

CREWS Project Presentation Note to the Steering Committee

Project Title	Supporting regional cooperation to strengthen seamless operational forecasting and multi hazard early warning systems at national level in the South-West Indian Ocean		
Document Reference	CREWS/RProj07/South West Indian Ocean		
Geographic coverage	South-West Indian Ocean coastal LDCs and SIDS (5 countries: Comoros, Madagascar, Mauritius, Seychelles, Mozambique)		
Timeframe	5 years (Q3 2020 - Q2 2025)		
Total CREWS Contribution	US\$ 4,000,000		
Lead Implementing Partner	WMO		
	a. Execution	US\$ 1,548,672	
	b. Fees	US\$ 201,327	
	c. Total	US\$ 1,750,000	
Additional Implementing Partners	World Bank		
	a. Execution	US\$ 1,575,000	
	b. Fees	US\$ 175,000	
	c. Total	US\$ 1,750,000	
	UNDRR		
	a. Execution	US\$ 442,478	
	b. Fees	US\$ 57,522	
	c. Total	US\$ 500,000	
	Project Recipient/ Beneficiary	Indian Ocean Commission (IOC, expected to coordinate the implementation of a 74 million USD Hydromet project funded by Intra-ACP, AFD and GCF, to coordinate an EDF-11 Intra-ACP project on disaster risk reduction)	
		5 LDCs and SIDS members of the IOC, of the WMO African tropical cyclone committee (TCC), of the WMO severe weather forecasting program (SWFP-Southern Africa) and/or of the WMO SWIO Climate Outlook Forum (SWIO-COF) <ul style="list-style-type: none"> - Comoros - Madagascar - Mauritius - Mozambique - Seychelles See acronyms and country memberships in Attachment 4	
Additional Implementing Partners	Météo-France, South Africa Weather Service, Australian Bureau of Meteorology + others TBD		
Main objective(s)	<p>The project objective is to enhance the adaptive capacity and climate resilience of communities and economic sectors in five countries of the SWIO region. It is in line with both (i) the AFD Building Regional Resilience through Strengthened Meteorological, Hydrological and Climate Services in the Indian Ocean Commission (IOC) Countries and (ii) the WB Disaster Risk Management and Resilience Program (active in Mozambique, in preparation in IOC Member States).</p> <p>This will involve strengthening multi-hazard and impact-based early warning systems through: (i) improving the regional cooperation frameworks for forecasting of climate and weather, including seasonal and subseasonal outlooks, tropical cyclones, storm surges, other severe</p>		

	weather events, flooding and climate extremes; and (ii) supporting dissemination, emergency planning and response capacities in each of the beneficiary countries. As such, the project will support and guide investments to strengthen in parallel climate adaptation, prevention as well as emergency preparedness and response.	
Initial state of play - project rationale	a. Vulnerability, exposure to risks, disasters impacts (on people and economy)	<p>The South-West Indian Ocean (SWIO) region is highly vulnerable to climate variability and change, as well as severe events such as cyclones, storms, storm surges and flooding . It is highly exposed to climate shocks and stresses and has relatively low adaptive capacities.</p> <p>The SWIO-RAFI study¹, led by the World Bank in 2017, indicated that over the last 50 years, Comoros, Madagascar, Mauritius and Seychelles have been affected by more than 100 natural disasters, 94 of them related to hydrometeorological phenomena. The population affected by these hazards was estimated at 14.4 million people across the four countries, and the physical damage resulting from climate events was estimated at USD 13.1 billion. The affected population and physical damages resulting from climate-related hazards are likely to rise in the coming years, as the frequency of more intense cyclones are expected to increase in the context of climate change.</p> <p>Mozambique has been impacted twice in 2019 by cyclones. The frequency and intensity of climate-related shocks have intensified over the past four decades. Over half of its population is vulnerable to climate-related shocks and the impacts of disasters on the country's budget and economy are sizable. Assets worth approximately 37 percent of GDP are exposed to two or more natural hazards (mostly wind and flooding, some of which are associated with cyclones), which translates into 1.1 percent annual average loss in GDP. The damages and losses of the 2000 floods were estimated at almost US\$ 450 million (or nearly 9% of GDP) and for the Limpopo river floods in 2013 the sum exceeded US\$ 517 million (both at current values)².</p>
	b. Status of the EWS, DRM institutions and NHMSs, actors / players present	<p>At the regional level,</p> <ul style="list-style-type: none"> - the Indian Ocean Commission (IOC) – of which four countries are members – has adopted a climate change adaptation strategy that advocates strengthening climate forecasting, increasing the capacity of all actors, and disseminating climate information more broadly. The implementation of this strategy is expected to be supported by the AFD 74 million USD project. The proposed CREWS project aims at providing specific guidance for the implementation of this strategy; - the South Africa Weather Service (SAWS) is accredited by WMO as regional specialised meteorological center (RSMC) for severe weather forecasting, and provides guidance to all 5 countries since 2006 through the Severe Weather Forecasting programme (SWFP); under this project, SAWS will be able to enhance the SWFP outputs and provide advisory services with regards to optimal use of Flash Flood Guidance System (FFGS) outputs for flash flood forecasting and warnings. SAWS Training unit has a strong collaboration with University of Pretoria as well, with exchange of faculty, for access

¹ see [Southwest Indian Ocean Islands: Catastrophe Risk Profiling & Financing Initiative](#)

² see Mozambique Disaster Risk Management and Resilience Program [appraisal document](#)

		<p>to additional expertise and degree programme opportunities through Fellowships;</p> <ul style="list-style-type: none"> - Météo-France (MF) in La Réunion is accredited by WMO as RSMC for tropical cyclone forecasting, including marine-related hazards, and provides neighbouring countries with storm surge guidance as well as developing better understanding of the tropical cyclone climatology; under this project, MF will be able to develop specific tools available to the region; - Kenya and Tanzania have submitted an application to WMO to put in place a regional WIGOS center for East Africa. <p>At the national level, the meteorological and hydrological services of the five countries have engaged in several initiatives to improve the production and delivery of weather, hydrological and climate services to vulnerable communities and sectors.</p> <p>In addition, in each country, the Project will interact with the project execution partners of the Hydromet project, as well as with additional entities as follows:</p> <p>Comoros:</p> <ul style="list-style-type: none"> - Comoros Meteorological Services (SMC), Ministry of Production Environment Energy Industry and Handicrafts - Hydrometeorological Service, under SMC - General Directorate of Civil Security (DGSC), Ministry of Interior <p>Madagascar:</p> <ul style="list-style-type: none"> - General Directorate of Meteorology (DGM), Ministry of Transport and Meteorology - Directorate for Hydrology, under DGM - National Office for Disaster Risk Management (BNGRC), Ministry of the Interior and Administrative Reform - Emergency Prevention and Management Unit (CPGU), Prime Ministry <p>Mauritius:</p> <ul style="list-style-type: none"> - Mauritius Meteorological Services (MMS), Ministry of Local Government and Disaster Risk Management - Water Resources Unit (WRU), Ministry of Energy and Public Utilities - National Disaster Risk Reduction Management Centre (NDRRMC), Ministry of Social Security, National Solidarity and Environment and Sustainable Development - Land Drainage Authority (LDA), Ministry of National Infrastructure and Community Development <p>Seychelles:</p> <ul style="list-style-type: none"> - Seychelles Meteorological Authority (DMA), Ministry of Environment Energy & Climate Change - Department of Risk and Disaster Management, Ministry of Environment Energy & Climate Change <p>Mozambique:</p>
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	<p>c. Projects and programs dealing with EWS and hydromet under implementation or preparation</p>	<p>The CREWS project will develop synergies with a number of initiatives:</p> <ul style="list-style-type: none"> - The Agence française de développement (French Development Agency (AFD)) is appraising a 74 million USD project titled Building Regional Resilience through Strengthened Meteorological, Hydrological and Climate Services in the Indian Ocean Commission Member Countries (Hydromet Project) with financing from the Green Climate Fund (GCF), EU Intra-ACP program and AFD, to provide investment resources for the IOC Member States. WMO provided technical guidance and advice during the project feasibility study; - The World Bank as part of Mozambique Disaster Risk Management and Resilience Program (P166437) is supporting (i) technical assistance to advise INGC, INAM, and DNGRH on the development and implementation of integrated early warning systems (800,000 USD, see DRM program para 33) and (ii) “creation of new and revitalization of existing local DRM committees by NGOs” (1500 committees, 9 million USD, see DRM program para 26), starting in May 2019; - Under the EU-funded Intra-ACP Climate Services Programme, the WMO grant supports provision of advisory services to setup a coordination framework to ensure operational functions of a Regional Climate Centre to deliver climate services to end beneficiaries (private sector, policy makers, farmer associations, universities, etc.) through National Meteorological and Hydrological Services (NMHSs). The expected results are: (i) interaction between the users, researchers and climate services providers through User Interface Platforms; (ii) access to climate services at regional and national level; (iii) capacity to generate and apply climate information and products is enhanced; KNMI is partnering with WMO to implement a climate data management and data sharing tool (ICA&D) in the subregion; - The United Nations Development Program (UNDP) is currently preparing a concept note for the Green Climate Fund (GCF) to provide investment resources to the national meteorological service in Madagascar; - The Southern African Development Community (SADC), with the Development Bank of Southern Africa (DBSA) and the Global Water Partnership (GWP), is putting together a project proposal to the GCF for the SADC region, aiming at developing water information systems with DRR as a particular target. This system will upgrade the existing SADC Groundwater and Drought Management Portal, SADC Water Sector International

		<p>Cooperating Partner Collaboration Portal and SADC GeoNetwork Portal - Water Datasets;</p> <ul style="list-style-type: none"> - The WMO Severe Weather Forecasting programme (SWFP – ongoing but underfunded) has been operating since 2006 with no external funding in Comoros, Mauritius, Seychelles and Madagascar. The programme will benefit from an update to the technical requirements from NMHSs and civil protection institutions, as well as from enhanced interfaces to enable easier use of SWFP products as input for national extreme weather forecast bulletins; - The IOC Hydrological Cycle Observing System (HYCOS) project, which will be implemented as part of the AFD project. Detailed needs for investments and technical assistance for improving water monitoring and data management systems have been agreed upon Nov. 2019 by IOC Member States; - The Africa (RA I) Tropical Cyclone Committee for the South West Indian Ocean developed some specific recommendations to improve the lead time, accuracy and reliability of tropical cyclone forecasting, and to better anticipate storm surge impacts in the region; - The Southwest Indian Ocean Risk Assessment and Financing Initiative (SWIO-RAFI - closed), financed by GFDRR, developed country risk profiles to improve the understanding of disaster risks for Comoros, Madagascar, Mauritius and Seychelles; - The EU 11th EDF Resilience building and Disaster Response Management in the Indian Ocean is currently under preparation, and will be managed by the Indian Ocean Regional Intervention Platform (PIROI), with involvement of UNDRR and the IOC, for an amount of 6.65 million EUR; - The H2020 Focus-Africa project involves Mauritius and Mozambique and supports NMHSs in delivering tailored climate services in four key sectors: agriculture and food security, water, energy, and infrastructure; - The Inclusive Agricultural Value Chains Development Programme (DEFIS, 15 million USD) initiative in Madagascar seeks to enhance the adaptive capacity of agricultural systems and vulnerable rural communities to the adverse impacts of climate change, notably through strengthening of agro-meteorological services in the country; - The FCDO funded WISER programme supported WIGOS and MHEWS activities in East Africa. It is planning its third phase to expand to additional countries in Africa including in Southern Africa; this would include support to Kenya and Tanzania in relation with the setup of the Regional WIGOS Center for East Africa; - The Nordic Development Fund Hydro-Meteorological Services project is a special sub-project to the WB National Water Resources Development Project (NWRDP). The project is under the umbrella of the Strategic Program for Climate Resilience (SPCR), a multi-donor long-term investment programme to
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		<p>promote climate-resilient growth strategies in Mozambique. The project objective is to strengthen hydrological and meteorological information services to deliver reliable and timely information that increases climate resilience, in turn lowering water and weather related risks to local communities and economic development. The project contains a ‘technical assistance’ component which is managed by the UK Met Office as part of a consortium including Deltares, Met Norway and a local water and engineering consultancy firm, CONSULTEC.</p> <ul style="list-style-type: none"> - The project Strengthening the capacities of the Indian Ocean Rim Association with a focus on disaster risk management, maritime safety and the blue economy, implemented by GIZ, supports the IORA Secretariat with revising strategic documents and administrative directives, and thus improving its political and organisational capacities for action; - The German government and the European Union are currently financing projects (namely PrAda and PAGE) strengthening various elements of the climate information system in Madagascar, notably through close collaboration with the national meteorological service (<i>Direction Générale de la Météorologie</i>, DGM). The GIZ PrAda project advises the DGM and undertakes respective capacity-building of the DGM. The PAGE project provided the DGM, among other things, with 30 meteorological stations; - AfDB is planning an infrastructure project to support the Beira region of Mozambique, post Idai tropical cyclone damage. The proposal for the NMS includes a replacement building, 4 AWS and weather radar replacement. The details and timescale of this project are in development; - The Newton Fund supported WCSSP South Africa project is a collaboration between the Met Office and SAWS which includes support to the SWFP process.
	<p>d. Describe the multiplier /leveraging potential of the CREWS investments</p>	<p>In line with the principles of the cascading forecast model for numerical weather prediction, which demonstrated benefits across the globe, the regional project is supporting (i) access to and optimal use of global models outputs at regional level, (ii) access to and optimal use of more accurate regional outputs by participating countries and (iii) through a feedback/collaboration mechanism, access to better local observations by global models.</p> <p>It will therefore (i) strengthen the existing cooperation framework to sustainably increase the capacity of national hydrological and meteorological services; (ii) enable more optimal use of resources available for meteorological and hydrological forecasting and climate prediction in the region; (iii) enhance the services provided to stakeholders involved in early warning (with specific focus on civil protection, urban development, agriculture and targeted communities at risk); (iii) help inform the technical design of future investments.</p> <p>The combination of technical assistance from CREWS and investments from development partners will provide a conducive context for CREWS beneficiary countries to make significant</p>

		<p>advances in the provision of timely and accurate early warning information to vulnerable communities.</p> <p>The CREWS project will also facilitate coordinated interventions from Governments and international partners, including those listed in the previous section, to maximize opportunities and synergies.</p>
	e. Describe measures to ensure coherence with existing initiatives	<p>The project will start with a detailed mapping about the contribution of national meteorological, hydrological, civil protection and disaster risk management services in respective national early warning procedures and systems. All relevant initiatives will be identified, to ensure they all contribute to enhance early warnings and trigger early actions, consistent with the core message from the Multi-Hazard Early Warning Conference and Global Platform for Disaster Risk Reduction 2019 as well as Resolution 16 of the 18th World Meteorological Congress requesting guidance with regards to effective support by NMHSs to national disaster risk management institutions, focusing on MHEWS operations, legislation and policy making and leveraging existing guidance material and good practices related to the four elements of MHEWS.</p> <p>Coherence with existing initiatives will be assured by close support and on-the-ground work with relevant institutions, including national meteorological, hydrological, civil protection and disaster risk management institutions.</p>
Project design	a. Project components and activities	See description in the matrix below. Under a part of this project, WMO will be providing advisory services to IOC, Comoros, Madagascar, Mauritius and Seychelles, in relation with the AFD Hydromet project. To ensure optimal coordination, WMO and AFD will sign a MoU defining cooperation on AFD investments, and WMO and the IOC will implement the activities in accordance with a specific operational manual.
	b. Work plan	See attachments 1, 2 and 3

Activity	Lead IP	Total
TOTAL PROJECT		USD 4 000 000
CREWS Regional Output: Institutional and human capacities in regional and intergovernmental organizations to provide regional climate and weather services to LDCs and SIDS increased		USD 1 250 000
<i>R.1 - South West Indian Ocean Climate Outlook Forum (SWIOCOF)</i>	<i>WMO</i>	<i>USD 100 000</i>
Provide guidance in relation with long range forecasting, climate monitoring and data services at regional level, with specific focus on (i) enhancing the governance of the South West Indian Ocean Climate Outlook Forum (SWIOCOF, AFD-supported); (ii) developing a customized Climate Services Toolkit (CST) for the SWIO Region; (iii) developing the SWIOCOF Portal; (iv) developing the SWIO RCC-Network; and (v) holding annual SWIOCOFs and associated pre-COF training workshops; and (vi) implementing phase 2 of Indian Ocean Data Rescue (INDARE). This component will also capitalize on WMO Space-based Weather and Climate Extremes Monitoring (SWCEM).		
<i>R.2 - Regional WIGOS centers (RWC)</i>	<i>WMO</i>	<i>USD 50 000</i>
Provide guidance to Kenya and Tanzania NMHSs, who have submitted an application to WMO to put in place a regional WIGOS center for East Africa, in relation with the process of setting-up a RWC for East Africa (expected to become operational Q3 2020) and potentially to SAWS for SADC		
<i>R.3 - Regional instruments center (RIC)</i>	<i>WMO</i>	<i>USD 50 000</i>

Provide guidance to the IOC in relation with the AFD-supported refurbishment or setup of a regional instruments center		
<i>R.4 - Severe weather forecasting (SWFP)</i>	<i>WMO</i>	<i>USD 200 000</i>
Strengthen the existing Severe Weather Forecasting program (SWFP) to improve lead-time, accuracy, reliability and dissemination of forecasts and warnings advisories for high-impact events by South Africa Weather Service, and training and equipping forecasters with appropriate tools (workstations). This component will also capitalize on WMO Space-based Weather and Climate Extremes Monitoring (SWCEM).		
<i>R.5 - Tropical cyclone forecasting products</i>	<i>WMO</i>	<i>USD 200 000</i>
Enhance the regional cooperation as part of the African (RA I) Tropical Cyclone Committee, through provision of in-country training on tropical cyclone forecasting and warnings for the five countries and promoting the development of a "synergized standard operating procedure" for tropical cyclone forecasting at national level specifically to improve the lead time, accuracy and reliability of tropical cyclone forecasting		
Enhance forecasting of impacts from tropical cyclone and associated hazards (wind, precipitation, storm surge, coastal inundation) with RSMC La Réunion		
<i>R.6 - Flood forecasting tools (urban, coastal, riverine)</i>	<i>WMO</i>	<i>USD 150 000</i>
Provide guidance to national hydrological services develop national hydrological capacities with appropriate regional cooperation, in the spirit of the original HYCOS proposal which was developed by IOC Member States in 2019		
Adapt the existing global guidance for coastal inundation, urban flooding, flash flood and riverine flood forecasting into work plans and terms of reference specific to the South-West Indian Ocean Region		
<i>R.7 - Harmonization of indicators for measuring effectiveness for EWS</i>	<i>UNDRR</i>	<i>USD 500 000</i>
Training on the use of custom indicators on Target G for monitoring EWS effectiveness (the generic list of custom indicators are developed under the "Target G project" ; specific indicators would be developed and tracked for beneficiary countries)		
Development of a community of practice on standard operating procedures for regional approach to impact-based EWS for early action and transboundary risk management		
Supporting an IOC common position to the regional discussion on standard operating procedures at the Africa Working Group on DRR and Regional Platform on DRR		
CREWS National Output 1: NMHSs' service delivery improved, including the development of long-term service delivery strategies and development plans		USD 1 275 000
<i>1.1 - Comoros, Madagascar, Mauritius, Seychelles</i>	<i>WMO</i>	<i>USD 1 150 000</i>
Provision of advisory services to heads of NMHSs in relation with investment priorities both at national and regional levels. The expertise required by the countries will be delivered by individuals as well as WMO partners (including Météo-France MF, South Africa Weather Services SAWS, US Hydrological Research Center HRC, Australia Bureau of Meteorology BoM, etc.).		
Strengthening the governance of NMHS, ensuring strategic and legal frameworks and standard operating procedures are in place both for long term development and more optimal contribution to early warning systems. This will contribute to develop basic capacities of the NMHS and facilitate collaboration with EWS stakeholders with clear understanding of user requirements (civil protection, food security, water and sanitation authorities, municipalities, etc.)		
Develop guidance (ToRs) for specific agro-meteorological early warning services building upon the drought monitoring and forecasting capacities developed under the ACP-EU climate services project		
Develop guidance (ToRs) with regards to training of NMHS staff, including joint training with staff of DRM, civil protection and food security institutions		
<i>1.2 - Mozambique</i>	<i>GFDRR/ WB</i>	<i>USD 125 000</i>
Strengthening of real time flood hazard models in one or two priority areas, based on international advances in the use of global modelling tools (e.g. GLoFAS; GLOFFIS) and available national data and models.		

CREWS National Output 2: Risk Information to guide early warning systems and climate and weather service developed and accessible		USD 250 000
<i>2.1 - Developing a risk and flood impact modeling platform to guide EWS in INGC Mozambique</i>	<i>GFDRR/ WB</i>	<i>USD 75 000</i>
Modeling & alerts: recommendations for priority risk zones for which flood alerts could start being produced		
<i>2.2 - Developing risk information to guide EWS in Comoros, Madagascar, Mauritius, Seychelles</i>	<i>GFDRR/ WB</i>	<i>USD 175 000</i>
Modeling & alerts: recommendations for priority risk zones for which flood alerts could start being produced		
CREWS National Output 3: Information and Communication Technology, including common alerting protocol, strengthened		USD 375 000
<i>3.1 - Provision of detailed guidance for common alerting protocol implementation in the 5 countries</i>	<i>WMO</i>	<i>USD 50 000</i>
Develop specific guidance and organize a training for NMHSs and DRM / civil protection institutions		
<i>3.2 - Dissemination systems in Mozambique</i>	<i>GFDRR/WB</i>	<i>USD 125 000</i>
Reviewing best practices in disseminating early warning messages to the community level in a trackable and systematic way, both in Mozambique and internationally; institutionalizing one systematic methodology that can be upscaled nationally, potentially based on currently piloted SMS-based systems; connecting communities in priority risk areas to the system and testing.		
<i>3.3 - Dissemination systems in Comoros, Madagascar, Mauritius, Seychelles</i>	<i>GFDRR/WB</i>	<i>USD 200 000</i>
Reviewing best practices in disseminating early warning messages to the community level in a trackable and systematic way, both in IOC Member States and internationally; institutionalizing one systematic methodology that can be upscaled; connecting communities in priority risk areas to the system and testing.		
CREWS National Output 4: Preparedness and response plans with operational procedures that outline early warning dissemination processes developed and accessible		USD 200 000
<i>4.1 - Advising INGC, INAM, and DNGRH on the development and implementation of integrated early warning systems in Mozambique</i>	<i>GFDRR/ WB</i>	<i>USD 75 000</i>
Establishing updated MoUs between the main agencies involved in the EWS information flow (at least DNA; INAM; INGC); review of the current translation of technical alert information into early warning levels and recommendations for improvements; strengthening the systematic links between national and sub-national entities in order to improve information flow.		
<i>4.2 - Advising Comoros, Madagascar, Mauritius, Seychelles on the development and implementation of integrated early warning systems</i>	<i>GFDRR/ WB</i>	<i>USD 125 000</i>
Establishing updated MoUs between the main agencies involved in the EWS information flow; review of the current translation of technical alert information into early warning levels and developing an improved method; strengthening the systematic links between national and sub-national entities in order to improve information flow.		
CREWS National Output 5: Knowledge products and awareness programmes on early warnings developed		USD 350 000
<i>5.1 - Diagnostic and recommendations on multi-hazard early warning operational procedures</i>	<i>WMO</i>	<i>USD 350 000</i>
Develop a detailed, integrated and crosscutting diagnostic on early warning capacities in the 5 countries and at regional level, including a sustainability plan and exit strategy		
CREWS National Output 6: Gender-sensitive training, capacity building programmes provided		USD 300 000
<i>6.1 : Gender-sensitive programming</i>	<i>WMO</i>	<i>USD 100 000</i>

Identification of gender-disaggregated user requirements and development of guidance for products and warnings responding to specific requirements of vulnerable groups		
6.2 : Gender-sensitive implementation	WMO	USD 100 000
Provide advisory services to NMHSs to support implementation with a gender-specific approach, such as gender action plans, either as stand-alone plans or embedded into the strategic plans of the institutions		
6.3 : Gender-sensitive monitoring	WMO	USD 100 000
Ensure monitoring and evaluation of the project implementation with a gender-sensitive approach; this includes the mid-term and the final evaluation, as well as routine oversight and monitoring.		

Organization and operating procedures	a. Institutional framework	<p>The project will be implemented by WMO, UNDRR and WB/GFDRR, guided by a Steering Committee composed of representatives from the IOC LDC and SIDS Member States (Comoros, Madagascar, Mauritius, Seychelles) as well as Mozambique.</p> <p>The Steering Committee will provide for</p> <ul style="list-style-type: none"> - feedback, guidance and approval for specific projects' deliverables; - scientific and technical recommendations to heads of national meteorological and hydrological services for planning and implementing activities related to the development of early warning systems in relation with (i) institutional strengthening, (ii) equipment upgrades and (iii) service delivery; - exchange of information among stakeholders, and recommends coordinated actions in order to optimize early warning systems' performance and coherence, with a multi-hazard approach and recognizing the responsibilities and working arrangements of institutions
	b. Monitoring and evaluation system	<p>WMO will monitor progress with project implementation and indicators with inputs from GFDRR/WB and UNDRR, and report regularly on progress to the CREWS Secretariat.</p> <p>The Steering Committee will meet regularly and evaluate the progress in line with the work plan. Reports will be made available to all project stakeholders and partners.</p> <p>At mid-term and at completion, an independent consultant will conduct a project evaluation.</p>
Project viability and sustainability	a. Main identified risks	<p>Political / Institutional: Medium - The project assumes (i) an overall agreement of IOC Member States in setting-up a Regional Climate Center (RCC) or RCC-Network, a Regional Instrument Center (RIC) and a Regional WIGOS Center (RWC), in line with WMO Regional Association I (Africa) recommendations, and in compliance with technical criteria; and (ii) alignment of partners work plans with the AFD IOC-led investment - MITIGATION: under this project, WMO will be providing guidance to IOC to support the accreditation of WMO regional centers; In addition, all partners will participate in the Project Steering Committee together with representatives from other regional and national institutions.</p> <p>Financial / Resources: Low - The CREWS project depends on resources allocated to early warning systems by AFD (74 million USD in pipeline) and WB (about 10 million USD for Mozambique</p>

		<p>+ additional pipeline for IOC countries). The process is well advanced and the risk that these resources would not materialize is low.</p> <p>Human Resources / Capacity: Medium - The project assumes availability of WMO, UNDRR and WB staff and experts to support various stages of implementation, which has resulted in some issues in other projects. In addition, the human resources in the IOC Secretariat are limited since most staff are engaged in supporting other ongoing projects. - MITIGATION: The project will support an equivalent of about 2 full time staff spread between headquarters and regional/national offices in WMO, UNDRR and WB and will establish partnership agreements with more developed NMHSs.</p> <p>Technology: Medium - SWFP has been formally requested by the Member States, including those targeted by this project, and is a well-proven solution; the roll-out of the flood forecasting component, however needs to be better articulated with initiatives ongoing in the region. - MITIGATION: The project will provide for specific design with careful attention to specific local (i) low Internet bandwidth and (ii) need for customizable solutions.</p> <p>Social & Environment: Low - The project does not support civil works, nor the provision of large equipment, and will be implemented by consultants and existing staff in the partner institutions.</p> <p>The overall risk rating for the project is Medium. As part of risk mitigation, the project will continue to maintain close links with all partners including IOC, Météo-France, SAWS and BoM, and identify as required additional mitigation measures.</p>
	<p>b. Critical assumptions</p>	<p>Based on Resolution 60 (Cg-17), beneficiary countries committed to international exchange of meteorological, hydrological and climate data and products. The project assumes the willingness of the countries to implement this resolution, as well as to collaborate with regional institutions to ensure sustainability and economies of scale for specialised support services.</p>
	<p>c. Judgment on the project sustainability</p>	<p>The proposed project will ensure appropriate regional coordination mechanisms and therefore lead to more optimal use of the project under appraisal by AFD (Intra-ACP 6 million EUR + GCF USD 58.1 million USD + AFD 5 million EUR) and under implementation by World Bank in Mozambique, in preparation in IOC countries. WMO and its technical partners will provide guidance, expertise and assistance, all of them most needed to improve the technical capability of regional institutions involved in warning processes.</p>

Attachment 1: Budget by Implementing Partner (USD)(see https://docs.google.com/spreadsheets/d/1DJQxnjGmbeYf_c7KTWpTNx_3MFKhsdLJHKL2pRAfOTs/edit?usp=sharing)

Activity	Lead IP	Total	WMO	UNDRR	WB/GFDRR
TOTAL PROJECT		4 000 000	1 750 000	500 000	1 750 000
CREWS Regional Output: Institutional and human capacities in regional and intergovernmental organizations to provide regional climate and weather services to LDCs and SIDS increased		1 250 000	750 000	500 000	0
R.1 - South West Indian Ocean Climate Outlook Forum (SWIOCOF)	WMO	100 000	100 000		
R.2 - Regional WIGOS centers (RWC)	WMO	50 000	50 000		
R.3 - Regional instruments center (RIC)	WMO	50 000	50 000		
R.4 - Severe weather forecasting (SWFP)	WMO	200 000	200 000		
R.5 - Tropical cyclone forecasting products	WMO	200 000	200 000		
R.6 - Flood forecasting tools (urban, coastal, riverine)	WMO	150 000	150 000		
R.7 - Harmonization of indicators for measuring effectiveness for EWS	UNDRR	500 000		500 000	
CREWS National Output 1: NMHSs' service delivery improved, including the development of long-term service delivery strategies and development plans		1 275 000	400 000	0	875 000
1.1 - Comoros, Madagascar, Mauritius, Seychelles	WMO	1 150 000	400 000		750 000
1.2 - Mozambique	GFDRR/ WB	125 000			125 000
CREWS National Output 2: Risk Information to guide early warning systems and climate and weather service developed and accessible		250 000	0	0	250 000
2.1 - Developing a risk and flood impact modeling platform to guide EWS in INGC Mozambique	GFDRR/ WB	125 000			75 000
2.2 - Developing risk information to guide EWS in Comoros, Madagascar, Mauritius, Seychelles	GFDRR/ WB	125 000			155 000
CREWS National Output 3: Information and Communication Technology, including common alerting protocol, strengthened		375 000	50 000	0	325 000
3.1 - Provision of detailed guidance for common alerting protocol implementation in the 5 countries	WMO	50 000	50 000		
3.2 - Dissemination systems in Mozambique	GFDRR/WB	125 000			125 000
3.3 - Dissemination systems in Comoros, Madagascar, Mauritius, Seychelles	GFDRR/WB	200 000			200 000
CREWS National Output 4: Preparedness and response plans with operational procedures that outline early warning dissemination processes developed and accessible		200 000	0	0	200 000
4.1 - Advising INGC, INAM, and DNGRH on the development and implementation of integrated early warning systems in Mozambique	GFDRR/ WB	100 000			75 000
4.2 - Advising Comoros, Madagascar, Mauritius, Seychelles on the development and implementation of integrated early warning systems	GFDRR/ WB	100 000			125 000
CREWS National Output 5: Knowledge products and awareness programmes on early warnings developed		350 000	250 000	0	100 000
5.1 - Diagnostic and recommendations on multi-hazard early warning operational procedures	WMO	350 000	250 000		100 000
CREWS National Output 6: Gender-sensitive training, capacity building programmes provided		300 000	300 000	0	0
6.1 : Gender-sensitive programming	WMO	100 000	100 000		
6.2 : Gender-sensitive implementation	WMO	100 000	100 000		
6.3 : Gender-sensitive monitoring	WMO	100 000	100 000		

Attachment 2: Timeline for implementation

	2020		2021				2022				2023				2024				2025	
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2
CREWS Regional Output: Institutional and human capacities in regional and intergovernmental organizations to provide regional climate and weather services to LDCs and SIDS increased																				
R.1 - South West Indian Ocean Climate Outlook Forum (SWIOCOF)	X	X	X	X	X	X	X	X	X	X										
R.2 - Regional WIGOS centers (RWC)		X	X	X	X	X														
R.3 - Regional instruments center (RIC)		X	X	X	X	X														
R.4 - Severe weather forecasting (SWFP)		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
R.5 - Tropical cyclone forecasting products		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
R.6 - Flood forecasting tools (urban, coastal, riverine)		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
R.7 - Developing a community of practice on monitoring and institutional collaboration		X	X	X	X	X	X	X	X	X	X	X	X							
CREWS National Output 1: NMHSs' service delivery improved, including the development of long-term service delivery strategies and development plans																				
1.1 - Comoros, Madagascar, Mauritius, Seychelles	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
1.2 - Mozambique	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
CREWS National Output 2: Risk Information to guide early warning systems and climate and weather service developed and accessible																				
2.1 - Developing a risk and flood impact modeling platform to guide EWS in INGC Mozambique	X	X	X	X	X	X														
2.2 - Developing risk information to guide EWS in Comoros, Madagascar, Mauritius, Seychelles					X	X	X	X	X	X	X									
CREWS National Output 3: Information and Communication Technology, including common alerting protocol, strengthened																				
3.1 - Provision of detailed guidance for common alerting protocol implementation in the 5 countries					X	X														
3.2 - Dissemination systems in Mozambique			X	X	X	X	X	X	X	X	X	X	X	X	X	X				
3.3 - Dissemination systems in Comoros, Madagascar, Mauritius, Seychelles							X	X	X	X	X	X	X	X	X	X	X	X	X	X
CREWS National Output 4: Preparedness and response plans with operational procedures that outline early warning dissemination processes developed and accessible																				
4.1 - Advising INGC, INAM, and DNGRH on the development and implementation of integrated early warning systems in Mozambique		X	X	X	X	X	X	X	X	X	X	X	X							
4.2 - Advising Comoros, Madagascar, Mauritius, Seychelles on the development and implementation of integrated early warning systems							X	X	X	X	X	X	X	X	X	X	X	X	X	X
CREWS National Output 5: Knowledge products and awareness programmes on early warnings developed																				
5.1 - Diagnostic and recommendations on multi-hazard early warning operational procedures	X	X	X	X	X															
CREWS National Output 6: Gender-sensitive training, capacity building programmes provided																				
6.1 : Gender-sensitive programming	X	X	X	X	X	X														
6.2 : Gender-specific implementation	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
6.3 : Gender-sensitive monitoring	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

Attachment 3: Simplified Logical framework

Activity	Result	Indicator	Baseline Jun 2020	Target Jun 2022	Target Jun 2025
Outcome indicators (in line with CREWS Core Programme Indicators)					
Enhancing regional cooperation for forecasting with a seamless approach	Monitoring and forecasting of climate and weather, including seasonal and subseasonal outlooks, tropical cyclones, storm surges, other severe weather events, flooding and climate extremes are improved	# regional centers accredited to support the 5 LDCs and SIDS (provided by WMO)	2 (La Réunion, Pretoria)	3	4 (among RSMCs, RCC, RIC, RWCs)
		# of hazards, which pose a risk of life loss, for which forecasting and warning capacity is available in all 5 countries (provided by WMO with inputs from NMS and NHS)	2 (tropical cyclone, drought)	3	4 (among tropical cyclone, severe storms, other severe weather, drought, other climate extremes, storm surge, flash flooding, riverine flooding)
Supporting dissemination, emergency planning and response capacities	Warning dissemination, emergency planning and response capacities are improved	# of people living in areas covered by forecasts and warnings for select hazards	TBD	baseline + 10%	baseline + 20%
		# of LDCs and SIDS that have risk information available to feed the early warning systems	0 (TBC)	1	2
		# of LDCs and SIDS communicating warnings through common alerting protocol (CAP)	1 (Madagascar)	2	3
Output indicators (project-specific)					
CREWS Regional Output: Institutional and human capacities in regional and intergovernmental organizations to provide regional climate and weather services to LDCs and SIDS increased					
R.1 - South West Indian Ocean Climate Outlook Forum (SWIOCOF)	SWIO-COF is established according to WMO standards (with support from Intra-ACP Climate Services and AFD Hydromet Grants)	# countries with access to enhanced regional climate services	0	2 (TBD)	5 (all countries)
R.2 - Regional WIGOS centers (RWC)	Regional WIGOS centers are established according to WMO standards (with funding from the countries)	# RWC guidance notes developed	0	1 (East Africa)	2 (EA & SADC)
R.3 - Regional instruments center (RIC)	Regional calibration center is working according to WMO standards (with support from	# regional calibration guidance notes developed	0	1	1

	AFD Hydromet Grants)				
R.4 - Severe weather forecasting (SWFP)	SAWS capacities to support NMHSs with severe weather forecasting guidance is enhanced	# years of operation of Pretoria RSMC severe weather	15	17	20
R.5 - Tropical cyclone forecasting products	TCC and TC RMSC are supported to provide guidance about tropical cyclone, coastal inundation and storm surge forecasting	# twinning arrangements to ensure provision of guidance from developed NMHSs to developing NMHSs	0	2	4
R.6 - Flood forecasting tools (urban, coastal, riverine)	WMO proposes a detailed road map for each country	# countries with access to flood forecasting guidance	0	2	4
R.7 - Harmonization of indicators for measuring effectiveness for EWS	The 4 countries have established regular consultation and Sendai Framework Target G common custom indicators	# of countries trained on Sendai Framework Target G custom indicators	0	2	4
CREWS National Output 1: NMHSs' service delivery improved, including the development of long-term service delivery strategies and development plans					
1.1 - Comoros, Madagascar, Mauritius, Seychelles	Individual countries have received advisory services for optimal use of investments at national level	# of days of advisory services mobilized	0	350	600
1.2 - Mozambique			0	100	250
1.0 - Overall service delivery progress indicator	The service delivery capacity of NMHSs is increasing	average level of service from the 5 NMHSs (from 1 – basic, to 4 – Advanced)	TBD	baseline + 0.5	baseline +1
CREWS National Output 2: Risk Information to guide early warning systems and climate and weather service developed and accessible					
2.1 - Developing a risk and flood impact modeling platform to guide EWS in INGC Mozambique	Risk information is available to better anticipate impacts of severe weather and climate events	# EW stakeholders contributing risk information at national level in Mozambique	0	2	5
2.2 - Developing risk information to guide EWS in Comoros, Madagascar, Mauritius, Seychelles		# EW stakeholders contributing risk information at national level in each IOC LDC & SIDS	0	2	5
CREWS National Output 3: Information and Communication Technology, including common alerting protocol, strengthened					
3.1 - Provision of detailed guidance for common alerting protocol implementation in the 5 countries	Warning messages can be exchanged over all kinds of networks	# countries in which NMHSs are trained on dissemination of forecasts and warning advisories using CAP format	0	2	5
3.2 - Dissemination systems in Mozambique		# households registered to receive SMS warnings	TBD	TBD	TBD
3.3 - Dissemination systems in Comoros, Madagascar, Mauritius, Seychelles		# households registered to receive SMS warnings	TBD	TBD	TBD

CREWS National Output 4: Preparedness and response plans with operational procedures that outline early warning dissemination processes developed and accessible					
4.1 - Advising INGC, INAM, and DNGRH on the development and implementation of integrated early warning systems in Mozambique	Warning messages activate preparedness and response plans	# EW stakeholders contributing in warning issuance decision process at national level in Mozambique	2 (DRM, meteo)	3	4 (meteo, hydro, DRM, food security)
4.2 - Advising Comoros, Madagascar, Mauritius, Seychelles on the development and implementation of integrated early warning systems		# EW stakeholders contributing in warning issuance decision process at national level in each IOC LDC & SIDS	2 (DRM, meteo)	3	4 (meteo, hydro, DRM, food security)
CREWS National Output 5: Knowledge products and awareness programmes on early warnings developed					
5.1 - Diagnostic and recommendations on multi-hazard early warning operational procedures	IOC provides sub-regional guidance to strengthen national MHEWS procedures	# countries with MHEWS diagnostic	2 (MDG, MUS by CADRI)	4 (MDG, MUS, TZN, MOZ)	5 (all countries)
CREWS National Output 6: Gender-sensitive training, capacity building programmes provided					
6.1 : Gender-sensitive programming	The project is programmed, implemented and monitored with gender-disaggregated approaches	% of project tasks implemented with a gender-disaggregated approach	n/a	100%	100%
6.2 : Gender-sensitive implementation		Ratio of women / men participating in technical and awareness trainings	n/a	40%	50%
6.3 : Gender-sensitive monitoring		% of indicators monitored in a gender-disaggregated manner	n/a	100%	100%

Attachment 4: References

Acronyms

ACP : Africa, Caribbean and Pacific Group of States
 AFD : French Development Agency (*Agence Française de Développement*)
 BoM : Australian Bureau of Meteorology
 CAP : Common Alerting Protocol
 CIFI : Coastal Inundation Forecasting Initiatives
 CIMA : CIMA Research Foundation
 CREWS : Climate Risks & Early Warning Systems
 DBSA : Development Bank of Southern Africa
 DRM : Disaster Risk Management
 DWD : German Weather Service
 EU : European Union
 EWS : Early Warning System
 FFGS : Flash Flood Guidance System
 GCF : Green Climate Fund
 GFDRR : Global Facility for Disaster Reduction and Recovery
 GIZ : German development agency (*Deutsche Gesellschaft für Internationale Zusammenarbeit*)
 GSP : Gender-Sensitive Programming, in reference to CREWS Operational Procedures Note No3
 GWP : Global Water Partnership
 IOC : Indian Ocean Commission
 LDC : Least Developed Country
 MDG : Madagascar
 MESA : Monitoring of Environment and Security in Africa
 MF : Météo-France
 MOZ : Mozambique
 MUS : Mauritius
 NMHSs : National Meteorological and Hydrological Services
 NDF : Nordic Development Fund
 PPCR : Pilot Program for Climate Resilience
 RCC : Regional Climate Center
 RIC : Regional Instruments Center
 RSMC : Regional Specialized Meteorological Centers (Pretoria, La Réunion)
 RWC : Regional WIGOS Center
 SADC : Southern African Development Community
 SAWS : South Africa Weather Service
 SIDS : Small Island Developing State
 SWFP : Severe Weather Forecasting programme
 SWIOCOF : South West Indian Ocean Climate Outlook Forum
 TCC : Tropical Cyclone Committee
 UNDP : United Nations Development Programme
 UNDRR : United Nations Office for Disaster Risk Reduction
 WMO : World Meteorological Organization
 WB/WBG : World Bank Group
 WIGOS : WMO Integrated Global Observing System

Country membership

	IOC	RALTCC	SWFP SA	FFGS SA	SWIOCOE
Comoros	X	X	X		X
Madagascar	X	X	X		X
Mauritius	X	X	X		X
Mozambique		X	X	X	X
Seychelles	X	X	X		X

Background documentation



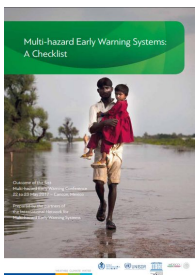
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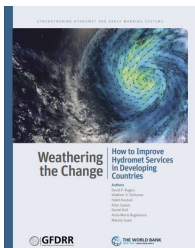
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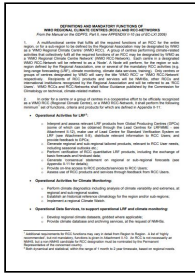
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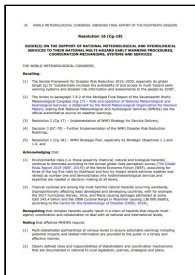
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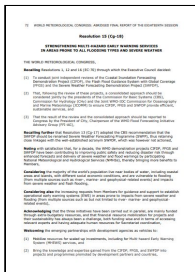
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Resolution 16 (Cg-18) - Guide(s) on the support of national meteorological and hydrological services to their national multi-hazard early warning procedures, coordination mechanisms, systems and services

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Resolution 15 (Cg-18) - Strengthening multi-hazard early warning services in areas prone to all flooding types and severe weather

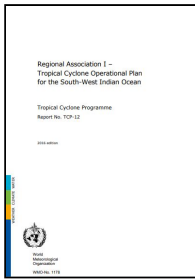
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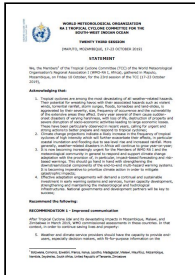
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This introduces AFD’s willingness to seek 60 million USD from the GCF, project currently under appraisal. The objective of the project is to strengthen communities’ resilience and adaptive capacity to climate change impacts, by developing the national hydro-meteorological services, strengthening regional cooperation and climate knowledge sharing, improving and scaling up climate services delivery and early warning systems with the aim of reducing climate and socio-economic vulnerabilities of IOC countries.



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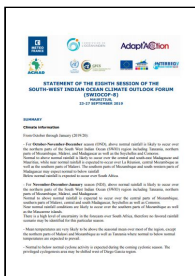
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Recommendation 2 para 9: “Members of WMO RA I with well-established weather and climate services are invited to assist those Members with less developed services, especially in the context of quality management systems, meteorological personnel competencies and skills through implementation of twinning/mentoring arrangements”



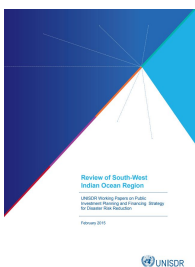
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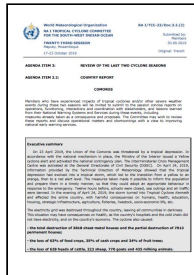
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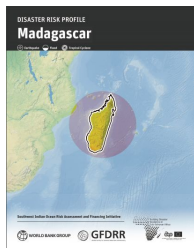
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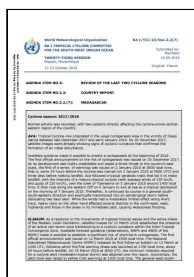
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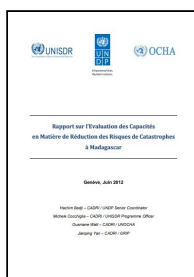
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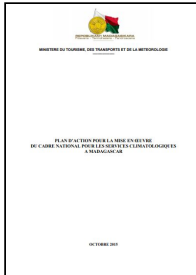


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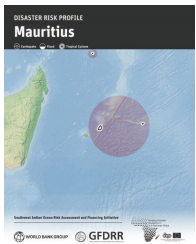
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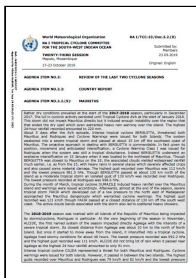
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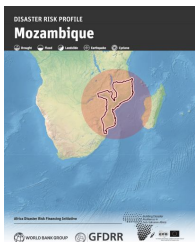
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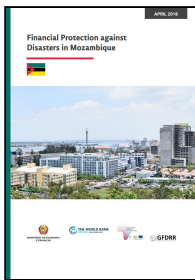
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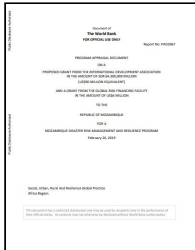


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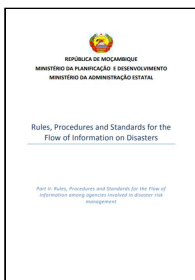
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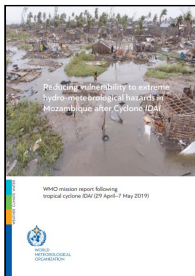
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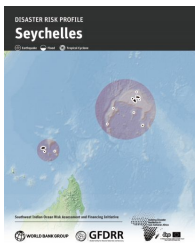
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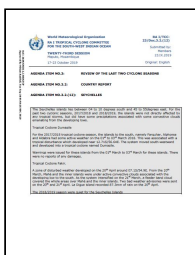
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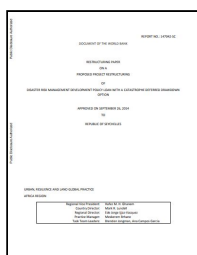
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<https://www.gfdrr.org/sites/default/files/seychelles.pdf>



Seychelles - RA1 TCC Country Report

<https://wmoomm.sharepoint.com/:b:/s/wmocpdb/Efxh1fVW-hFOqDbh5Ub-1VoB-ZSvxjgHV5LNpxa90U058A?e=oXRzha>



Seychelles - Disaster Risk Management Development Policy Loan with a Catastrophe Deferred Drawdown Option (P148861)

Program Document :

<http://documents.worldbank.org/curated/en/781401468305114304/pdf/882640PGD0P148010Box385319B000UO090.pdf>

Restructuring paper :

<http://documents.worldbank.org/curated/pt/102561585150519395/pdf/Seychelles-Disaster-Risk-Management-Development-Policy-Loan-with-a-Catastrophe-Deferred-Drawdown-Option-Cat-DDO-Restructuring.pdf>

Comment Matrix (synthesis of comments received from CREWS Steering Committee Members including Germany, Netherlands, UK)

Section / Comment	Response
Main Objective	
The two activities (regional cooperation and dissemination) do not necessarily deliver the stated objective. We recommend that user / stakeholder engagement is added as a priority activity, using SDIP / GFCS methodologies.	The description of the objective has been revised accordingly. Some activities under the project are targeting user / stakeholder engagement using approaches inspired from Service Delivery Implementation Plan (SDIP) / Global Framework for Climate Services (GFCS), and the wording has been updated accordingly.
The current scope appears quite broad and we would suggest that clarity is provided around timescales and hazards.	The proposed objective is worded to be in line with the objectives of the 2 largest synergistic proposals and investments, namely (i) the AFD Building Regional Resilience through Strengthened Meteorological, Hydrological and Climate Services in the Indian Ocean Commission (IOC) Countries and (ii) the WB Disaster Risk Management and Resilience Program (active in Mozambique, in preparation in IOC Member States). The CREWS project expects to deliver advisory services from WMO, WB and UNDRR in line with the broad scope supported by these 2 projects.
I suggest to consider in this nexus of activities always the link in between contingency/ disaster risk response plans and the national adaptation planning (to improve a comprehensive management of climate and disaster risk management)	This link is paramount to both AFD and WB proposals and investments, and has been clarified in the updated "main objective" section.
Initial state of play - project rationale	
The Project design could also consider to use synergies with regard to other regional organisations at a later stage, e.g. in Terms of sharing best practices and lessons learned. GIZ (financed by the German Foreign Ministry) is providing technical support to the IORA Secretariat so that we have a good base to build upon.	The proposal was not initially planning to coordinate with IORA, however the CREWS project will seek to involve the IORA Secretariat during implementation (e.g. for project steering committee meetings) and identify synergies, together with IOC Secretariat, with regards to Hydromet and early warning systems.
We recommend that this section includes an	The proposal was updated along with this

overview of actors per country including NMHS, DRM, media, civil society etc.	recommendation, and lists actors per country for meteorology, hydrology, climate, disaster risk management/reduction and civil protection. However the landscape for media and civil society representation on a country by country basis is too extensive to be summarized in the proposal.
One remark concerning the focus of activities in Madagascar: while many activities regarding the meteorological station network and DGM's climate data base seem to be covered by the below listed GER projects already, we see an important potential for CREWS to strengthen the institutional dimension of early warning systems in Madagascar. In particular, the interface between DGM and the national bureau for disaster risk management (Bureau National de Gestion de Risques et des Catastrophes, BNGRC) as well as the consideration of both climatic and non-climatic disasters in a coherent way in line with the Sendai Framework offer significant potential for improvement.	While the AFD Hydromet project will focus primarily on strengthening the capacity of the DGM, we expect the pipeline WB DRM and resilience program will strengthen the interface between forecasting, preparedness and response. The CREWS project will ensure provision of advisory services in relation with both the AFD and the WB proposals and investments, including on strengthening the interface between DGM, BNGRC and CPGU in relation with early warning systems.
Project design	
From our experience of running similar projects, the allocation of budget to activities is not reflective of the level of effort required to deliver such activity. For example, delivering an enhanced SWFP process with 200k compared to the provision of advisory services for 1.15m appears unbalanced. Projects tend to have a higher chance of success if local organisations are also funded. It would be good to seek aligned funding to ensure local uptake.	National institutions and the IOC are funded through the AFD 74 million hydromet investment + WB disaster resilience P4R program. The objective of the CREWS project is to fill financing gaps with additional partners + provide advisory services for optimal use of investment resources by national and regional institutions. The support to regional centers is structured to build upon their existing capacities and sustainable self-financing, and cover specific additional support to project countries.
R1-7 (regional sub-components) are focused on outputs from the met community. We would recommend that a service development component is added which involves a co-production process with the user community (providing clear requirements).	The regional sub-components are indeed designed to leverage economies of scale and ensure best quality of regional guidance products delivered to the (i) meteorological community for R1-R6 and to (ii) the DRR community for R7. Warning being a national responsibility, the development of services is envisaged at the national level, through CREWS National outputs 1 to 6. It is envisaged to engage in co-production processes with user communities at the national level.
<i>R2 Regional WIGOS centers</i> - KMD and TMA are currently supported under the WISER HIGHWAY WIGOS element. How does this activity build on current work?	The CREWS project builds upon about 12 complementary projects, among which the HIGHWAY and WISER projects. Some additional needs have been identified by the countries. Specific synergies with HIGHWAY and WISER can be discussed at the Africa Programme Coordination Meeting to be convened by FCDO (formerly DFID) and hosted by WMO in Nov 2020 (date to be confirmed).
1 <i>NMHS service delivery improved</i> - in the indicators, We wonder how this measure [of # of	The other indicators in the logframe focus more on achievements (outputs and results). The [# of days of

days of expertise mobilized] supports the delivery of the overall objective - it seems to relate to project management tool as opposed to a logframe measure?	expertise mobilized] provides a quantitative indication about inputs provided respectively by the 3 implementing partners to beneficiary institutions. In parallel, we propose to add an additional indicator measured by WMO related to Members' service delivery capacity.
<i>1.2 NMHS service delivery in Mozambique</i> - Strengthening of real time flood hazard models in Mozambique has been done under the NDF project by Deltares, who set up a coastal flooding services so any future activity should build on this.	Based on needs identified by the national authorities, CREWS will build upon the Deltares model funded by NDF, as well as other models available in Mozambique; and will strengthen flood models in specific locations.
<i>2.1 Flood modelling in Mozambique</i> - A flood forecasting platform has already been developed and established in DNGRH by Deltares - currently only being used by DNGRH. We recommend this is reviewed before a new platform is designed or delivered and that emerging advances in research are built upon (e.g. through SHEAR).	Thanks for pointing this specific platform. As part of usual practice, the project will review all previous initiatives including the Deltares model and platform; and will focus on interoperability to ensure INGC can access information about hydro, weather and climate risks.
<i>2.1 Flood modelling in Mozambique</i> - INGC continues to receive the majority of investment in Mozambique for improved early warnings where funding to INAM lags behind to provide good data to feed into tools/platforms. We recommend that this is co-produced by INAM, DNGRH and INGC.	Indeed, the impact modeling platform would provide guidance to INGC, however it would be co-produced by INAM, DNGRH and INGC.
<i>3.2 Dissemination systems in Mozambique</i> - Similar activities were undertaken in the WB PPCR programme by Teresa Abrantes. Under the Met Office TA INAM have access to the SA 4km model via Diana system.	This sub-component will be related to the ongoing strengthening and creation of Local Committees for Disaster Risk Management (CLGRC), which play a role in community preparedness and early response to disasters, by the Government of Mozambique under the DRMR program . The CREWS project will build upon progress by the WB PPCR project.
<i>4.1. Integrated early warning systems in Mozambique</i> - A similar activity was undertaken under the WB PPCR project, therefore any future activity should build on reviews already undertaken as opposed to starting afresh. Mandates need to be reviewed in all three agencies, new SOPs to be established and MOUs agreed. See WMO assessment report for a summary.	This activity will build upon the WB PPCR project, and will start with a review of the current translation of technical alert information into early warning impact levels and recommendations; and update MoUs between the main agencies involved in the EWS information flow (DNGRH; INAM; INGC) as necessary.
<i>5.1 Diagnostic and recommendations on multi-hazard early warning operational procedures</i> - We are unclear what this current activity relates to. A recommendation would be that Output 5 is a co-production service development exercise to ensure the high level objective is met, working with users to understand and agree the impacts of severe weather to inform product development.	The diagnostic (1 report by country + 1 regional report) will provide a baseline regarding capacities as well as specific recommendations with regards to investments to be supported by the AFD and WB projects. It would indeed be a co-production among the 4 to 5 national institutions involved in early warning, focusing on all 4 aspects of early warning.
<i>CREWS National Output 6: Gender-sensitive training, capacity building programmes provided</i> - Perhaps this could be expanded to include all vulnerable groups and be threaded throughout the	The component 6 will respond to specific requirements of vulnerable groups, however the title remains "Gender-sensitive training, capacity building programmes provided" in line with the CREWS

project, as opposed to being a standalone output.	Monitoring Framework
Project viability and sustainability	
<i>Risks related to Human Resources / Capacity</i> - A lesson learnt from other similar projects is that local organisations / staff are funded and available to support the project, starting with its design.	The CREWS project will work with local organisations and staff, specifically the focal points of the AFD Hydromet project and WB DRMR program.
<i>Judgment on the project sustainability</i> - We would recommend a sustainability plan and exit strategy.	A sustainability plan will be developed as part of the diagnostic under 5.1. The sustainability also depends upon the outcomes from the AFD Hydromet project and WB DRMR program.
Timeline for implementation	
Would this require revisions due to restrictions on travel (COVID)?	The proposed timeline was developed with different scenarios on restrictions imposed on travel in relation with COVID-19. With strong restrictions, the advisory services would mostly be provided by local experts, with remote guidance and support from international networks of expertise.
Acronyms	
Could this be expanded to include all the acronyms in the document?	The missing elements have been included.