

Pacific 2.0 Project Proposal

Project Title	<i>Strengthening Hydro-Meteorological and Early Warning Systems in the Pacific (CREWS Pacific SIDS)</i>	
Project Reference	<i>CREWS/RProj/05/Additional Financing Pacific</i>	
Geographic coverage	<i>Pacific Small Island Developing States (SIDS) Region (Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Republic of the Marshall Islands, Nauru, Niue, Palau, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, and Vanuatu)</i>	
Timeframe	<i>Four years</i>	
Total cost of CREWS Contribution	US\$ 4,799,449	
Lead Implementing Partner	WMO	
	a. Allocation requested for execution of project activities	3,085,300
	b. Fees of Implementing Partner	401,089
Additional Implementing Partner	c. Total	3,486,389
	UNDRR	
	a. Allocation requested for execution by Partner	517,000
	b. Fees of Implementing Partner	67,210
	c. Total	584,210
	World Bank GFDRR	
	a. Allocation requested for execution by Partner	645,000
	b. Fees of Implementing Partner	83,850
	c. Total	728,850
Project Recipient/ Beneficiary	Pacific SIDS National Meteorological Services (NMSs), National Hydrological Services (NHSs), National Disaster Management Agencies (NDMAs), Communities in Pacific SIDS, Regional Specialized Meteorological Center in Tropical Cyclone Forecasting in Nadi, Fiji (RSMC-Nadi)	
Additional Implementing Partners	The Secretariat of the Pacific Regional Environment Programme (SPREP) The Secretariat of Pacific Community (SPC)	

Total Project Amount	The Australian Bureau of Meteorology (BoM)	
	US\$ 4,799, 449	
Main objective(s)	To enhance the effectiveness and inclusiveness of Pacific Island and Regional Early Warning systems for local and vulnerable populations	
Initial state of play - project rationale	a. Vulnerability, exposure to risks, disasters impacts (on people and economy)	<p>Of the 4.3 billion population in Asia Pacific, it is the 2.3 million people of the Pacific’s Small Island Developing States (SIDS) who face the highest level of disaster and climate risk. The Asia Pacific Disaster Report 2019 rates the risk level as 3-4 times that of any other population in the entire region. The World Risk Report 2018 places five Pacific SIDS among its ten most at-risk countries in the world.</p> <p>The impact of climate change and disasters is pushing tens of thousands of Pacific Islanders into poverty every year: In Fiji an average of 25,000 people – 3% of the population – suffer this fate every year (2019 Voluntary National Review).</p> <p>Major climate-related disasters regularly hit the region. In 2020, Cyclone Harold badly hit Vanuatu, Solomon Islands, Fiji, and Tonga. Previously, Tropical Cyclones Gita, Winston, Pam and Evan have heavily affected the region with losses and damages estimates are around US\$ 1.7 billion. Meanwhile, drought conditions continue to develop in the North Pacific.</p> <p>In addition, smaller and less reported disasters – such as the localized floods and landslides in Honiara, Solomon Islands in January 2019 – cumulatively have an even greater impact on community and national development across the Pacific.</p> <p>The Pacific is on the frontline of the climate crisis. National survival is not an abstract discussion. Radical adaptation – including relocation – is already happening.</p> <p>Ambitious and preventative action to accelerate climate and disaster resilience is urgently needed. This is, of course, critical for the Pacific region. But it also has a much wider relevance. Many of today’s successes and failures in the Pacific will be those of the Asia region tomorrow.</p> <p>Phase II of the Pacific’s CREWS initiative seeks to strengthen more integrated and inclusive early warning systems that are part of the region’s stronger</p>

		<p>and more comprehensive human security and resilience agenda as articulated in the Boe Declaration and Framework for Resilient Development in the Pacific respectively.</p>
	<p>b. Status of the EWS, DRM agencies and NMHSs, actors / players present</p>	<p>Fiji Meteorological Service (FMS) is designated as a WMO Regional Specialized Meteorological Centre (RSMC), specialized in tropical cyclones. In addition to serving the citizens of Fiji, the RSMC also serves another six Pacific Island Countries and Territories (Cook Islands, Kiribati, Nauru, Niue, Tokelau and Tuvalu). The RSMC is also a special advisor to Samoa, Tonga and Vanuatu. Strengthening the RSMC is a main priority under the ongoing CREWS Pacific SIDS project and will continue to be a priority under this project.</p> <p>The RSMC is embedded within FMS and does not have any additional human or financial resources to support its operations, therefore the limited resources are shared between FMS and the RSMC. At the same time, the geographical area that the RSMC is serving is extensive and the workload related to serving as RSMC significant.</p> <p>National Meteorological and Hydrological Services (NMHS) are key providers of weather and climate information and services. Together with National Disaster Management Offices (NDMOs), emergency response agencies, media services, non-governmental organizations (NGOs) and other humanitarian organizations, they contribute to the operationalization of national EWSs.</p> <p>The Pacific SIDS NMHSs are supported in their role by international development agencies including WMO and the World Bank, as well as regional partners such as the Secretariat of the Pacific Regional Environment Programme (SPREP), the Pacific Community (SPC) and the Commonwealth Scientific and Industrial Research Organization (CSIRO). Moreover, stronger NMHSs in the region including New Zealand National Institute of Water and Atmosphere (NIWA), Meteorological Service of New Zealand, and the Australian Bureau of Meteorology (BoM), play a key role in supporting and strengthening the Pacific SIDS NMHSs.</p> <p>With regards to EWS for hydrometeorological hazards, which remain the trigger of most natural disaster events, significant advances have been made in predicting weather, water, and climate extremes. Notwithstanding these advances, much remains to be</p>

		<p>done. A stocktaking of EWSs in the Pacific commissioned by the Australian Government Department of Foreign Affairs and Trade highlighted capacity gaps in the region. Although capacity level varies across the PICTs, there is a need to strengthen all components of EWSs including hazard identification, analysis, warning dissemination and community preparedness and response. The institutional set up required for a smooth coordination of operations and sustainability of EWSs remains a challenge.</p> <p>More specifically, NMHSs and NDMOs need support to develop, issue and communicate scientifically-sound warnings. Warnings are not always effectively communicated, and they are poorly understood by last mile users. This is especially a challenge in remote islands and communities. Even when messages are communicated and understood, systems that lead to effective action are not always in place. It is therefore critical to enhance the capacity of communities to participate in the development of user-tailored warnings that are easily understandable and enable the development of effective action plans.</p> <p>Regional cooperation in the Pacific is strong and the role of regional centres is particularly important for operational support, and technical assistance to PICTs. The strategy of the Secretariat of the Pacific Regional Environmental Programme (SPREP) aims to enhance and build capacity for applied research, foster meteorological and oceanic observation and monitoring programs to improve understanding, and develop targeted responses to climate change and related disaster risk reduction.</p>
	<p>c. Projects and programs dealing with EWS and hydromet under implementation or preparation</p>	<p>Several EWS projects and programmes for PICTs are on-going, or in the pipeline. This proposed CREWS Pacific 2.0 project continues the regional aspect from the current CREWS Pacific SIDS project in its focus to strengthen RSMC-Nadi, as well as regional coordination mechanisms such as the Pacific Meteorological Council (PMC) and the Pacific Meteorological Desk Partnership (PMDP), the Pacific Regional Disaster Partnership, as well as through the country level support from the NMHS, NMSs, NHSs and NDMAAs.</p> <p>Completed: <u>CIFDP-Fiji</u></p>

		<p>The Coastal Inundation Forecasting Demonstration Project for Fiji (CIFDP-Fiji) has been completed with funding from the Republic of Korea International Cooperation Agency (KOICA) and the Korean Meteorological Agency (KMA). CIFDP-Fiji enables the FMS to establish and operate a Coastal Inundation Warning System (CIWS). Coastal inundation efforts under the current CREWS Pacific SIDS Project builds on the learning outcomes of the CIFDP-Fiji.</p> <p>Ongoing:</p> <p><u>CREWS Pacific SIDS Project</u></p> <p>The current CREWS Pacific SIDS Project is focused on strengthening RSMC-Nadi and the countries that it supports. Activities cover 14 SIDS in the region (Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Republic of the Marshall Islands, Nauru, Niue, Palau, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, and Vanuatu). The project is co-funded by the CREWS Initiative and Environment and Climate Change Canada and is contributing to three outcomes: (i) improved governance, (ii) enhanced product development and accessibility, and (iii) enhanced service delivery. The project is implemented by WMO with the support of SPREP, SPC and the Meteorological Service of New Zealand. Further information on the project, including project reports can be found here.</p> <p><u>CIASS-Fiji</u></p> <p>With supplementary support from the KMA, a Coastal Inundation Support Alert System (CIASS) is planned to be set up in Fiji. The CIASS supplement the CIWS for Fiji, focusing on inundation caused by river flood events.</p> <p><u>PREP Program</u></p> <p>The World Bank Pacific Resilience Program (PREP) is currently under implementation. The participating countries for Phase one of this programme are Samoa, Tonga, the Republic of Marshall Islands and Vanuatu. For Samoa and Tonga PREP aims to strengthen (i) early warning and preparedness, (ii) risk reduction and resilient investments, and (iii) disaster risk financing in participating countries. For the Republic of Marshall Islands, PREP focuses on disaster risk financing and</p>
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		<p>resilient investments. A Phase 2, including additional investments is envisaged.</p> <p><u>GCF Vanuatu</u></p> <p>SPREP is currently implementing the GCF funded project for Vanuatu “Climate Information Services for Resilient Development”. The objective of this project is to strengthen climate resilience in Vanuatu. Moreover, the project focuses on climate information system to support resilience development in water, infrastructure, tourism, agriculture and fisheries.</p> <p>Other projects in the region include the UNEP GCF Proposal titled “Enhancing Climate Information and Knowledge Services for resilience in five island countries of the Pacific Ocean” for Cooks, Niue, Palau, RMI, Tuvalu.</p> <p><u>Intra-ACP</u></p> <p>The “Intra-ACP Climate Services and Related Application” project focuses on implementing the Global Framework for Climate Services in the Pacific at the regional level and enhancing climate services to meet the needs of end-users.</p>
	<p>d. Describe the multiplier /leveraging potential of the CREWS investments</p>	<p>The initiatives contained in this proposal builds on the previous CREWS Pacific SIDS project and reflects some of the critical needs to be addressed in the region. Both initiatives are closely aligned to the Pacific Islands Meteorological Strategy (PIMS) 2017 – 2026¹ that clearly articulates the five broad priority areas of the region. By framing the interventions within the context of the PIMS, donors and stakeholders are able to map the progress achieved, as well as highlighting how the work with the NMHS has been contributing to increasing the resilience of a highly exposed and vulnerable population. Aligning investments to the PIMS increases the confidence of beneficiary countries and development partners to continue to provide financial support to EWS in the region.</p> <p>Furthermore, there are tangible partnership benefits to CREWS Pacific activities. To date, the current CREWS project has closely coordinated efforts with other regional projects such as the UNDP “Disaster</p>

¹ https://www.pacificclimatechange.net/sites/default/files/documents/PIMS_2017-2026_FINAL-.pdf

		<p>Resilience in Pacific Small Island States” (RESPAC). Moreover, the project will increase its cooperation with the World Bank PREP Program, and the Australian Government funded “Climate and Oceans Support Programme in the Pacific” (COSPPac) to enhance synergies where possible.</p>
	<p>e. Describe measures to ensure coherence with existing initiatives</p>	<p>The Pacific Meteorological Desk and Partnership hosted at SPREP in collaboration with WMO acts as a clearing house / coordination unit for all activities in the region. It liaises with all relevant institutions and development partners in the region.</p> <p>Additionally, representatives of the Pacific Met Desk, WMO President for Regional Association V (Tonga), and Pacific SIDS countries are members of the Steering Committee for the Pacific SIDS Project. Their participation at the Steering Community ensures a strong alignment of activities to the priorities outlined in the Pacific Islands Meteorological Strategy (PIMS).</p>
<p>Project design</p>	<p>a. Project components and activities</p>	<p>The proposed activities will be further elaborated during the development of the detailed implementation plan during the project kick-off meeting.</p> <p>Outcome 1: Improved Governance Strengthened enabling environment for the Regional Centres and the NMHSs, NMSs, NHSs and NDMA are in place.</p> <p>Output 1.1: Support the development of bills, legislations, and socioeconomic assessment for meteorology, hydrology, disaster management.</p> <p>Broad Activities:</p> <p>1.1.1 Development of template for drafting bills. 1.1.2 Drafting or updating of bill(s) considering the participation of women, people with disabilities, elderly and minority groups. 1.1.3 Stakeholder consultation(s) with participation of women, people with disabilities, elderly and minority groups on priority areas for drafting of bill(s). 1.1.4 Develop an advocacy strategy that is endorsed by the Pacific Ministerial Meeting on Meteorology² 1.1.5 Socioeconomic assessment of benefits generated by Fiji Meteorological Services for Fiji and for the Pacific region through improvement of RSMC-</p>

² Advocacy strategy is to address both the Met Bills as well as the NSPs

		<p>Nadi services</p> <p>Output 1.2: National Strategic Plans (NSPs) inclusive of National Framework for Climate and Weather Services (NFWCS) with costed implementation plans for meteorology, hydrology, disaster risk management, and other related environmental disciplines developed for six Pacific SIDS.</p> <p>Broad Activities:</p> <p>1.2.1. Review existing or develop new NSPs for meteorology, hydrology, disaster risk management, and other related environmental disciplines</p> <p>1.2.2 Map/review existing DRM governance arrangements & gaps in the 5 countries and recommend how DRM can be appropriately integrated into existing/new NSPs</p> <p>1.2.3 Conduct stakeholder consultation for NSP and NFCWS with participation of women, persons with disabilities, elderly and minority groups on proposed priority areas for the development of NSPs for meteorology, hydrology, disaster risk management and other related environmental disciplines.</p> <p>1.2.4 Facilitate government-led DRM multi-sector/ multi-stakeholder consultations to feed into the development of inclusive NSPs that are coherent and complementary to existing governance arrangements</p> <p>Output 1.3 WMO and regional coordination mechanisms for meteorological, hydrological, disaster management, and other related environmental disciplines and services improved</p> <p>Broad Activities:</p> <p>1.3.1 Provide logistical support to the Pacific Meteorological Council (PMC) meetings (to continue coordination of meteorological, hydrological and other related environmental services at the regional level)</p> <p>1.3.2 Explore options for sustainable funding of PMC</p> <p>1.3.3 Provide support to relevant PMC panel activities on hydrology, aviation, education and training, communications, infrastructure and ocean and marine services.</p> <p>1.3.4 Strengthen collaboration between RSMC Nadi and associated Members in the responsible area (including Tonga and Samoa)</p>
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		<p>Outcome 2: Enhanced Product Co-Development and Accessibility</p> <p>Output 2.1: Integrated and inclusive operational Early Warning System (EWS) plan and system to address new and existing multi-hazards developed (includes SWFP, FFGS, CIFDP).</p> <p>Broad Activities:</p> <p>2.1.1 Develop and implement national integrated and inclusive operational EWS plans</p> <p>2.1.2 Conduct joint mission to refine country or region specific technical and operational requirements that responds to the needs of women, people with disabilities, elderly and minority groups</p> <p>2.1.3 Conduct training workshops on integrated operational EWS (SWFP, FFGS, CIFDP) at national and regional levels.</p> <p>Output 2.2: Implementation of a high-resolution NWP mesoscale model in Fiji completed.</p> <p>Broad Activities</p> <p>2.2.1 Upgrade and enhance FMS and RSMC Nadi's website and Portal</p> <p>2.2.2 Conduct capacity development on nowcasting system (develop and apply models) as agreed by participating NMHSs, global and regional centres</p> <p>2.2.3 Provide access for the RSMC-Nadi to high-quality Numerical Weather Prediction (NWP) products and relevant support tools</p> <p>2.2.4 Establish an on-going verification and validation programme to the advancement of the forecasting and warning system</p> <p>Outcome 3: Enhanced Service Delivery</p> <p>Improved quality of accessible services provided to priority sectors and stakeholders to better respond to hazards</p> <p>Output 3.1: Support development of Regional ICT Strategy that includes WIS to exchange and deliver meteorological, hydrological, and other related environmental information and services</p> <p>Broad Activities:</p> <p>3.1.1 Assess ICT capacity, needs and accessibility requirements to improve exchange and delivery of</p>
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		<p>meteorological, hydrological, and other related environmental information and services, at the national and regional.</p> <p>3.1.2 Support the development of a Regional ICT Strategy that includes WIS to exchange and deliver meteorological, hydrological, and other related environmental information and services; (including costed training plan, maintenance plan and secondment protocols between NMHSs IT to SPREP).</p> <p>Output 3.2 Communication of Early Warning improved</p> <p>Broad activities:</p> <p>3.2.1 Conduct stakeholder consultations, including women, people with disabilities, elderly and minority groups, at the national and regional levels on the use of ICT for EWS and Hydrometeorological warnings.</p> <p>3.2.2 Conduct workshop to strengthen capacity of NMHSs and NDMA's personnel to communicate meteorological, hydrological and other related environmental risks information and warnings to communities including those most at risk.</p> <p>3.2.3 Develop an Effective risk messaging module (i.e. communicating warnings that are trusted, accurate, timely, useful, usable & used) that can be adapted for global as well as Pacific use</p> <p>Output 3.3 National and regional platforms for NMHSs to exchange and share meteorological, hydrological, and other related environmental information with stakeholders including those in the socio-economic sectors strengthened</p> <p>Broad Activities:</p> <p>3.3.1 Support National Climate Outlook Forums (NCOFs) to enable exchange, sharing and discussions between the NMHSs and national stakeholders.</p> <p>3.3.2 Support the Pacific Island Climate Outlook Forum (PICOF) to enable exchange, sharing and discussions between the NMHSs and regional stakeholders.</p> <p>3.3.3 Support the strengthening of Country Profile DataBase (CPDB) to enable exchange and sharing of up-to-date information between the countries and WMO Secretariat, based on official requests from member states.</p> <p>3.3.4 Showcase EW/EA case studies from Pacific</p>
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	<p>CREWS and ensure that learning influences regional and global policymaking as a result of the outcomes of the Pacific Resilience Meeting (2021), Asia Pacific Ministerial Conference on DRR (2021) and Global Platform for DRR (2022)</p> <p>Output 3.4 Capacities to detect, monitor and forecast severe high impact meteorological, hydrological, and other related environmental hazards’ events improved</p> <p>Broad Activities:</p> <p>3.4.1 Capacity building on detecting, monitoring and forecasting severe high impact meteorological, hydrological, and other related environmental events</p> <p>3.4.2 Conduct National Training on use of WMO GPC LRFs sub-season to seasonal climate prediction products from ACCESS-S (the Australian Community Climate Earth System Simulator – Seasonal) in selected partner countries</p> <p>3.4.3 Conduct National Training on Tropical Cyclone Seasonal Forecasts in selected partner countries</p> <p>3.4.4 In-country capacity building on seasonal forecasts.</p> <p>3.4.5 Strengthen RSMC Nadi capacity in tropical cyclone forecast through collaboration with other RSMCs tropical cyclone and/or advanced Members.</p> <p>Output 3.5 Community-Based Early Warning System (CB-EWS) implemented</p> <p>Broad Activities:</p> <p>3.5.1 Review existing systems in place for accessible CB-EWS (including traditional knowledge and feedback mechanism to national level)</p> <p>3.5.2 Strengthen existing or establish new sites for accessible CB-EWS that includes traditional knowledge and needs of women, people with disabilities, elderly and minorities.</p> <p>3.5.3 Develop an inclusive case study on CB-EWS feedback mechanism to national level, incorporating traditional knowledge</p> <p>Output 3.6 Communities’ response to multi-risk information and warnings improved</p> <p>Broad Activities:</p> <p>3.6.1 Develop or update existing climate risks maps identifying vulnerable groups (women, disabled,</p>
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		<p>elderly, minority groups) 3.6.2 Revise and make accessible community-based and -led response plans 3.6.3 Conduct IBFWS workshops to improve communities’ understanding and capacity to respond to warnings including women, people with disabilities, elderly and minority groups 3.6.4 Implement Impact Based Forecasting and Warning Services (IBFWS) in at least one country</p> <p>Output 3.7 Socio-economic benefits of RSMC Nadi and FMS demonstrated Broad Activities: 3.7.1 Socio-economic benefit study of regional and national impact of RSMC Nadi and FMS</p> <p>Outcome 4: Enhanced communication and awareness programmes on early warnings</p> <p>Output 4.1: Accessible knowledge products and publications developed</p> <p>Broad activities: 4.1.1 Develop knowledge products for publication (peer reviewed journals) 4.1.2 Host a regional write shop (CBEWS) and develop a publication of the workshop outcome 4.1.3 Develop a case study on CB-EWS feedback mechanism to national level, incorporating traditional knowledge and vulnerable communities</p> <p>Outcome 5: Stronger inclusion of gender and persons living with disabilities in EWS</p> <p>Output 5.1: Guidance document on mainstreaming gender and disability developed</p> <p>5.1.1 Develop guidelines for integrating gender and disability across all project result areas 5.1.2 Conduct Joint Regional Gender Sensitization Workshop 5.1.3 Conduct Women Leadership in meteorology, hydrology and other related environmental disciplines</p>
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		5.1.4 Review and develop gender specific (inclusive of marginalized groups) SOPs to include in SPREP SOPs, considering intersectionality
	b. Work plan	Attached to proposal as Annex 2
Organization and operating procedure	a. Institutional framework	<p>The project will be implemented by WMO with support from BoM, SPREP and SPC as executing partners. Additionally, the NMHSs and Disaster Management Agencies of the participating SIDS will execute local and national level activities.</p> <p>Current Steering Committee for the CREWS Pacific SIDS project will continue to serve the CREWS 2.0. The responsibilities of the Committee will be similar to those outlined in a sample ToR for another CREWS regional project presented in Annex 4</p> <p>The committee will include the following members: (i) representative of RSMC Nadi (ii) representatives of the involved PIC NMHS (iii) representatives of disaster risk management offices (iv) CREWS Implementing Partners (WB-GFDRR and UNDRR) representatives (v) Regional, CREWS Executing Partners representatives SPREP, SPC, and BoM. Representatives from the communities, including women and people with disabilities. The Steering Committee will overview progress of the project throughout the implementation period.</p>
	b. Monitoring and evaluation system	<p>The WMO monitoring and evaluation system and the project logical framework will be used to monitor progress and achievements of the project against expected results (outcome and output indicators). Project reviews will take place on an annual and/or bi-annual function and will include reporting of outputs, and maintaining progressive records. The annual reviews will be performed in accordance with the Project Performance Monitoring and Evaluation Framework. Moreover, vulnerable groups including people with disabilities, women, elderly and minority groups will be included in the beneficiary feedback..</p> <p>Additionally WMO will organize an internal evaluation of the project at midterm that will allow adaptive management to make the necessary adjustments in the case that any problems are identified.</p>

Project viability and sustainability	a. Main identified risks	<p>Operational risks:</p> <p>Commitment from participating countries for the project (low): relevant stakeholders including women, people with disabilities, elderly and minority groups in each country to be properly identified and engage in the project development and implementation process in order to get their commitment. It is also critical for ownership of the project by participating countries, to ensure that the project contributes to fill country specific gaps with regard to EWSs.</p> <p>Reluctance from countries to share their data with the Nadi (RSMC) (risk level low to medium). Need to assess country data policies. To mitigate this risk, it will be important to support the establishment of cooperation agreements as appropriate while respecting national policies.</p> <p>Financial risks</p> <p>Low performance of Nadi/RSMC in managing project resources (risk level low to medium): Assessment of financial management systems of the RSMC and gaps to be addressed before or during project implementation;</p> <p>Financial sustainability following completion of the project: This risk will be mitigated through increased ownership and synergy with existing or planned investments in the sector. The project will assess the need to establish a funding mechanism to support activities upon completion.</p>
	b. Critical assumptions	<p>For the project to be successful, the following assumptions are critical:</p> <p>Strong political commitment from governments of participating countries;</p> <p>Strong engagement from WMO network of NMHSs, Regional Centres, and partners;</p> <p>Strong commitment from beneficiary communities to actively implement community-based early warning services;</p> <p>Increase public awareness to hydro-meteorological hazards and need to build resilience;</p> <p>Initiative is understood and objectives agreed upon by relevant stakeholders.</p>
	c. Judgment on the project sustainability	<p>Sustainability aspects will be assessed and addressed during the formulation and planning of the project with an exit strategy developed toward mid-term of</p>

		<p>implementation.</p> <p>Sustainability of the project will be ensured in the long run through:</p> <p>Ensuring country ownership during project development and implementation: stakeholders' engagement will be an important aspect of the project development and implementation process. The objective is to ensure that the project is driven by the RSMC and participating countries and that their needs are addressed. The project builds on existing institutions and there is a buy-in from country authorities.</p> <p>Mobilization of funding to support EWSs in SIDS through WMO Programme for SIDS and MITs and the CREWS initiative. Efforts will be made to promote and support mobilization of additional funding for resilience building in SIDS (ODA finance, emerging financiers, international climate and environmental funds, etc).</p> <p>Sharing the findings of studies through regional organizations such as SPREP and SPC, allowing other entities to uptake the learning outcomes from the studies conducted under the project. Regional platforms such as the PMC will also serve to disseminate the findings, and encourage learning between the countries.</p> <p>Capacity building in agencies that will continue to receive government support for the foreseeable future (e.g. the NMSs).</p>
<p>Indicators</p>	<p>Portfolio indicators contributed</p>	<p>Pending finalization of the indicators</p>
	<p>Project indicators</p>	<p>See logical framework</p>

Annex 1: Strengthening Hydro-meteorological and early warning systems in the Pacific								
Concise logical framework with results and indicators (to be revised within the first six months of implementation)								
	Narrative	Indicator	Means of Verification	Baseline	Targets (cumulative)			
					YR1	YR2	YR3	YR4
Outcome 1	Improved Governance	# of NMHSs with enacted bills						
Output 1.1	Bills or legislation for NMHSs, NDMOs & others developed	# of Bills supported Existence of SEB Report	Drafted bills SEB Report	3	1	2	3	5
Output 1.2	National Strategic Plans developed	# of NSPs developed	Endorsed NSPs that are accessible	6	0	2	4	5
Output 1.3	Coordination mechanisms improved	# of PMC meetings supported	Reports from meetings that includes resources provided	3	0	1	2	3
Outcome 2	Enhanced product development & accessibility	% increase in use of enhanced products						
Output 2.1	Integrated & inclusive operational EWS plans & systems developed	# of integrated plans developed & accessible	Existence of plans via accessible platforms (websites)	0	0	1 (R)	0	5 (N)
Output 2.2	Implementation of a high-resolution NWP mesoscale model in Fiji completed.	# of products generated from the High resolution NWP mesoscale model in place	Existence of a High-resolution NWP mesoscale model with a plan to maintain the system	0	0	0	0	1
Outcome 3	Enhanced Service Delivery							
Output 3.1	Support development of Regional ICT Strategy that includes WIS to exchange and delivery of meteorological, hydrology	# of technologies integrated and used by agencies	Existence of ICT Strategy with an implementation plan; reports by NMSs	TBD ³	TBD	TBD	TBD	TBD
Output 3.2	Communication of Early Warning Improved	# of stakeholder consultations identifying communication channels	Existence of communication strategy	TBD	TBD	TBD	TBD	TBD
Output 3.3	National & regional platforms improved	# of national and regional platforms hosted	Reports demonstrating key outcomes from platforms	7 (combined PICOE & NCOEs)	3	6	9	12
Output 3.4	Capacities to detect, monitor and forecast severe high impact meteorological, hydrological, and other related environmental hazards' events improved	# of capacity building sessions conducted	Reports from capacity building sessions; attendance lists	TBD	2	6	10	14
Output 3.5	Community-based EWS implemented	# of CBEWS in place	Documentation on the location, system and maintenance of the CBEWS	1	0	1	0	3
Output 3.6	Communities' response to multi-risk information and warnings improved	# of vulnerable communities trained	Reports on actions taken by communities	TBD	TBD	TBD	TBD	TBD

³ Indicators noted TBD will be identified during kick-off meeting

Annex 1: Strengthening Hydro-meteorological and early warning systems in the Pacific								
Concise logical framework with results and indicators (to be revised within the first six months of implementation)								
	Narrative	Indicator	Means of Verification	Baseline	Targets (cumulative)			
					YR1	YR2	YR3	YR4
			demonstrating use of enhanced skills					
Outcome 4	Enhanced communication and awareness programmes on early warnings							
Output 4.1	Knowledge products for publication produced	# of knowledge products published	Existence of publications identified and accessed	TBD	0	+1	0	+3
Outcome 5	Improved integration of gender across the EWS value chain	% increase of gender distribution across EWS value chain	Existence of strategy reflecting approach to increasing gender equity	TBD	+5%	+10%	+10%	+15%
Output 5.1	Guidance document on mainstreaming gender developed	Existence of document	Existence of reports demonstrating application of guidelines	1	0	1	0	0

**ANNEX 2: Strengthening Hydro-meteorological and early warning systems in the Pacific
– Timeline for Implementation (to be revised within first six months of implementation)**

Components	FY 2021				FY 2022				FY 2023				FY 2024			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Outcome 1: Improved Governance																
1.1 Bills developed		x	X	x	x	X	X	x	X	x	x	x	x	x	x	X
1.2 National Strategic Plans developed		x	X	x	x	X	X	x	X	x	x	x	x	x	x	X
1.3 Implementation Plans developed	X	x	X	x	x	X	X	x	X	x	x	x	x	x	x	X
1.4 Coordination mechanisms improved					x				x				x			
Outcome 2: Enhanced product development & accessibility																
2.1 Integrated & inclusive operational EWS plans & systems developed	X	x	X	x	x	x										
2.2 Coordination of ocean data improved	X	x	X	x	x	x	X	x	x	X	x	x	X	x	x	X
2.3 ICAO requirements for safety of aircraft operations strengthened	X	x	X	x	x	x	X	x	x	X	x	x	X	x	x	X
Outcome 3: Enhanced Service Delivery																
3.1 ICT (includ of GIS) use at national & regional levels strengthened																
3.2 Communication of Early Warning Improved							X	X								
3.3 National & regional platforms improved	X	x	X	x	x	x	X	x	x	X	x	x	x	x	x	
3.4 Capacities to forecast, detect and monitor severe high impact hazards improved			X	X	X	X	X	X	X	X	X	X	X	X	X	X
3.5 Community-based EWS implemented	X	x	X	x	X	x	X	X	X							
3.6 Communities' response to multi-risk information and warnings improved							X	X	X	X	X	X	X	X	X	X
Outcome 4: Enhanced communication and awareness programmes on early warnings																
4.1 Knowledge products for publication produced					X	X	X	X					X	X	X	X
Outcome 5: Improved integration of gender across the EWS value chain																
5.1 Guidance document on mainstreaming gender developed	X	X	X	X												

ANNEX 3 - Budget (Attached separately)

ANNEX 4: Sample Project Steering Committee Terms of Reference

Terms of Reference for the Project Steering Committee for the Project “Strengthening Hydro-Meteorological and Early Warning Services in the Pacific”

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

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

The CREWS-financed **Strengthening Hydro-Meteorological and Early Warning Services in the Pacific (CREWS Pacific)** project aims at strengthening and streamlining regional and national systems and capacity related to weather forecasting, hydrological services, multi-hazard impact-based warnings and service delivery for enhanced decision-making. It is implemented jointly by WMO in close collaboration with the Secretariat of the Pacific Regional Environment Programme (SPREP), the Secretariat of Pacific Community (SPC), the Regional Specialized Meteorological Centre in Nadi and the Australian Bureau of Meteorology. The project consists of five outcomes, namely:

- a. **Outcome I:** Improved Governance which focuses on developing or revising legislation, national strategic plans and developing an advocacy strategy to facilitate increased visibility and commitment of policy makers to the NMSs, NHSs and their critical partners.
- b. **Outcome II:** Enhanced Product Co-Development and Accessibility which has as one of the main results the development of an integrated and inclusive operational early warning system plan and system that harmonizes the processes and use of existing platforms (SWFP, FFGS, CIFDP).
- c. **Outcome III:** Enhanced Service Delivery which looks at developing a comprehensive regional ICT strategy that will provide the framework for sustained training, and improvement in delivery of service.
- d. **Outcome IV:** Enhanced communication and awareness programmes on early warnings, an area that will encourage documentation of research areas and best practices which will include those resulting from community focused interventions.
- e. **Outcome V:** Improved integration of gender across the EWS Value Chain which can be considered a cross cutting area that will seek to ensure gender is mainstreamed. However, to facilitate this work will be the development of a guideline.

2- Project Steering Committee Members

A Project Steering Committee (PSC) will be established, comprised of the following members: (i) representative of RSMC Nadi (ii) representatives of the involved PIC NMHS (iii) representatives of disaster risk management offices (iv) CREWS Implementing Partners (WB-GFDRR and UNDRR)

representatives (v) Regional, CREWS Executing Partners representatives SPREP, SPC, and BoM (vii) Representatives from the communities.

Project Steering Committee Members should have skills complementary to those of the programme and which could include expertise in the following areas: Pacific meteorology and weather forecasting, disaster risk management with a focus on Early Warning Systems, management of operational NDMOs/NMHSs, as well as capacity development and communications. Membership should consider gender balance.

Any change to the composition or nominees of the participating member institutions of the PSC shall be communicated to the Chair.

Project Steering Committee Terms of Reference

The Project Steering Committee (PSC) will provide overall strategic guidance and advice to ensure that the project is implemented on-time, as well as ensure its overall success and sustainability.

The Project Steering Committee will meet in person or virtually at least once *every 6 months*, jointly convened by the WB, WMO and UNDRR Project leads and at other times deemed necessary by the project leads when seeking guidance on specific issues. Additional Steering Committee meetings may be organized on an as-needed basis, at the request of PSC members. Costs for attending meetings will be covered through the project funds.

The Implementing Partners will liaise closely with the PSC Members to ensure they are adequately informed on the progress of the Project to enable them to perform their advisory role.

The Project Steering Committee is expected, *inter alia*, to provide the following to the project:

- 1) *At PSC meetings:*
 - a. Provide advice on the strategic direction of the project implementation including: cohesion of the technical aspects of the work plan, research uptake, capacity building and M&E methodology;
 - b. Provide feedback on the implementation plan and activities for the following 6 months, with proposal of adjustment, if needed, to ensure delivery of intended outcomes/outputs;
 - c. Provide advice and support promoting the project's outcome and sustainability, using established and new platforms; Advise on Project risks and potential mitigation measures;
 - d. Provide advice and support with the high-level engagement⁴ with relevant ministries and platforms, collaboration and/or communication across stakeholders at regional and global level to ensure the progress of the project towards a successful, operational EWS in the Pacific;
 - e. Provide guidance to ensure that all aspects of the project are supported and sustained by decision makers, policy makers and users in the region; and
 - f. Any other specific items of concern.

⁴ Engagement with high level representatives from relevant ministries at the national level and regional level, among others, to ensure the sustainability of the Regional Early Warning System

The agenda of each PSC meeting and relevant reports will be circulated to the Steering Committee members at least (1) week prior to the meeting, to allow the members to prepare for the different topics and matters that require decisions. The minutes of the meeting will be sent within two weeks after the meeting.

- ii) *On an ad hoc basis or as necessary, perform the following activities and advise the Project Management Team on:*
- a. Endorsement of bi-annual progress report prior to submission to the CREWS Secretariat
 - b. Provide suggestions on the wider context of the project and emerging opportunities;
 - c. Provide suggestions on effective communication to intended users; and
 - d. Provide suggestions on opportunities for effective partnerships with target institutions in other developing countries and relevant continental and international institutions.

Members of the Project Steering Committee

Institution	Name	Email
World Bank/GFDRR	TBC	
World Meteorological Organization	TBC	
UNDRR	Andrew Mcelroy Stefanie Dannenmann-Di Palma	mcelroy@un.org dannenmann@un.org
SPREP	TBC	
SPC	TBC	
The Australian Bureau of Meteorology	TBC	
Representative of a NMHS	TBC	
Representative a NDMO	TBC	
Chair of the RA V Working Group on Disaster Risk Reduction	TBC	

References

- [1] <https://sdd.spc.int/topic/population>
- [2] <https://unctad.org/en/Pages/ALDC/Least%20Developed%20Countries/UN-list-of-Least-Developed-Countries.aspx>
- [3] https://reliefweb.int/sites/reliefweb.int/files/resources/WorldRiskReport-2019_Online_english.pdf
- [4] https://library.wmo.int/doc_num.php?explnum_id=6381
- [5] https://library.wmo.int/doc_num.php?explnum_id=6381
- [6] https://library.wmo.int/doc_num.php?explnum_id=6381
- [7] Specifically, Vanuatu, Niue, Tonga, the Federated States of Micronesia, the Solomon Islands, Fiji, the Marshall Islands and the Cook Islands;
<http://www.worldbank.org/content/dam/Worldbank/document/EAP/Pacific%20Islands/climate-change-pacific.pdf>
- [8] https://unfccc.int/files/adaptation/cancun_adaptation_framework/loss_and_damage/application/pdf/litea.pdf
- [9] https://www.gfdrr.org/sites/default/files/publication/2015.06.25_PCRAFI_Combined-%5BCompressed%5D-rev-0.9.pdf

ACRONYMS

CB-EWS	Community Based Early Warning System
CIFDP	Coastal Inundation Forecasting Demonstration Project
fCPDB- WMO	Country Profile Database
CREWS	Climate Risk and Early Warning System
DRM	Disaster Risk Management
EWS	Early Warning System
FFGS	Flash Flood Guidance System
FMS	Fiji Meteorological Service
GCF	Global Climate Fund
GDP	Gross Domestic Product
IBF	Impact Based Forecasting
ICT	Information and Communication Technology
IDA	International Development Association
KMA	Korean Meteorological Administration
KOICA	Korea International Cooperation Agency
LDCs	Least Developed Countries
MITs	Member Island Territories
NCOFs	National Climate Outlook Forums
NMHSs	National Meteorological and Hydrological Services
NSPs	National Strategic Plans
ODA	Official Development Assistance
PSC	Project Steering Committee
PICs	Pacific Island Countries
PICTS	Pacific Island Countries and Territories
PIMS	Pacific Islands Meteorological Strategy
PREP	World Bank Pacific Resilience Programme
SIDS	Small Island Developing States
RSMC	Regional Specialised Meteorological Centre
SPC	The Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
SWFP	Severe Weather Forecasting Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNEP	UN Environment
WB-GFDRR	World Bank Global Facility for Disaster Reduction and Recovery
WIS	WMO Information System
WMO	World Meteorological Organisation