (moderate): Any activities that are engaged with or touch upon the lives of communities present the risk that they exacerbate problems such as power dynamics, inequality and exclusion.</p> <p><i>Mitigation measures:</i> The program team will take social issues into consideration during implementation. In particular, the project will seek to ensure gender sensitive design. The program will work closely with the social specialists who are engaged with ongoing initiatives in the countries.</p>
	b. Critical assumptions	The success of the project hinges on the following critical assumptions:

		<ul style="list-style-type: none"> <li>• Strong political commitment from governments of the participating countries;</li> <li>• Cooperation among/between and support from the WMO network of NMHSs, Regional Centres, and partners;</li> <li>• An increase in public awareness to hydro-meteorological hazards and a desire to build resilience;</li> <li>• Agreement among partners and stakeholders on their complementary roles within the four components of people-centered 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);</li> <li>• Agreement among the stakeholders on the objectives along with a clear understanding of the initiatives implemented.</li> <li>• In light of the statement issued by the World Bank on October 27, 2021, lifting the current pause of disbursements in all of the World Bank operations in Sudan is a prerequisite to implement all the proposed activities related to Sudan.<sup>5</sup></li> </ul>
	c. Judgment on the project sustainability	<p>The project will focus on, among others, institutional capacity building and also producing tangible outputs with convincing narratives so that decision makers would be aware of the tangible benefits of hydromet and early warning services. The Project will help to improve service delivery to key national and sub-national stakeholders by introducing impact-based forecasting, thus creating additional demand and facilitating increase of budget support. In addition, The CREWS will leverage a few IDA funded projects, which are highly visible within the government, creating opportunities to sustain project outcomes.</p>

<sup>5</sup> <https://www.worldbank.org/en/news/statement/2021/10/27/world-bank-group-paused-all-disbursements-to-sudan-on-monday>

### Attachment 1: Budget Breakdown (USD)

Activity	Lead IP	Total	WB	WMO	UNDRR
<b>Component 1: Strengthened regional capacities and coordination for climate, weather, and hydrological services</b>		<b>1,842,600</b>	<b>218,000</b>	<b>990,000</b>	<b>634,600</b>
<b>Sub-component 1.1: Improving regional services to support countries to provide effective EWS</b>					
Strengthening the Regional User Interface Platform and Regional Climate Outlook Forum, to include knowledge exchange activities	WMO	80,000		80,000	
Enhancing capacity to produce, disseminate and communicate information services through National Climate Outlook Forums (NCOFs)	WMO	80,000		80,000	
Developing Climate Services Toolkits (CSTs) tailored to the operational needs of NMHSs	WMO	200,000		200,000	
The improvement of technical and infrastructural capacity of ICPAC to access and utilize Long-Range Forecasts (LRF) and derive seasonal and sub-seasonal forecasts at sub-regional scales	WMO	160,000		160,000	
Building capacity to deliver operational data services to support operational LRF and climate monitoring	WMO	160,000		160,000	
Improving national abilities to access, process and analyze multi-model long-range climate information through a regional cascading mechanism	WMO	190,000		160,000	30,000
Enhancing regional and national capacities of WIGOS and WIS (observations and data exchange)	WMO	100,000		100,000	
Technical assistance to support countries to conducting baseline and end-point assessments including Country Hydromet Diagnostics	WMO	50,000		50,000	
Developing regional guidelines for producing early warning services that reach communities most at risk	WB	48,000	48,000		
<b>Sub-component 1.2: Strengthening regional coordination and cooperation for effective EWS and climate services</b>					
Boosting flood preparedness and emergency response through the preparation and trialing of pilot flood contingency plans	WB	75,000	75,000		
Strengthening data exchange between member states to enhance capabilities in flood forecasting on transboundary rivers	WB	95,000	95,000		
Operating the Situation room at ICPAC and enhancing knowledge exchange between national entities on good practices in early warning systems	UNDRR	368,000			368,000
Strengthening transboundary collaboration through joint training	UNDRR	236,600			236,600
<b>Component 2: Strengthening impact based Early Warning Services and targeted climate services in Ethiopia</b>		<b>745,000</b>	<b>745,000</b>	<b>0</b>	<b>0</b>
<b>Sub-component 2.1: Reaching the last-mile. Communities with actionable EWS and ensuring early actions</b>					
Enhancing capacities of the end users to demand, understand and utilize climate and impact based early warning information, products and services	WB	70,000	70,000		
Strengthening last mile dissemination.	WB (w/ Red Cross)	95,000	95,000		
Exploring opportunities for how hydromet and climate data and information services can support existing and emerging disaster risk financing mechanisms	WB (w/ Red Cross)	95,000	95,000		
Strengthening governance and operational coordination for impact-based early warning	WB	95,000	95,000		
<b>Sub-component 2.2: Developing demand driven climate and early warning information services</b>					
Developing pilots for impact-based warnings for hydrometeorological events	WB	120,000	120,000		
Technical support to assist in the design of new climate and weather service products.	WB/WMO	75,000	75,000		
Integration of dam safety operations in flood EWS	WB	70,000	70,000		
Technical assistance to develop hydromet systems including, observation, data management and archiving, data analysis, forecasting in support of	WB	125,000	125,000		

hydromet investment projects					
<b>Component 3: Strengthening national capabilities in Somalia</b>		<b>1,365,000</b>	<b>735,000</b>	<b>0</b>	<b>630,000</b>
<b>Sub-component 3.1: Develop and deliver priority public hydromet services</b>					
Capacity development for staff in priority technical areas (observation, data management and analysis, meteorological and hydrological forecasting)	WB	115,000	115,000		
Strengthening the development and delivery of services to the priority farming and pastoralist communities	WB	100,000	100,000		
Supporting the mainstream of gender responsive design in hydromet services	WB	60,000	60,000		
Supporting the jump-start of service provision through partnership	WB	130,000	130,000		
Supporting technical design of minimum basic observing, data management, forecasting and service delivery systems	WB	105,000	105,000		
<b>Sub-component 3.2: Institutional Development</b>					
Institutional development of NMHS	WB	115,000	115,000		
Integration of hydromet systems	WB/WMO	110,000	110,000		
Supporting operationalization of the National Emergency Operations Centre /Multi-hazard Early Warning Centre	UNDRR	630,000			630,000
<b>Component 4: Strengthening national capabilities in Sudan</b>		<b>745,000</b>	<b>545,000</b>	<b>0</b>	<b>200,000</b>
<b>Sub-component 4.1: Strengthening community involvement in EWS</b>					
Support community based EWSs and strengthen their complementarity with a national EWS	WB	75,000			
Development of community contingency plans	WB	95,000			
Support community based EWSs and strengthen their complementarity with a national EWS	WB	75,000			
<b>Sub-component 4.2: Strengthening flood early warning services</b>					
Support to update and rehabilitate flood early warning system on Eastern Nile	WB	140,000	140,000		
Improving interoperability of monitoring systems	WB	95,000	95,000		
Strengthening of the hydro-meteorological monitoring network	WB	70,000	70,000		
Strengthening operational coordination between the Ministry of Irrigation and Water, Humanitarian Affairs Commission, Local Government and the new Emergency Operations Center	WB	70,000	70,000		
Implement Risk Assessment for Floods, and Droughts	UNDRR	200,000			200,000
<b>Project Costs</b>			<b>2,243,000</b>	<b>990,000</b>	<b>1,464,600</b>
<b>Overhead (13% for WMO and UNDRR, 10% for WB)</b>			<b>224,300</b>	<b>128,700</b>	<b>190,398</b>
<b>TOTAL PROJECT COSTS</b>		<b>5,240,998</b>	<b>2,467,300</b>	<b>1,118,700</b>	<b>1,654,998</b>

### Attachment 2: Timeline for implementation

	2022			2023				2024				2025				2026			
	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Establishing baseline and targets	X	X																	
<b>Component 1: Strengthened regional capacities and coordination for climate, weather, and hydrological services</b>																			
<b>Sub-component 1.1: Improving regional services to support countries to provide effective EWS</b>																			
Strengthening the Regional User Interface Platform and Regional Climate Outlook Forum				X	X	X	X	X	X	X	X	X	X	X	X				
Enhancing capacity to produce, disseminate and communicate information services through National Climate Outlook Forums (NCOFs)	X	X	X	X	X	X	X	X	X	X	X								
Developing Climate Services Toolkits (CSTs) tailored to the operational needs of NMHSs	X	X	X	X	X	X	X												
The improvement of technical and infrastructural capacity of ICPAC to access and utilize Long-Range Forecasts (LRF) and derive seasonal and sub-seasonal forecasts at sub-regional scales				X	X	X	X	X	X	X	X								
Building capacity to deliver operational data services to support operational LRF and climate monitoring				X	X	X	X	X	X	X	X								
Improving national abilities to access, process and analyze multi-model long-range climate information through a regional cascading mechanism								X	X	X	X	X	X	X	X				
Enhancing national capacities on WIGOS and WIS (observations and data exchange)	X	X	X	X	X														
Technical assistance to support countries to conducting baseline and end-point assessments including County Hydromet Diagnostics	X	X	X	X	X											X	X	X	X
Developing regional guidelines for producing early warning services that reach communities most at risk			X	X	X	X	X	X	X	X	X								
<b>Sub-component 1.2: Strengthening regional coordination and cooperation for effective EWS and climate services</b>																			
Boosting flood preparedness and emergency response through the preparation and trialing of pilot flood contingency plans	X	X	X	X	X	X	X	X	X	X	X								
Strengthening data exchange between member states to enhance capabilities in flood forecasting on transboundary rivers				X	X	X	X	X	X	X	X	X	X						
Operating the Situation room at ICPAC and enhancing knowledge exchange between national entities on good practices in early warning systems	X	X	X	X	X	X	X												
Strengthening transboundary collaboration through joint training		X	X	X	X	X	X	X	X	X	X	X	X	X	X				
<b>Component 2: Strengthening impact based Early Warning Services and targeted climate services in Ethiopia services in Ethiopia</b>																			
<b>Sub-component 2.1: Reaching the last-mile. Communities with actionable EWS and ensuring early actions</b>																			



Enhancing capacities of the end users to demand, understand and utilize climate and impact based early warning information, products and services				X	X	X	X	X	X	X	X								
Strengthening last mile dissemination.								X	X	X	X	X	X	X	X	X			
Exploring opportunities for how hydromet and climate data and information services can support existing and emerging disaster risk financing mechanisms	X	X	X	X	X	X	X												
Strengthening governance and operational coordination for impact-based early warning	X	X	X	X	X	X	X	X	X	X									
<b>Sub-component 2.2: Developing demand driven climate and early warning information services</b>																			
Developing pilots for impact-based warnings for hydrometeorological events	X	X	X	X	X	X	X	X	X	X	X								
Technical support to assist in the design of new climate and weather service products.	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
Integration of dam safety operations in flood EWS				X	X	X	X	X	X	X	X								
Technical assistance to develop hydromet systems including, observation, data management and archiving, data analysis, forecasting in support of hydromet investment projects	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>Component 3: Strengthening national capabilities in Somalia</b>																			
<b>Sub-component 3.1: Develop and deliver priority public hydromet services</b>																			
Capacity development for staff in priority technical areas (observation, data management and analysis, meteorological and hydrological forecasting)	X	X	X	X	X	X	X	X	X	X	X								
Strengthening the development and delivery of services to the priority farming and pastoralist communities				X	X	X	X	X	X	X	X	X	X	X	X				
Supporting the mainstream of gender responsive design in hydromet services	X	X	X	X	X	X	X	X	X	X	X								
Supporting the jump-start of service provision through partnership	X	X	X	X	X	X	X												
Supporting technical design of minimum basic observing, data management, forecasting and service delivery systems	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
<b>Sub-component 3.2: Institutional development</b>																			
Institutional development of NMHS	X	X	X	X	X	X	X	X	X	X	X								
Integration of hydromet systems	X	X	X	X	X	X	X												
Supporting operationalization of the National Emergency Operations Centre /Multi-hazard Early Warning Centre	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
<b>Component 4: Strengthening national capabilities in Sudan</b>																			
<b>Sub-component 4.1: Strengthening community involvement in EWS</b>																			
Support community based EWSs and strengthen their complementarity with a national EWS				X	X	X	X	X	X	X	X	X	X	X	X				
Development of community contingency plans	X	X	X	X	X	X	X												

Sub-component 4.2: Strengthening flood early warning services																
Support to update and rehabilitate flood early warning system on Eastern Nile	X	X	X	X	X	X	X									
Improving interoperability of monitoring systems		X	X	X	X	X	X	X	X	X	X					
Strengthening of the hydro-meteorological monitoring network				X	X	X	X	X	X	X	X	X	X			
Strengthening operational coordination between the Ministry of Irrigation and Water, Humanitarian Affairs Commission, Local Government and the new Emergency Operations Center		X	X	X	X	X	X	X	X	X	X	X	X	X		
Implement Risk Assessment for Floods and Droughts		X	X	X	X	X	X	X	X	X	X					

### Attachment 3: Logical framework

Activity	Result	Indicators	Means of Verification	Baseline	Target
<b>CREWS program indicators</b>					
Improving forecasting and warning capacities	Greater level of services provided by NMHS	'Level of Service' category of the National Meteorological and Hydrological Services (NMHS)	Report	1 - Basic (Somalia and Sudan) 2- Essential (Ethiopia)	2 - Essential (Somalia and Sudan) 3 - Full (Ethiopia)
Improving capacity to disseminate early warning services	Established platforms that can use CAP for warning.	# of LDCs and SIDS communicating warnings through common alerting protocol procedures	Report	0	1
Access to early warning	Increased ability for people to receive early warning messages	Number of people living in areas covered by forecasts and warnings for a given hazard	Report	TBD	TBD
Improving capacity to prepare for and respond to warnings	Increased ability for end-users and on-the-ground responders to take action on the receipt of warnings. Roles and responsibilities for stakeholders clearly defined.	# of LDCs and SIDS using standard operating procedures (SOPs) on how to respond in the face of an impending emergency	Report	0	3
Supporting gender-sensitive design of early warning services	Increased ability for women to act upon early warning information	Number of capacity building workshops specifically targeting women groups and other traditionally under-represented groups	Report	0	6 (2 per country)
<b>Component 1: Strengthened regional capacities and coordination for climate, weather, and hydrological services</b>					
<b>Sub-component 1.1: Improving regional services to support countries to provide effective EWS</b>					
Strengthening the Regional User Interface Platform and Regional Climate Outlook Forum, to include knowledge exchange activities	Greater participation by providers and users at the fora.	Number of providers and users of services attending Platform and Forum	Reports	TBD	TBD
Enhancing capacity to produce, disseminate and communicate information services through National Climate Outlook Forums (NCOFs)	Developed Climate Sector Action and Communication Plans for key sectors	# of Climate Sector Action and Communication Plans prepared and approved	Reports	TBD	TBD
Developing Climate Services Toolkits (CSTs) tailored to the operational needs of NMHSs	Developed toolkits which are piloted in Ethiopia, Somalia, and Sudan	# of countries where the CSTs are piloted	Reports	0	3
The improvement of technical and infrastructural capacity of ICPAC to access and utilize Long-Range Forecasts (LRF) and derive seasonal and sub-seasonal forecasts at sub-regional scales	The establishment of regional models for Long-Range forecasts	Operational status of Long-Range Forecast models at ICPAC	Reports	TBD	TBD
Building capacity to deliver operational data services to support operational LRF and climate monitoring	Established gridded quality controlled regional climate datasets	Gridded quality controlled regional climate dataset established and available for use by regional partners	Reports	TBD	TBD

Improving national abilities to access, process and analyze multi-model long-range climate information through a regional cascading mechanism	Development and implementation of procedures to obtain, pre-process and analyze seasonal and annual to decadal climate information from multiple sources	Published technical document, detailing the procedures and sources of information and used by countries.	Reports	TBD	1
Enhancing regional and national capacities of WIGOS and WIS (observations and data exchange)	Each country operates a number of observing stations (surface & upper-air) providing data internationally according to the GBON requirements	Number of observations exchanged internationally every six months against the expected number from a GBON fully compliant network	WDQMS webtool	baseline yet to be determined	target is yet to be identified and discussed
	Countries are being assisted by a Regional WIGOS Centre which provides the mandatory functions	Number of incident tickets, related to WIGOS metadata and/or data availability or quality, are registered and being followed up on the WDQMS incident management system	WDQMS Incident Management System	baseline yet to be determined	target is yet to be identified and discussed
Technical assistance to support countries to conducting baseline and end-point assessments including County Hydromet Diagnostics	Improved understanding of the state of services in Ethiopia, Somalia, and Sudan	Number of completed Country Hydromet Diagnostics published.	Report	0	3
Developing regional guidelines for producing early warning services that reach communities most at risk.	Improved ability to identify disadvantaged or traditionally under-represented groups and to tailor services	Published guidelines on identifying the needs of populations most at risk and used by Ethiopia, Somalia and Sudan as relevant.	Report	No	Yes
<b>Sub-component 1.2: Strengthening regional coordination and cooperation for effective EWS and climate services</b>					
Boosting flood preparedness and emergency response through the preparation and trialing of pilot flood contingency plans	A number of flood contingency plans prepared for transboundary basins in Horn of Africa	# of flood contingency plans piloted	Reports	0	1
Strengthening data exchange between member states to enhance capabilities in flood forecasting on transboundary rivers	Establishment of platform for regional exchange of real-time data (precipitation and river discharge) using common data formats	Establishment of platform with access by national NMHS (Yes/No)	Report on platform	No	Yes
Operating the Situation room at ICPAC and enhancing knowledge exchange between national entities on good practices in early warning systems	Regional staff from emergency operating centres participating in workshops at the newly established IGAD Disaster Operations Center	Number of national emergency operating center staff participating in the knowledge exchange workshops	Reports of training	0	TBD
Strengthening transboundary collaboration through joint training	Better collaboration opportunities identified for transboundary information services	# of joint training events and joint planning	Reports on training	0	2
<b>Component 2: Strengthening impact based Early Warning Services and targeted climate services in Ethiopia</b>					
<b>Sub-component 2.1: Reaching the last-mile: Communities with actionable EWS and ensuring early actions</b>					
Enhancing capacities of the end users to demand, understand and utilize climate and impact based early warning information, products and services	Improved ability for end-users to understand climate information and make decisions that affect their lives and livelihoods	# of participatory workshops or roving seminars held with positive feedback from participants (percentage of women)	Reports	0	#TBD (at least 40% of participants should be women)
Strengthening last mile dissemination.	Improved ability for end-users to receive understandable, actionable warning information.	Updated guidelines for last-mile dissemination at woreda and community level.	Reports	No	Yes

Exploring opportunities for how hydromet and climate data and information services can support existing and emerging disaster risk financing mechanisms	Improved ability for financial resources to be mobilized in the case of a disaster.	Design and piloting of mechanism for the early distribution of financial resources ahead of potential disaster / publication of standard operating procedures for resource distribution	Reports	No	Yes
Strengthening governance and operational coordination for impact-based early warning	Clarity on expected working relationships for IBW, focusing on the practical operationalization of Impact-Based Flood Early Warning	Design and development of Standard Operating Procedures for Impact-Based Forecasting and Warning, considering NMHS and DRM agencies, and inputs from end-users where relevant.	Reports	No	Yes
<b>Sub-component 2.2: Developing demand driven climate and early warning information services</b>					
Developing pilots for impact-based warnings for hydrometeorological events	An operational design of an impact-based warning system introduced to user groups.	# of impact-based warning products developed and approved, ready for piloting	Reports	0	3
Technical support to assist in the design of new climate and weather service products.	A set of guidelines prepared on the preparation of new climate services. Multi-stakeholder fora held to include private and academic sector in the development of climate services. As well as flood early warning, wildfire risk monitoring could be considered.	Published guidelines on improved processes for developing services, including a focus on gender-responsive services	Reports	No	Yes
Integration of dam safety operations in flood EWS	advisory support and training provided	# Dams with SOPs developed on operation of dams and EWS information	Published SOPs	0	TBD
Technical assistance to develop hydromet systems including, observation, data management and archiving, data analysis, forecasting in support of hydromet investment projects	Provision of targeted advisory services for the development of back-end systems	Preparation of guidelines / technical specifications that precede system installation	Report	No	Yes
<b>Component 3: Strengthening national capabilities in Somalia</b>					
<b>Sub-component 3.1: Develop and deliver priority public hydromet services</b>					
Capacity development for staff in priority technical areas (observation, data management and analysis, meteorological and hydrological forecasting)	Completed training courses and training material, resulting in greater technical capacity for staff.	# of technical staff trained including women (at least 30%) with positive feedback on training from participants.	Reportss	0	50 (of which at least 15 women)
Strengthening the development and delivery of services to the priority farming and pastoralist communities	The roll out of workshops at community levels focusing on the use of and response to climate and early warning information	# no of participants in workshops including women (at least 0%) with positive feedback on training from participants.	Reports	0	300 ( of which at least 120 women)
Supporting the mainstream of gender responsive design of hydromet services, including accessibility by disadvantaged and under-representative groups	Guidance document on mainstreaming gender and access to services by disadvantaged or under-represented groups	Existence of national level guidance document for integrating gender and increased accessibility across all project result areas	Reports	No	Yes
Supporting the jump-start of service provision through partnership	Partnerships formulated to provide improved climate services	# of services provided through partnership arrangements	Reports	0	1
Supporting technical design of minimum basic observing, data management, forecasting and service delivery systems	Provision of targeted advisory services including TA in preparing technical	Critical elements of hydromet systems are designed, with technical specifications elaborated	Reports	No	Yes

	specifications for critical elements of the hydromet systems meeting WMO standards				
<b>Sub-component 3.2: Institutional development</b>					
Institutional development of NMHS	Preparation of relevant policy and operational documents including annual budgets	Publication of policy and/or operation documents	Reports	No	Yes
Integration of hydromet systems	Better coordination and amore integrated investment approach among development partners active in hydromet space in Somalia	# donor coordination meetings	Reports	0	5
		The availability of integrated investment plan	Investment plans	No	Yes
Supporting operationalization of the National Emergency Operations Centre /Multi-hazard Early Warning Centre	Increased capacity to coordinate the receipt of warnings with disaster response	Existence of operational plan	Reports	No	Yes
<b>Component 4: Strengthening national capabilities in Sudan</b>					
<b>Sub-component 4.1: Strengthening community involvement in EWS</b>					
Support community based EWSs and strengthen their complementarity with a national EWS	Communities with improved access to early warning information. A particular focus will be on disadvantaged and under-represented groups;	# of community based EWS supported (their operation and complementary use with national system)	Reports	0	TBD
Development of community contingency plans	Template developed and training for trainers conducted	# of communities supported to develop the contingency plan	Reports	0	TBD
<b>Sub-component 4.2: Strengthening flood early warning services</b>					
Support to update and rehabilitate flood early warning system on Eastern Nile	Upgraded flood early warning system with validation exercises carried out.	Validation report on updated system	Reports	No	Yes
Improving interoperability of monitoring systems	Installation and operationalization of improved data management system (e.g. MCH)	Improved data management system operational	Establishment of operational platform	No	Yes
Strengthening of the hydro-meteorological monitoring network	Development of a roadmap for a fit-for-purpose hydro-meteorological network	Preparation of roadmap	Reports	No	Yes
Strengthening operational coordination between the Ministry of Irrigation and Water, Humanitarian Affairs Commission, Local Government and the new Emergency Operations Center	Prepared revised standard operating procedure detailing roles and responsibilities in flood early warning	Preparation of Standard Operating Procedures	Reports	No	Yes
Implement Risk Assessment for Floods and Droughts	Multi-hazard, prospective and probabilistic risk assessment at the national level for Sudan, on which losses caused by different hazards are quantified in different types of exposure	Multi-hazard, prospective and probabilistic risk assessment	Reports	No	TBD

#### Attachment 4: Acronyms

CST	Climate Services Toolkits
EDRMC	Ethiopian Disaster Risk Management Commission
EMI	Ethiopian Meteorology Institute
ENTRO	Eastern Nile Technical Regional Office
EWS	Early Warning System
FAO	Food and Agriculture Organization of the United Nations
FbF	Forecast-based financing
FEWS	Flood Early Warning System
FGS	Federal Government of Somalia
FMI	Finnish Meteorological Institute
GBON	Global Basic Observing Network
GHOACOF	Greater Horn of Africa Climate Outlook Forum
HoA	Horn of Africa
IBF	Impact-based forecasting
ICPAC	IGAD Climate Predication and Applications Center
IDA	International Development Association
IDRMP	Integrated Disaster Risk Management Project
LRF	Long-Range Forecasts
MoIWR	Ministry of Irrigation and Water Resources (Sudan)
MoWE	Ministry of Water and Energy (Ethiopia)
NBI	Nile Basin Initiative
NFOF	National Climate Outlook Forum
NMHS	National Meteorological and Hydrological Service
PMT	Project Management Team
PMU	Project Management Unit
RCOF	Regional Climate Outlook Forum
SCRP	Somalia Crisis Recovery Project
SMA	Sudan Meteorological Authority
SWALIM	Somalia Water and Land Information Management Project
TA	Technical Assistance
UNDRR	United Nations Office for Disaster Reduction
WASH	Water Sanitation and Hygiene
WIGOS	WMO Integrated Global Observing System
WIS	WMO Information System
WMO	World Meteorological Organization

## Reference Materials



World Bank Nile Cooperation for Climate Resilience Project (P172848)

<https://projects.worldbank.org/en/projects-operations/project-detail/P172848>

- [Project Appraisal Document](#)



World Bank OneWASH program (P167794)

<https://projects.worldbank.org/en/projects-operations/project-detail/P167794>

- [Project Appraisal Document](#)



World Bank Strengthen Ethiopia's Adaptive Safety Net Project (P172479)

<https://projects.worldbank.org/en/projects-operations/project-detail/P172479>

- [Project Appraisal Document](#)



World Bank Somalia Crisis Recovery Project (P173315)

<https://projects.worldbank.org/en/projects-operations/project-detail/P173315>

- [Project Appraisal Document](#)



World Bank / GFDRR Sudan Floods Assessment and Recovery Support

<https://www.gfdrr.org/en/sudan-floods-damage-assessment-and-recovery-support>

- [Assessment Report](#)



Nile Basin Climate Services Infrastructure Investment Project

<https://nilebasin.org/index.php/information-hub/climate-services>





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>

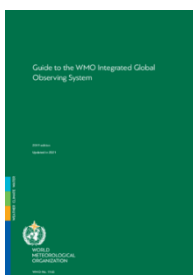


Nairobi Declaration on accelerating the path to achieving the goals and targets of the Programme of Action for the Implementation of the Sendai Framework for Disaster Risk Reduction 2015-2030 in Africa

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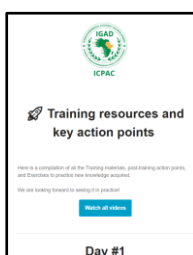
WMO Hydrological Survey

- General questionnaire: [French](#), [English](#), [Spanish](#)
- INFOHYDRO questionnaire: [French](#), [English](#), [Spanish](#)
- Hydrological Forecasting: [French](#), [English](#), [Spanish](#)



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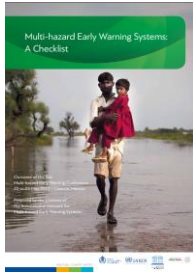
ICPCAC training resources on communicating climate information to end-users

<https://mailchi.mp/8f7f4c21b47b/webinarclimate-change-in-eastern-africa-6251668>



ICPCAC, 2021. Report of the 58 Greater Horn of Africa Climate Outlook Forum.

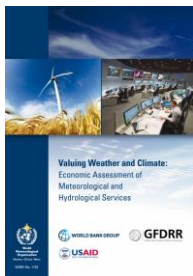
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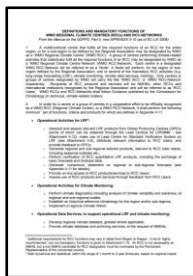
Multi-hazard Early Warning Systems: A Checklist  
[https://library.wmo.int/doc\\_num.php?explnum\\_id=4463](https://library.wmo.int/doc_num.php?explnum_id=4463)



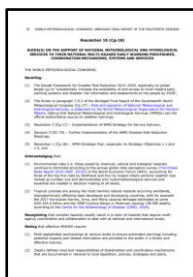
Weathering the Change: How to Improve Hydromet Services in Developing Countries  
<https://www.gfdr.org/en/publication/weathering-change-how-improve-hydromet-services-developing-countries>



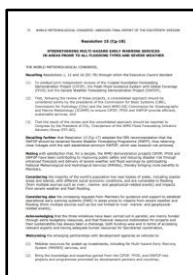
Valuing Weather and Climate: Economic Assessment of Meteorological and Hydrological Services  
[https://library.wmo.int/index.php?lvl=notice\\_display&id=17225#.YVGgw7gzZxQ](https://library.wmo.int/index.php?lvl=notice_display&id=17225#.YVGgw7gzZxQ)



Definitions and mandatory functions of WMO regional climate centres (RCCs) and RCC-networks  
[http://www.wmo.int/pages/prog/wcp/wcasp/rcc/documents/RCC\\_Mandatory\\_Functions\\_Definitions.pdf](http://www.wmo.int/pages/prog/wcp/wcasp/rcc/documents/RCC_Mandatory_Functions_Definitions.pdf)



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](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](https://library.wmo.int/doc_num.php?explnum_id=9827#page=80)



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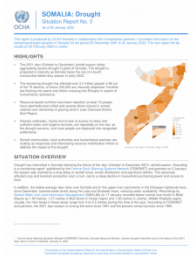
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**Comment Matrix (synthesis of comments received from Experts nominated by CREWS Steering Committee Members)**

Ref.	Comment	Response
John Farager, Met Office (United Kingdom)		
A.1	<p><b>Logframe Activity: Supporting gender-sensitive design of early warning services</b></p> <p>I'm aware that this feeds up to the Gender approach for CREWS, so the activity is probably staying as it is, however – whilst the comments mention targeting other traditionally under-represented groups, it might be good to have something more clearly stating that the project will consider accessibility to some of these specifically. For the countries in question, this could include women, users with poor (or no) literacy, internally displaced populations (especially in the context of Sudan), users with disabilities, and (though slightly more difficult to define) those otherwise excluded from civil society by impact of religious, social or economic status.</p>	<p>The CREWS HoA project will consider accessibility aspects rather than the gender alone. In the proposal, we make reference to other disadvantaged groups that include refugees, the illiterate, persons with disabilities and remote communities in addition to integrating gender aspect in the design and development of EWS. To address this point, we have added a regional activity that will seek to develop best-practice guidelines for reaching these disadvantaged groups, which will also inform the specific activities in Somalia, Ethiopia, and Sudan to ensure inclusiveness. The project plans to collaborate with NGOs and entities like Red Cross.</p>
A.2	<p><b>Logframe - Baseline of Indicators</b></p> <p>Is the plan to have these in place at project outset? If not, should be included as an activity. It's also notable that there are no SEB or user reach / uptake indicators – not sure what the CREWS approach to this is?</p>	<p>An activity has been added at the regional level, where the WMO will support an assessment of the state of service delivery in each of the three countries, providing a baseline. This activity will be repeated at the midpoint and at the end of the project.</p> <p>In the log-frame, we have included an indicator on the “Number of people living in areas covered by forecasts and warnings for a given hazard”.</p>
A.3	<p><b>Knowledge Management / Applying lessons learned during the project</b></p> <p>It's not clear from the proposal that there is an ongoing function provided by the PMT to support learning / knowledge exchange between the various elements of the project. This has been highlighted as a weakness in a couple of recent projects that I have been involved in recently where project activities become siloed resulting in lessons not being implemented and potential synergies missed. Likewise, the proposal mentions the PMT will be responsible for guidance and recommendations, but that the implementing partners will be responsible for quality / technical assurance – other than monitoring logframe indicators, will there be any quality assurance and is there a VfM strategy?</p> <p>It might be worth including either some information about how the PMT intends to implement project co-ordination and any mechanisms for quality / technical assurance or a statement that these processes will be designed and implemented at project outset.</p>	<p>We have strengthened this aspect in the proposal to ensure that the PMT does play such a role. We have further ensured that knowledge exchange is included, especially in relation to the regional climate outlook forum (GHACOF) and the Regional User Interface Platform (sub-component 1.1a) to promote exchange and dialogue between service providers, mainly NMHS, and users but also other parties including the private sector and NGO stakeholders. We have made a commitment that the PMT will receive key project deliverables annually to ensure a shared quality assurance process.</p> <p>As for VfM, the the CREWS HoA informs World Bank Investment Project Financing (IPF). All IPFs have Procurement strategies, which considers VfM more explicitly. In that way, the combined hydromet and early warning program fully takes VfM into account.</p>

A.4	<p><b>Sustainability</b></p> <p>You could consider an explicit activity that produces a sustainability or investment plan beyond the close of the project. Sustainability should also be a component of any quality / technical assurance process to ensure that activities are explicitly designed to produce outputs that can be continued at low-/no-cost beyond the project.</p>	<p>We fully agree that sustainability is important. We have emphasized, as noted above, the need for knowledge exchange, especially at the regional level through various regional activities. Furthermore, at the national level, recipient executed projects (e.g. IDRMP in Ethiopia and SCRIP in Somalia) is where sustainability can be best promoted. We have added a few lines in the project to highlight this.</p> <p>In addition, the project can consider supporting countries to develop sustainable business models for hydromet service delivery that integrate public private engagement considerations.</p>
<p>Janek Toepper, InsuResilience (Germany)</p>		
B.1	<p>[Sub-component 1.1a] It would be important to understand the functioning of these platform(s) better. Can a sentence be added here to provide more detail as to their function?</p>	<p>Agree. A few sentences have been added to explain what the Regional Climate Outlook Forum (GHACOF) is doing, and on the User Interface Platform concept and on what it could do at the regional level.</p>
B.2	<p>[Sub-component 1.1g]As widely known it is a priority of CREWS Steer Co members to ensure CREWS projects work synergetically with the newly launched SOFF. In my view this project component could be an example of that, yet during implementation will need to be carefully carried out to avoid capturing too much "SOFF ground"</p>	<p>We have made reference to how this activity could work to strengthen the GBON, and seek synergies with the SOFF.</p>
B.3	<p>[Sub-component 2.1c] Important point, suggest to keep this formulation as open as possible to facilitate support of other DRF mechanisms not yet on the radar (specifically, as mentioned previously, potential upcoming insurance/ DRF projects by KfW and the InsuResilience Solutions Fund, see also line 27 in simplified logframe).</p>	<p>Noted. The wording has been modified to suggest this could include forecast-based financing but also other innovative financing mechanisms including insurance options.</p>
<p>Harri Pietarila, Finnish Meteorological Institute/Saana Ahonen, Foreign Ministry (Finland)</p>		
C.1	<p>We do not have many if any subject remarks, nevertheless we believe it would be good to include also information on Finnish funded project in the concept note since the Countries, Beneficiaries and partly even objectives and activities are the same.</p> <p>At least the Finland and FMI would not like to overlap anything, we would like to find synergies and possible even cooperate with this important CREWS initiatives and more over also with other WB initiatives in the region.</p> <p>And the Finnish projects are:</p> <ul style="list-style-type: none"> <li>- Sudan, Improving the Adaptation to Climate Change by Enhancing Weather and Climate Services in Sudan, FERSAD, The main Beneficiary SMA, on-going (we have over 10-years continuous cooperation with SMA)</li> </ul>	<p>We fully agree on the importance of coordination and commit to coordination efforts going forward to ensure the maximum synergies and benefits.</p> <p>These projects are now also described in the proposal.</p>

	<ul style="list-style-type: none"> <li>- Ethiopia, Improving meteorological observation infrastructure and forecasting capabilities of the National Meteorological Agency (NMA) to minimize the impact of frequent weather hazard, beneficiary EMI, on-going</li> </ul> <p>Not directly in same main beneficiary countries, but having also wider EAC regional component:</p> <ul style="list-style-type: none"> <li>- FINKERAT, Finnish Meteorological institute - Kenya Meteorological Department - Rwanda Environmental Management Authority - Rwanda Meteorology Agency - Tanzania Meteorological Authority Project, just started (funding decision made by MFA Dec 2021)</li> </ul> <p>And in pipe-line (not Finnish funded)</p> <ul style="list-style-type: none"> <li>- Sudan, Strengthening Climate Services and Multi-hazard Early Warning for Resilience in Sudan, UNEP proposal to GCF, FMI included as one of the executing entities, SMA the main beneficiary institute</li> </ul> <p>The information on these Finnish funded projects have been shared with CREWS, I do not know why not reached you. Nevertheless, I am happy to provide any additional information. And more importantly, FMI is surely very happy to cooperate and maybe even contribute this CREWS initiative if the project gets funding.</p>	
Red Cross Climate Centre		
D.1	The Red Cross Climate Centre is actively engaged in the field of anticipatory action (including impact-based forecasting and forecast-based financing).	The implementing partners recognize the efforts and activities being undertaken by Red Cross and sees many opportunities for alignment and cooperation as the project progresses.
D.2	The Red Cross has a network of its national societies in the region, who can contribute to engaging communities and other stakeholders.	Reference is made to the potential for Red Cross to support areas like capacity building, stakeholder engagement and public awareness.
D.3	There are a number of ongoing research projects funded by through the EU's Horizon 2020 programme (Down2Earth and CONFER) which are working on climate services in the Horn of Africa.	The project team has made note of these projects and will communicate with the research projects to identify ways to work together.