General Information

Fund	MPTF_00300: Infrastructure Resilience Accelerator Fund (IRAF)
FMP Record	MPTF_00300_00012: Mapping, assessing and planning for comprehensive multi-hazard early warning capabilities in Fiji
MPTFO Project Id	00140786
Start Date	14-Aug-2024
End Date	14-Aug-2026

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Description	This project has been developed by Fiji National Disaster Management Office (NDMO). The NDMO is a permanent body within the Fijian Government responsible for disaster management where the day-to-day functions of the disaster management organizations are conducted. The NDMO currently sits within the Ministry of Rural and Maritime Development and Disaster Management. It functions as the central agency to implement and coordinate the implementation of policies of the National Disaster Management Council (NDMC) including disaster mitigation and preparedness. During emergencies, the NDMO sets up within its precincts the National Emergency Operations Centre (NEOC) to coordinate the activities of disaster monitoring, warning and immediate post-disaster response including emergency relief work.
	In the event of an emergency, the NDMO obtains warning information on extreme weather, floods, earthquakes, tsunami and other threats from the Fiji Meteorological Services (FMS) and Mineral Resources Department (MRD) and then take charge of communicating it to related agencies. The NDMO also carries the responsibility for making decisions about warning information in the event of an emergency and setting up and operating the NEOC as needed under the command of the National Disaster Controller.
	Early warning systems for floods, droughts, illnesses, cyclones, and tsunamis are being heavily invested in across Fiji and the region. Over the past decade, Fiji has seen a profusion of early warning systems that monitor different threats and provide alerts. Even though cross-sectoral and multi-hazard methods are needed, early warning system governance is still segregated.
	The national state of early warning systems must be better understood across the complete early warning to early action value cycle across all time scales. Building on this, the NDMO and MoW will need technical support to collaborate with partners, including financiers and technical agencies currently involved in hydrological and meteorological systems and early warning development, to map existing and proposed multi-hazard early warning systems. This mapping will enable NDMO to identify gaps and areas of attention over the next five years and give MoW a solid action plan for all coastal and waterways programmatic project developments for the next 20 years.
	The overarching goal of this process is to
	(i) establish a roadmap for developing a Multi-hazard Early Warning System at the national level by linking the existing various single-hazard early warning systems in various sectors and institutions and
	(ii) establish an action plan to identify projects and develop an action plan for coastal protection, riverbank stabilization, watershed management, river works, flood mitigation using innovative structural engineering via Nature-based solutions (NbS);
	(iii) establish a robust monitoring and evaluation system, mainstreaming GEDSI and environmental and social management systems

Universal Markers	**Gender Equality Marker**	**Risk**
	• GEM2 - GEWE is a significant objective of the Key Activity's overall intent	• Low Risk

Fund Specific Markers	**THEMATIC FOCUS**	**Themes** • NETWORKING, COLLABORATION, PLATFORM • TRAINING, PEER LEARNING, SCHOLARSHIPS, FELLOWSHIPS, CAPACITY BUILDING SERVICES • POLICIES, REGULATORY FRAMEWORKS
	GEOGRAPHICAL WINDOWS	**Geographical Funding windows** • Small Island Developing States (IRIS)
	SECTORAL FOCUS	**PRIMARY SECTORS IN FOCUS** • Multi-sector
	ELIGIBILITY TO RECEIVE IRAF FUNDING	**ELIGIBILITY CRITERIA - SELECT RELEVANT CRITERIA APPLYING TO YOUR ORGANIZATION -ATTENTION UN ORGANIZATIONS : ONLY SELECT n/a)** • Prevention of Sexual Exploitation, Harassment and Abuse (PSEAH): Your organization does not yet have such policy and/or established procedures, or is in the process of developing them, and may require support to establish these.

Geographical Scope	**Geographical Scope**	**Name of the Region**	**Region(s)**	**Country**
	• Country		• Oceania	• Fiji

Participating Organizations and their Implementing Partners	**UN Participating Organizations**	**Government/ Multilateral/ NGO/ Other**	**New Entities**	**Implementing Partners**
		• Live & Learn - Live & Learn Environmental Education		Live & Learn Fiji

Programme and Project Cost	Participating Organization	Amount (in USD)	Comments
	Budget Requested		
	Live & Learn	$500,000.00	Insert fund_requested from Quantum;
	Total Budget Requested	**$500,000.00**	
	Tranches		

Tranche 1		Tranche 2		Tranche 3	
Live & Learn (20%)	$100,000.00	Live & Learn (50%)	$250,000.00	Live & Learn (30%)	$150,000.00
Total:	**$100,000.00**	**Total:**	**$250,000.00**	**Total:**	**$150,000.00**

	Other Sources (Parallel Funding)		
	Total	**$500,000.00**	
Thematic Keywords			
Programme Duration	**Anticipated Start Date**	01-Jan-2024	
	Duration (In months)	24	
	Anticipated End Date	01-Jan-2026	

Narratives

Title	Text

Qualification of the Participating Organization: Mission & mandate	Live & Learn educates, mobilises communities and facilitates supportive partnerships in order to foster a greater understanding of sustainability, and to help move towards a more sustainable future. Live & Learn aims to: (i) encourage individual and community attitudes, values and actions that are ethical and sustainable (ii) encourage networks and partnerships between schools, children, youth, teachers, governments, chiefs, elders, parents, the media and nongovernmental organisations (NGOs) (iii) share knowledge, skills, learning experiences and resources with others for the benefit of the physical and human environment (iv) promote the integration of the concepts of human rights, environmentalism, humanitarianism, culture, gender equality and peace in all projects and programs (v) promote action-based, effective and creative learning models and teaching methodologies

Live & Learn Fiji works in vulnerable regions in Fiji threatened by natural disasters such as cyclones, earthquakes, volcanoes, tsunamis, droughts and floods, in addition to the impacts of climate change. These vulnerabilities are compounded by economic and social factors such as population growth, poorly planned coastal development, unplanned urban growth and land use, environmental and ecosystem degradation, and unsustainable use of natural resources such as extensive logging and mining.

Disaster risk reduction and climate change adaptation cut across different aspects and sectors of development. There are 25 targets related to disaster risk reduction in 10 of the 17 Sustainable Development Goals, firmly establishing the role of disaster risk reduction as a core development strategy. Building disaster resilience is critical to achieving the goal of eradicating extreme poverty (SDG 1). Natural hazards are a cause of global food insecurity and hunger (SDG 2). Large shocks and extensive risks destroy agricultural assets and infrastructure, causing serious damage to the livelihoods and food security.

Building community resilience through collaboration is a priority for Live & Learn Fiji. We work with communities and government to assess vulnerability and risks, integrate risk reduction across government policies, plans and budgets, safeguard livelihoods, food resources and water, promote climate resilient crops and farming techniques, and mobilise communities for coastal protection and sustainable management of forests and marine environments. Empowering women in humanitarian response and disaster risk management is prevalent throughout all our disaster risk reduction activities.

In disaster preparedness & response, Live & Learn Fiji provides support in the following areas;

- Water, Sanitation & Hygiene (WASH)
- Shelter
- Food Security & Livelihood
- Safety & Protection
- Community Based Disaster Risk Management

Long-term relationships and local networks are critical to facilitating prompt access to communities. Partnerships with other organisations such as CARE, UNICEF and UNDP enable us to broaden the geographic reach and scope of our disaster risk reduction and response activities.

Live & Learn Fiji has ongoing relationships with the WASH Cluster Secretariat, Food Security & Livelihoods Cluster Secretariat, Shelter Cluster Secretariat, Safety & Protection Secretariat, National Disaster Management Office & Divisional Commissioners. We also work very closely with Fiji Disabled People's Federation (FDPF), Empower Pacific, CARE in the Pacific, Community Safe Houses for people with diverse sexual orientation to ensure that our approach is inclusive.

In 2016 Live & Learn responded to TC Winston, TC Josie & Keni (2018), TC Sarai (2019), TC Harold & TC Yasa (2020) and COVID 19 (2021). Established partnerships with government and partner NGOs has enabled Live & Learn's response to be inclusive and sector specific particularly in WASH, Food Security & Livelihoods and Shelter. |
| Qualification of the Participating Organization: Organization geographical coverage | Live & Learn works with local and international partners to create more equitable, sustainable and climate resilient communities across Asia and the Pacific. Live & Learn currently has local program offices established in Cambodia, Fiji, Kiribati, Maldives, Papua New Guinea, Solomon Islands, Tonga, Tuvalu, Vanuatu and Vietnam. |

Qualification of the Participating Organization: Thematic expertise relevant to the project	**This section describes the Implementing Partner (Live & Learn Fiji) and the lead technical partner Fiji's National Disaster Management Office (NDMO) thematic experience demonstrating why this partnership is well positioned to undertake this work.** Live & Learn Fiji works in vulnerable regions in Fiji threatened by natural disasters such as cyclones, earthquakes, volcanoes, tsunamis, droughts and floods, in addition to the impacts of climate change. These vulnerabilities are compounded by economic and social factors such as population growth, poorly planned coastal development, unplanned urban growth and land use, environmental and ecosystem degradation, and unsustainable use of natural resources such as extensive logging and mining. Disaster risk reduction and climate change adaptation cut across different aspects and sectors of development. There are 25 targets related to disaster risk reduction in 10 of the 17 Sustainable Development Goals, firmly establishing the role of disaster risk reduction as a core development strategy. Building disaster resilience is critical to achieving the goal of eradicating extreme poverty (SDG 1). Natural hazards are a cause of global food insecurity and hunger (SDG 2). Large shocks and extensive risks destroy agricultural assets and infrastructure, causing serious damage to the livelihoods and food security. Building community resilience through collaboration is a priority for Live & Learn Fiji. We work with communities and government to assess vulnerability and risks, integrate risk reduction across government policies, plans and budgets, safeguard livelihoods, food resources and water, promote climate resilient crops and farming techniques, and mobilise communities for coastal protection and sustainable management of forests and marine environments. Empowering women in humanitarian response and disaster risk management is prevalent throughout all our disaster risk reduction activities. In disaster preparedness & response, Live & Learn Fiji provides support in the following areas; - Water, Sanitation & Hygiene (WASH) - Shelter - Food Security & Livelihood - Safety & Protection - Community Based Disaster Risk Management Long-term relationships and local networks are critical to facilitating prompt access to communities. Partnerships with other organisations such as CARE, UNICEF and UNDP enable us to broaden the geographic reach and scope of our disaster risk reduction and response activities. Live & Learn Fiji has ongoing relationships with the WASH Cluster Secretariat, Food Security & Livelihoods Cluster Secretariat, Shelter Cluster Secretariat, Safety & Protection Secretariat, National Disaster Management Office & Divisional Commissioners. We also work very closely with Fiji Disabled People's Federation (FDPF), Empower Pacific, CARE in the Pacific, Community Safe Houses for people with diverse sexual orientation to ensure that our approach is inclusive. In 2016 Live & Learn responded to TC Winston, TC Josie & Keni (2018), TC Sarai (2019), TC Harold & TC Yasa (2020) and COVID 19 (2021). Established partnerships with government and partner NGOs has enabled Live & Learn's response to be inclusive and sector specific particularly in WASH, Food Security & Livelihoods and Shelter. There are currently significant levels of investments across Fiji and the region into systems that collect and share early warning information on a range of hazards including floods, droughts, diseases, cyclones and tsunamis. Over the last decade there has been a proliferation of early warning systems in Fiji, each monitoring different hazards and issuing their own warnings targeted at various audiences. Experience indicates that the governance of early warning systems is still siloed regardless of the clear need for cross-sectoral and multi-hazard approaches. There is a need to collectively develop a better understanding of the national status of early warning systems, across the full early warning to early action value cycle and across all time scales. Building on this analysis, NDMO should work with partners, including donors and key technical agencies already active in hydrological and meteorological systems, and early warning development, to conduct a mapping of existing and planned multi-hazards early warning system efforts. This mapping will help to identify outstanding gaps and areas of focus for the next five years. **The overarching goal of this process is to establish a roadmap for developing a Multi-hazard Early Warning System at the national level by linking the existing various single hazard early warning systems that exist in various sectors and institutions.** The technical

capacity for issuing warnings can be housed in the National Emergency Operations Centrethat should be linked to all key institutions issuing early warning in real time (meteorological services, hydrology, agriculture, health, etc.)

Provide a brief overview of your organization's experience in working in resilient and inclusive infrastructure system development. Describe your track record, technical expertise and experience relevant to the project under submission including when relevant in Small Island Developing States

Fiji, through the National Disaster Management Office (NDMO), has made commendable progress in pursuing the priorities and targets set forth in the Sendai Framework for Disaster Risk Reduction. Notably, we have achieved a reduction of over eleven percent (11%) in disaster-related mortality since 2016. Furthermore, we have fostered stronger collaboration among stakeholders to integrate disaster risk reduction (DRR) into socioeconomic and development processes.

This progress can be attributed to our unwavering commitment to adopt a holistic approach involving the entire Government and society in DRR. We prioritize the inclusion of the voices of the most vulnerable and exposed to disaster risk, ensuring their perspectives are duly considered in the design and implementation of DRR strategies and policies. We firmly believe that effective disaster risk governance mechanisms, which delegate responsibility and accountability to local authorities and communities, are instrumental in placing people at the core of decision-making processes. This approach empowers individuals to take ownership of managing and reducing their risks from both natural and man-made hazards.

By fostering a whole-of-society approach and promoting participatory governance, we are dedicated to creating a resilient and disaster-resilient Fiji.

Fiji has made notable strides in the implementation of the Sendai Framework within both Civil Society Organizations (CSOs) and Government ministries. Our progress encompasses the following areas:

Understanding disaster risk:

We have an ongoing project in collaboration with the Korean NDMI to develop community-level early warning systems. Through hazard modeling, we ensure the selection of resilient site locations and timely dissemination of messages to enhance community preparedness. Additionally, NDMO has initiated a new project in partnership with the Japanese Government to utilize their satellite (QZSS) for issuing tsunami early warning messages. Furthermore, efforts are underway to strengthen community resilience through ongoing DRR work.

Strengthening disaster risk governance:

NDMO has taken significant steps to reinforce disaster risk governance. This includes the formulation and launch of the National DRR Policy (NDRRP) as well as a review of the Natural Disaster Management Act 1998, which provides the legal framework for disaster risk management in Fiji. Moreover, coordination mechanisms have been improved among national, sub-national, and local governments, as well as with CSOs, the private sector, and other stakeholders.

Investing in DRR for resilience:

NDMO has allocated resources towards various DRR measures, including infrastructure development, enforcement of building codes, agricultural investments, and Public-Private Partnerships (PPPs). Emphasizing community-based approaches, Fiji has prioritized initiatives that actively engage local communities in identifying and addressing their own disaster risks.

Enhancing disaster preparedness and "Building Back Better":

Significant efforts have been made by NDMO to strengthen disaster preparedness and response capacities. This includes the establishment of a National Disaster Response Plan and an Emergency Operations Centre.

Fiji has also invested in training programs and simulation exercises to enhance disaster response capabilities. Additionally, the implementation of disaster risk financing mechanisms has been prioritized to support swift response and facilitate post-disaster recovery, rehabilitation, and reconstruction.

Through these initiatives, Fiji is actively working towards building resilience and ensuring effective disaster risk management.

Qualification of the Participating Organization: Human Resources	**Live & Learn (Fiji)** has a total full-time staff of 30 (15M/15F). 26 are Community Facilitators with expertise in community development, water, sanitation & hygiene, agriculture, health, education, climate change & disaster risk management and gender & social inclusion. The Live and Learn team includes 4 members of the finance & administration team. **The Fiji National Disaster Management Office (NDMO) team** comprised of 10 staff with expertise in the areas of Emergency response and preparedness and mainstreaming DRR will support the implementing partner to deliver the project.
Qualification of the Participating Organization: Portfolio analysis	For the current financial year (July 2022 to June 2023), the organizational portfolio is USD2,983,571/FJD6,749,521 Over the last 5 years, Live & Learn (Fiji) has managed the following projects with indicative total budget: - Ecosystems Based Climate Adaptation Project – USD812,684/FJD1,820,937 - Climate Resilient Islands Program (Fiji) – USD236,096/FJD529,007 - Drought Recovery & Climate Resilient Project – USD973,329/FJD2,245,281 - Atoll Food Futures – USD88,130/FJD197,469 - COVID Response Project-USD624,820/FJD1,400,000 - Australian Humanitarian Program Disaster READY – USD248,511/FJD556,826

Project justification: Needs assessment and Rationale (Word limit 1000)	The section first characterises the 'problem' this project seeks to address - referencing vulnerability analysis and baseline. It then justifies the 'need' for this project, a roadmap for developing a Multi-hazard Early Warning System at the national level illustrating the requirement to link the existing various single-hazard early warning systems in various sectors and institutions and governance structures. It then overviews relevant projects previous undertaken and/or currently under implementation by organisations and institutions that deal with hazards and early warning systems - the outputs of which are useful in drawing lessons for this work.
	Fiji comprises 110 inhabited islands and is home to nearly 900,000 people, approximately 75% of whom live within 5 km of the coast. It is an economic hub in the Pacific, but is highly vulnerable to external shocks, including climate change. Small Island Developing States (SIDS) such as Fiji are affected disproportionally by climate change compared to continental land masses. Fiji's geography is characterised by high and low islands, with 12% of the urban and 6% of the rural population residing in low-lying areas close to the coastline. Such households are at risk from temporary flooding due to storm surges, cyclone impacts and flash floods, and permanent inundation due to sea-level rise. Fiji is located in the Pacific "Ring of Fire," an area of high seismic activity caused by the meeting of several tectonic plates. Fiji is exposed to multiple hazards, such as cyclones, floods, storm surges, landslides, droughts, and earthquakes, which can have devastating impacts on lives, livelihoods, and infrastructure . Fiji is also highly vulnerable to the effects of climate change, which can increase the frequency and intensity of these hazards
	Fiji's Climate Vulnerability Assessment estimates it will cost FJ$9.3 billion over 10 years, plus ongoing operation and maintenance costs, to reduce Fiji's climate vulnerability in the housing, disaster risk management, water and sanitation, electricity, and transport sectors. This estimate does not cover all of Fiji's adaptation needs, thus underscoring the scale of the climate finance challenge Fiji faces.
	Evidence from the vulnerability analysis and landscape analysis provide strong evidence of the project need, such that over the last decade, there has been a proliferation of early warning system in Fiji, each monitoring different hazards and issuing their own warnings targeted at various audiences. The baseline scenario indicates that the governance of early warning systems is still siloed regardless of the clear need for cross-sectoral and multi-hazard approaches. Thus, Fiji currently lacks a comprehensive and integrated approach to forecasting and monitoring, hazards. There is a need for the national state of early warning systems to be better understood across the complete early warning to early action value cycle across all time scales. Building on this, Fiji's NDMO and Ministry of Waterways (MoW), will need technical support to collaborate with partners, including financiers and technical agencies currently involved in hydrological and meteorological systems and early warning development, to map existing and proposed multi-hazard early warning systems. This mapping will enable NDMO to identify gaps and areas of attention over the next five years and give MoW a solid action plan for all coastal and waterways programmatic project developments for the next 20 years.
	Multihazard early warning systems (MHEWS) are critical in the context of hazard cascades because they enable timely detection, comprehensive risk assessment, integrated response, public awareness, and resilience building. They enhance preparedness, reduce the impacts of disasters, and save lives and livelihoods in multihazard situations.
	Effective Early Warning Systems that are cross-scalar and multi-sector give a helpful, realistic illustration of how risk governance arrangements may be put up to handle systemic risk and demonstrate the need and cooperation. MHEWS handle several hazards and/or consequences of similar or different types in environments where hazardous events may occur alone, concurrently, cumulatively, or cascading through time, taking into consideration potential linked effects. Using coordinated and compatible methods and capabilities to identify and monitor numerous threats, a multi-hazard early warning system improves warning efficiency and consistency.
	Nature-based solutions (NBS) are important in future planning for hazards and early warning systems because they can provide multiple benefits for reducing disaster risk, enhancing resilience, and supporting sustainable development. NBS are defined as "actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits". Specific benefits are the reduction of exposure and vulnerability of people and assets to natural hazards, such as floods, landslides, droughts, heatwaves, and coastal erosion, by providing natural buffers, regulating water flows, stabilizing slopes, moderating temperatures, and restoring shorelines. They also act to enhance the adaptive capacity and resilience of communities and ecosystems to climate

change and variability, by increasing biodiversity, ecosystem services, and livelihood options. Providing cost-effective and flexible alternatives or complements to conventional engineering solutions, by reducing maintenance costs, increasing durability, and adapting to changing conditions. NBS projects often provide the opportunity for the participation and empowerment of local stakeholders, especially women, youth, indigenous peoples, and marginalized groups, in the design, implementation, and monitoring of early warning systems and disaster risk management strategies. Further more, they can support the implementation of the Sendai Framework for Disaster Risk Reduction 2015–2030, the Paris Agreement on Climate Change, the 2030 Agenda for Sustainable Development, and the Convention on Biological Diversity, by providing synergies and co-benefits across multiple goals and targets.

Fiji's Climate Change Bill (2021) was passed as an Act of Parliament on the 24th of September 2021. Fiji's Climate Change Act creates the legal framework for a coordinated national response to climate change and has been received and recognised as a highly innovative and ground-breaking piece of national climate change legislation due to its multi-sectoral implications. The law is framed around a declaration of climate emergency and through its articles, the legislation enshrines the Paris Agreement in national law thereby creating both a legal structure for protecting human rights threatened by climate change impacts and new mechanisms for enabling economy-wide low carbon transition. However, Fiji currently lacks and overarching NBS Policy framework. This project intends to create an NbS Action Plan that will translate into an overarching NbS policy for Fiji , that will be endorsed by cabinet .

The overarching goals of this process are to;

1. **Establish a roadmap for developing a Multi-hazard Early Warning System at the national level** by linking the existing single hazard early warning systems that exist in various sectors and institutions. The technical capacity for issuing warnings can be housed in the National Emergency Operations Center that should be linked to all key institutions issuing early warning in real time (geological and meteorological services, hydrology, agriculture, health, etc.)

Development of a Roadmap would involve facilitation of an agreement with the key actors including relevant government agencies, technical partners and donors on the way forward to develop and implement a MHEWS.

- NDMO needs to establish a roadmap for collaboration with existing early warning systems to harmonize data collection, reporting, and analysis.
- A Multi-hazard Early Warning System should be set up with a single national authority issuing warnings. This recommendation is in line with the National Disaster Risk Reduction Policy (NDRRP).

2. **Establish a roadmap for developing of a Nature Based Solutions (NbS) policy for Fiji** - to align to the 2021 Climate Change ACT (CCA). Including but not limited to, the identification of key projects and action plans for NbS based coastal protection, riverbank stabilization, watershed management, river works, flood mitigation using innovative structural engineering and Nature-based solutions (NbS); this element speaks directly to the IRIS call , which aims to aims to support Small Island Developing States (SIDS) in achieving sustainable development through a systematic approach to resilient, sustainable, and inclusive infrastructure

3. **Establish a robust monitoring and evaluation system**, mainstreaming GEDSI and environmental and social management systems for all projects

There are a number of Indicate the potential synergies and complementarity with other on-going country / regional initiative across the institutions and organisations responsible for managing hazards and early warning systems. T

 This project seeks Reflect on lessons learnt and good practices derived from previous experiences in the region or globally for similar projects. There are a number of relevant projects across ministries and organisations in Fiji from which lessons can be garnered. By relevant implementing partner - these are as follows. A full list can be made available on request.

1. NDMO

Project 1:

- **name of project:** Tsunami Sirens (started in 2018)
- **implementing organization:** NDMO

- **BRIEF project description:** One third of Fiji's population lives in the Suva-Nausori corridor, the majority of which lives and works in the 10 meter tsunami danger zone. Funding was sought to increase the number of sirens to ensure that the coastal populace receives as much warning as possible to evacuate in the event of a tsunami. A total of 5 x Whelan 2000 watt sirens have been installed along the Suva Peninsula. NDMO will expand the scope of the project to cover high risk areas outside of Suva Peninsula. Additional 13 Tsunami Sirens will be installed in Viti Levu & Vanua Levu.
- **Relevance to national multi-hazard early warning system** Tsunami EWS to be integrated into MHEWS.

2. Fiji Meteorological Office

Project 1:

- **name of project:**

Weather Ready Nation (WRN) - Fiji

- **implementing organization:**

Hydrologic Research Centre (HRC) through the National Weather Service-International Activities Office and the U.S. Agency for International Development/Bureau for Humanitarian Assistance.

- **BRIEF project description:**

The Weather-Ready Nations (WRNs) project is a multi-hazard impact based forecasting and early warning approach to develop capacity within National Meteorological and Hydrological Services (NMHS), National Disaster Management Agencies (NDMAs), other partner agencies (e.g. transportation, infrastructure) and stakeholders (e.g. public, etc.) with the goal to provide "people-centred" early warnings for hydro-meteorological hazards.

- **relevance to national multi-hazard early warning system@**

This project is based on four interrelated key elements of an early warning system (EWS):

(1) Disaster risk knowledge;

(2) Detection, monitoring, analysis and forecasting of the hazards and possible consequences;

(3) Dissemination and communication; and (4) Preparedness at all levels to respond to the warnings received.

Project 2:

- **name of project:**

Hydrology support for flash flood early warning systems - Rakiraki

- **implementing organization:**

Pacific-Community-SPC and FMS with funding support by the Australian Water Partnership.

- **BRIEF project description:**

The project selects Rakiraki as a pilot catchment in Fiji to demonstrate an approach for the strategic development of an upscaled programme of support for building surface water hydrological capacity and systems to address flash flooding and other hydrological needs in Fiji and the Pacific.

- **relevance to national multi-hazard early warning system:**
- To understands cause of flood, extents, timing, hazards and impacts
- Increase the capacity of communities to respond to flooding through increased knowledge of flood hazard and disaster messaging
- Foster a shared understanding of different stakeholder's requirements of flood early warning to save life, properties and reduce loss

Project 3:

- **name of project:**

Strengthening the Capability of Republic of Fiji in Disaster Risk Reduction

- **implementing organization:**

- Korean National Disaster Management Research Institute (Korean NDMI)

- Ministry of Rural and Maritime Development

- Fiji Meteorological Service

- **BRIEF project description:**

Ba River Flows basin area of 937km2 – Leeward side of the Viti Levu Catchment: The Ba River Valley contains substantial areas forest, with 57km2 of dense natural forest, 120km2 of medium dense natural forest, 109km2 of scattered forest and 103 km2 of plantation forest (mostly pine). Altogether, forest comprises 43%of the catchment area. The dominant land use is the lower valley is sugar cane cultivation, which occupies more than 150km2(16%) of the valley. Grassland utilized for grazing is the main land use in the remainder of the valley.

The Korean NDMI, Ministry of Rural and Maritime Development and FMS had selected 7 water level sties, 4 rainfall sites and Warning posts to be install within the Ba province (Ba catchment, Lautoka and Nadi area).

- **relevance to national multi-hazard early warning system:**

The capacity of Fiji in disaster risk management can be enhanced through demonstration of disaster prevention technology. With enhanced disaster risk capacity, Fiji can become more resilient toward natural disasters.

 Enhanced capacity of the Fiji government officials on disaster prevention technology and policy through the training and education program.

Project 4:

- **name of project:**

Installation of Water Level and Rainfall Telemetry Instruments

- **implementing organization:**

 Fiji Meteorological Service and NIWA

- **BRIEF project description:**

The Fiji Meteorological Service (FMS) has planned to install the automatic water level and rainfall stations on all rivers in Fiji so that FMS can collect real time data for flood forecasting and warnings and data to use for consultancy and development purposes in Fiji. During the review process from past experienced it has been identified that we still need to improve on our coverage for some of the areas, streams and tributaries that needs to be investigated as they are also affected with floods during severe weather.

For this year 2023, The FMS Hydrology has planned to install Hydrology monitoring stations at Nacara at Rakiraki Catchment, Naseyani at Yaqara catchment, Waimilika at Korovou catchment, Elevuka at Ba catchment, rainfall station at Mount Kasi and rainfall station Wainunu in Bua.

- **relevance to national multi-hazard early warning system:**

The establishment of flood warning systems in any major catchment (i.e. river, stream and creeks) provides critical information that can protect property and save lives. The real time hydrological data collected is very useful to detect signs of flood. It also very useful for development purpose such as bridge, roads, housing designing etc.

Project 5:

- **name of project:**

There is consultation to expand the first Coastal Inundation Project (CIFDP) by securing the Adaptation Fund

- **implementing organization:**

Continuing from CIFDP_1 with:

 JMA (Storm Surge), Tonkin and Taylor and SPC (TC Waves), SPC (Inundation)

- **BRIEF project description:**

Activities to focus on when the appropriate funding is secured:

1) Expansion of high resolution wave model to the whole of Fiji waters

2) High resolution baseline data for both topography and bathymetry for part of Fiji Coastal areas to improve the accuracy of coastal inundation extent and water level estimation from the shore line.

3) Expand the coastal inundation to the other parts of Fiji coastal areas who are frequently impacted by coastal inundation and storm surges.

4) Risk Information for Fiji coastal areas and many others.

- **relevance to national multi-hazard early warning system:**

Early Preparedness, Saves life, Reduce economic loss

Aids in planning and future development

3. Mineral Resources Division

Project 1:

- **name of the project:** Tsunami Ready Project
- **implementing organization:** UNESCO/IOC, MRD AND NDMO
- **BRIEF project description:**

Implementing the Tsunami Ready Recognition Programme will be a key contribution to the 'Safe Ocean' societal outcome of the UN Decade of Ocean Science for Sustainable Development (2021-2030). The IOC's Ocean Decade Tsunami Programme aims to make 100% of communities at risk of tsunami prepared for and resilient to tsunamis by 2030.

- **relevance to national multi-hazard early warning system@**

The UNESCO/IOC Tsunami Ready Recognition Programme (TRRP) is an international community-based recognition programme aimed at building resilient communities through awareness and readiness strategies that will protect life, livelihoods, and property from tsunamis.

The achievement of tsunami readiness is a collective effort that requires collaboration between government agencies, scientists, community leaders, and the public. By meeting a set of Assessment, Preparedness, and Response criteria, a community can be acknowledged as 'Tsunami Ready' by UNESCO/IOC. This important recognition can be attained through the joint commitment of these stakeholders.

Project 2:

- **name of the project:** Earthquake Disaster Adaptation Programme
- **implementing organization:** USGS, USAID, MRD
- **BRIEF project description:** Earthquake monitoring and capacity-strengthening for the warning center and the expansion of the network.
- **Relevance to national multi-hazard early warning system:** Strengthening seismic monitoring in the Region to accurately locate and disseminate Earthquake and Tsunami information to the Public and relevant stakeholders.

Project 3:

- **name of the project:** SATREP
- **implementing organisation:** JICA, University of Tokyo, MRD
- **BRIEF project description:** Volcano Research in Fiji, Tonga, and Vanuatu
- **relevance to national multi-hazard early warning system:** Risk knowledge of our region is important for disaster risk reduction.

Project 4

- **name of project: Landslide Inventory –** Assessment of Prone Areas in the Central Division, Viti Levu
- **implementing organization:** MRD
- **Brief project description:** Field identification and assessment of potential sites susceptible to landslides in the Tailevu, Naitasiri, Serua, Namosi, Rewa provinces.
- **relevance to national multi-hazard early warning system:** identification of high risk zones to strategically install early warning systems in communities susceptible to landslides

Project 5

- **name of project: Mainstreaming Disaster Risk Reduction Project –** Debris Flow Assessment
- **implementing organization:** JICA and NDMO
- **brief project description:** hazard/risk assessment of shallow debris flow using GIS in the Ba and Nadroga/Navosa catchments, Viti Levu
- **relevance to national multi-hazard early warning system:** identification of high risk zones to strategically install early warning systems in communities susceptible to landslides

Project 6

- **name of project:** Mainstreaming Disaster Risk Reduction Project – Steep Slope Collapse assessment
- **implementing organization:** JICA and NDMO
- **brief project description:** hazard/risk assessment of shallow debris flow using GIS; areas to be confirmed in new FY
- **relevance to national multi-hazard early warning system:** identification of high risk zones to strategically install early warning systems in communities susceptible to landslides

Project Goal (Word limit 100)	
Project Objectives (Word limit 100)	
Project Key deliverables (Word limit 250)	
Project Approach and Methodology (Word limit 1000)	

Project Expected Impacts (Word limit 500)	**This section aims to describe the impact of the project in terms of beneficiary population size in Fiji (direct and indirect). It also seeks to address the amount of infrastructure investment in Fiji that could benefit from this project. The latter part of the response discusses the primary and secondary long-term effects in Fiji that will be produced by the project interventions directly and indirectly.**
	The overall objective of the work directly aligns to illustrates the **IRAF output 3.1** (SIDS are better equipped with knowledge and resources to increase the resilience and inclusivity of their critical infrastructure systems) and **IRAF output 3.1 indicator 3** (DRI / resilient recovery knowledge products that are locally relevant in SIDS contexts and promoting inclusion, community knowledge and/or nature-based solutions, produced and disseminated
	A multi-hazard early warning system (MHEWS) addresses several hazards of similar or different nature in contexts where events may occur alone, simultaneously, in cascades or cumulatively over time. These cascading impacts threaten communities, assets, public infrastructure, critical services and, in some cases, the whole country. Therefore, they may have interrelated effects which can be considered under a multi-hazard approach.
	Harmonized approaches for risk communication, warning dissemination, and preparedness minimize inefficiencies, maintenance costs, and duplication, and maximize investments in awareness, education, and preparedness. Warning messages may also be more widely received, more easily recognized, and better understood if they are presented in the same format and come from the same source. Familiarity with the format and meaning will be reinforced by the greater frequency of warnings received for multiple hazards. A common framework will make it easier to ensure that warning messages for related hazards are consistent and complementary. This will prevent confusion among users. It will also enable actions that address compounding impacts and minimize cascading hazardous events.
	Protecting lives from the impacts of extreme weather and climate events and reducing economic losses are the major benefits of an effective MHEWS.
	Improved forecasts of extreme meteorological events and effective dissemination of information about their effects and appropriate responses to them can substantially reduce economic losses caused by the events. Improved forecasts of routine climate can result in increased enterprise profits (or reduced costs) and improved decision-making by households.
	According to Global Commission on Adaptation, early warning systems are estimated to provide more than a tenfold return on investment – the greatest of any adaptation measures. A 24-hour prior warning for an incoming storm or a heatwave can reduce the ensuing damage by 30 per cent. UNDRR estimates that countries with limited to moderate MHEWS coverage have nearly eight times the mortality rate as compared to those countries with substantial to comprehensive coverage.
	Given the increase in frequency and intensity of weather, climate, and water extremes across the globe, the impacts of climate change are evident and undeniable. Climate change brings exposure to multiple hazards, which themselves can experience compounding effects due to urbanisation, environmental degradation and population growth. Simple weather forecasting, and early warning systems are no longer sufficient, thus impact-based warning systems to save lives and livelihoods are critical. A comprehensive MHEWS would have a significant impacts on the beneficiary population size, both directly and indirectly, making substantial improvements through improved technology, communication, community engagements and importantly – governance arrangements. A comprehensive MHEWS would enable Fiji to prevent loss of life and preserve critical infrastructure avoiding catastrophe.
	Direct Beneficiary Population Size: **Current population of Fiji: 915,384 (all).** The direct beneficiaries of a multi-hazard early warning system in Fiji would primarily include the local communities, residents, and tourists within the country. These individuals would receive timely and accurate warnings about potential hazards such as tropical cyclones, floods, tsunamis, earhquakes and other weather-related events. Effective EWS allow people to take appropriate measures to protect their lives, property, and livelihoods. It would also act to boost community awareness and preparedness, create more data available for key stakeholders to make decisions, reduce deaths and economical loss
	Indirect Beneficiary Population Size: The indirect beneficiaries of the multi-hazard early warning system includes all stakeholders involved in disaster management and response – such as government agencies responsible for emergency management, disaster risk reduction organizations, non-governmental organizations, and other institutions involved in disaster preparedness and response efforts. These stakeholders would benefit from the system by having access to real-time information and data, enabling them to make informed

decisions and allocate resources effectively during emergencies. The indirect beneficiary population size would depend on the number of organizations involved in disaster management activities in Fiji.

Regional Impact: Fiji Meteorological Service provides weather forecast, warning and advisory services for other Pacific Island Countries without local capabilities. Fiji Meteorological Service provides the full range of tropical-cyclone services and information through the WMO Regional Specialised Meteorological Center (RSMC) – Nadi and as a Tropical Cyclone Advisory Centre (TCAC)[1]

Fiji Meteorological Service functions as the Meteorological Watch Authority (MWA) and the Meteorological Watch Office (MWO) for the Nadi Flight Information Region (FIR) and other specified areas as per International Civil Aviation Organisation (ICAO) designation, for the purpose of international air navigation.

The indirect beneficiaries will include other Pacific Island Countries and international communities accessing services and information related to weather, climate and hydrological data, associated forecasts and warnings projections.

Development of a MHEWS will provide a useful model and 'lessons Learned' for other Pacific Countries that aspire to develop a MHEWS.

Economic Impact: Economic sectors that are exposed to weather-related risks will be able to integrate meteorological and hydrological data, which will lead to the creation of new information, to the possibility of new business models and to better products and service options for consumers.

Infrastructure Investment: The implementation of a multi-hazard early warning system would require significant infrastructure investment. This would include the establishment and upgrading of meteorological monitoring stations, weather radars, seismological instruments, communication networks, data processing and analysis systems, and dissemination mechanisms. The investment would also involve the training of personnel to operate and maintain the system effectively. The amount of infrastructure investment required would depend on the scope and complexity of the system, as well as the coverage area. **Additional benefits that would impact infrastructure investment include: building capacity locally, more critical data and information for planning, more accurate data available for determining building codes and more constructive long-term plans could be developed**

Primary Long-Term Effects: The primary long-term effects of a multi-hazard early warning system in Fiji would be enhanced preparedness and reduced vulnerability to natural disasters. By providing early warnings and accurate information, the system would enable individuals, communities, and organizations to take proactive measures to mitigate the impact of hazards. This would lead to a decrease in the loss of lives, injuries, and damage to infrastructure. Additionally, the system would contribute to building a culture of preparedness and resilience among the population, leading to better response capabilities and increased community participation in disaster risk reduction activities.

Secondary Long-Term Effects: The secondary long-term effects of the project interventions would be multifaceted. Firstly, the early warning system would contribute to improved economic stability by reducing the disruption caused by disasters. By enabling timely evacuation, businesses and industries would have the opportunity to safeguard their assets and minimize economic losses. Secondly, the system would facilitate better urban planning and land-use management, as decision-makers would have access to hazard information for informed decision-making. This could lead to the development of safer infrastructure and communities. Lastly, the availability of reliable data collected through the early warning system would contribute to improved scientific research and analysis, which could aid in identifying long-term trends, developing more accurate forecasting models, and enhancing disaster risk reduction strategies.

The impacts of a MHEWS in Fiji would provide;

Timely detection: MHEWS allow for the early detection of multiple hazards, enabling authorities to issue warnings and take necessary actions to minimize the potential impacts. By detecting the initial hazard in a cascade, early warning systems can trigger alerts for subsequent hazards, giving communities more time to prepare and respond effectively.

Comprehensive risk assessment: MHEWS consider multiple hazards simultaneously, providing a comprehensive understanding of the risks faced by a particular region. This allows authorities to develop more informed disaster management plans and allocate resources more efficiently. By understanding the potential interactions between hazards, they can take proactive measures to prevent or mitigate cascading effects.

Integrated response: MHEWS facilitate a coordinated and integrated response to multihazard situations. They enable different agencies and stakeholders responsible for different types of hazards to collaborate and share information, ensuring a more effective

and streamlined response. This integration improves communication, coordination, and decision-making, thereby enhancing overall emergency management efforts.

Increased Public awareness and preparedness: MHEWS help raise public awareness about the various hazards that can occur in a specific area and the potential cascading effects. Early warning systems can provide clear and concise information to the public about the risks they face and the actions they should take to protect themselves. This empowers individuals and communities to be better prepared, reducing the potential loss of life and property during disasters.

Resilience building: By providing early warnings and facilitating preparedness, MHEWS contribute to the long-term goal of building resilient communities. Communities that are aware of multiple hazards and have well-established early warning systems are more likely to invest in measures to reduce vulnerabilities and increase their capacity to cope with disasters. This includes infrastructure improvements, land-use planning, and community-based risk reduction initiatives. Overall, a multi-hazard early warning system in Fiji would have a profound impact on both the direct and indirect beneficiary population, reducing vulnerability to natural hazards, improving preparedness and response, and fostering long-term resilience and sustainable development.

In summary, MHEWS are critical in the context of reducing impacts of hazard cascades – enabling timely detection, comprehensive risk assessment, integrated response, public awareness, and resilience building. They enhance preparedness, reduce the impacts of disasters, and save lives and livelihoods in multihazard situations.

Development of a MHEWS in Fiji with key focus on systemic risk would provide an opportunity to identify enabling factors for improving governance of early warning systems by managing what are increasingly interdependent risks with the potential for cascading impacts. More specifically, the proposed process will explore risk governance successes and failures with the goal of developing insights on how to bolster systemic risk governance of early warning systems in policy and practice.

https://www.icao.int/APAC/Documents/edocs/fasid/tmet3a.pdf*Global Commission on Adaptation, "Adapt Now: A global. Call for leadership on climate resilience", 13 September 2019. Available at https://gca.org/ reports/adapt-now-a-global-call-for-leadership-on-climate-resilience/*

Project Alignment/Complementarity with Global, Regional & National Commitments (Word limit 500)	Whilst SDG 9,11 and 17 are critical in this context, MHEWS are relevant to a number of SDGs due to their potential to save lives, protect infrastructure, and promote sustainable development. The following SDGs are particularly relevant to MHEWS:

Whilst SDG 9,11 and 17 are critical in this context, MHEWS are relevant to a number of SDGs due to their potential to save lives, protect infrastructure, and promote sustainable development. The following SDGs are particularly relevant to MHEWS:

1. **SDG 1:** No Poverty: MHEWS can contribute to poverty reduction by minimizing the impacts of disasters on vulnerable communities. Early warning systems enable timely evacuation, preparation, and response, reducing the loss of livelihoods and assets.
2. **SDG 2:** Zero Hunger: MHEWS can support food security by providing early warnings of weather events that could affect agricultural production. Farmers can take preventive measures or adapt their practices to minimize losses.
3. **SDG 3:** Good Health and Well-being: MHEWS play a crucial role in protecting human lives and health by providing advance warnings of natural hazards. This allows authorities to initiate emergency response measures, including evacuations and the provision of healthcare services.
4. **SDG 6:** Clean Water and Sanitation: MHEWS can help protect water resources by providing advance notice of flooding or contamination events.
5. **SDG 9: Industry, Innovation, and Infrastructure: MHEWS contribute to resilient infrastructure by providing warnings of potential hazards that could impact critical infrastructure systems, such as roads, bridges, and power grids.**
6. **SDG 11: Sustainable Cities and Communities: MHEWS are essential for building resilient cities and communities. They enable urban planners and local authorities to prepare for and respond to natural disasters, reducing the impact on communities, infrastructure, and services.**
7. **SDG 13:** Climate Action: MHEWS are a vital tool for climate change adaptation. By providing early warnings of extreme weather events linked to climate change, such as hurricanes, droughts, or heatwaves, MHEWS can help communities and governments take appropriate actions to mitigate risks.
8. **SDG 15:** Life on Land: MHEWS contribute to the conservation of terrestrial ecosystems and biodiversity by providing warnings of potential natural hazards.
9. **SDG 17: Partnerships for the Goals: MHEWS require collaboration and partnerships between national governments, local communities, and international organizations. Strengthening these partnerships is crucial for building effective early warning systems and enhancing disaster preparedness and response capabilities.**

Noting that the three main contributing goals will be selected for SDG contributions.

| Project Contribution to the Sendai Framework for Disaster Risk Reduction targets (Word limit 500) | **Contribution to the Sendai Framework for Disaster Risk Reduction targets**

- Sendai Framework recognizes the importance of multi-hazard early-warning systems (MHEWS) in supporting disaster risk reduction efforts. In particular, it includes commitments to investing in and strengthening people-centred MHEWS, disaster risk communications mechanisms and hazard-monitoring telecommunications systems – emphasising a participatory and gender-inclusive approach[1].
- Specifically, Target G of the Sendai Framework aims to "substantially increase the availability of and access to multi-hazard early-warning systems and disaster risk information and assessments to people by 2030"

To achieve Target G, incorporating the following recommendations will help to increase the availability of, and access to, multi-hazard early-warning systems and disaster risk information in a way that is inclusive and accessible to all.

- **Build on existing connections and networks within communities.** Listening, learning and engaging with existing networks, helps to build strong community connections, and MHEWS can benefit from locally-led information gathering and greater resource efficiency. Ensuring positive, safe and inclusive participation, and engagement that acknowledges and respects experiences of vulnerable and marginalised groups and reflects the diversity within each community, helps broaden ownership and community buy-in for MHEWS.
- **Build and unlock community knowledge.** Improving community awareness**,** and in particular members of vulnerable and marginalised groups understanding of climate change and disaster risks, using both traditional and modern scientific knowledge, helps to inform community-level disaster risk management and empower women and persons with disabilities to participate.
- **Facilitate community-based data collection and hazard monitoring.** Support communities through appropriate resourcing and capacity-building to engage in systematic data collection about hazards, socio-economic vulnerabilities, disaster impacts in their local area and strengthen information and data sharing between the community and national level.
- **Deliver effective early-warning messages:** Ensuring early-warning messages are received and acted upon, by involving communities in the development of messaging and using different communication channels to transmit message.

1, The Sendai Framework for Disaster Risk Reduction 2015-2030, Article 33 (b). |

Project Gender Equality and Social Inclusion (GESI) plan (Word limit 500)	**This project should consider including gender equality and social inclusion considerations through all workstreams . The entire architecture recognises vulnerable groups, Inclusive infrastructure and the diverse needs of different population groups, especially the most marginalized, including women and girls and persons with disabilities considering them as users and as contributors.** **Consideration of inclusion, gender perspectives and cultural diversity[1]** – Throughout this work it will be important to recognise that culture, gender and other characteristics of people at risk (e.g. disabilities) affect people's vulnerability and the way in which they respond to disasters. • The inclusion of gender and diversity issues should be considered as a technical factor from the beginning of the process, rather than being an afterthought and add-on.[2] • Women and men often have different preferences for and access to communications media during a crisis. To reach everyone during a crisis, particularly those requiring evacuation, crisis communication and planning need to take these gender differences/preferences into account. (adopted from, Good Practices for Gender in EWSs, Global Crisis Support Programme). • Women and children tend to be viewed mostly as vulnerable, potential victims during crises. While they do have increased vulnerability in many crisis contexts, they also can and do play an active role in crisis response and related planning also needs to take their strengths and capacity into account, e.g., Women often take the lead in ensuring that the elderly and disabled are evacuated at the community level. • It is critical to regard women and children as potential change agents and not just as vulnerable groups. [1] Gender and Early Warning Systems, OSCE Office for Democratic Institutions and Human Rights (ODIHR), [2] Conference report "Early Warning – From concept to action: The Conclusions of the Third Inter- national Conference on Early Warning,", Secretariat for the International Strategy for Disaster Reduction, German Committee for Disaster Reduction, 2006, p. 19, available at <www.ewc3.org/upload/ downloads/Early_warning_complete2.pdf

Project Sustainability strategy (Word limit 500)	To achieve national ownership, uptake of project results and deliverables, and lasting impact after project completion a number of key components and engagement with key stakeholders must be in place. These are as follows;

Structure of the system. An MHEWS is a system that allows for the detection and forecasting of impending hazardous events to allow effective warnings to be formulated based on scientific knowledge, monitoring and a consideration of the factors that affect disaster severity and frequency. **For a MHEWS to be effective and sustainable four main elements[1] are needed** [(1) Disaster Risk Knowledge, (2) Observations, Monitoring, Analysis, and Forecasting, (3) Warning, Dissemination and Communication, and (4) Preparedness and response capabilities] and in close connection with those who need to receive the warnings. An end-to-end warning system connects the people who collect and track information on hazards with those who need to receive the relevant messages to ensure timely action. Successful implementation of the MHEWS system requires interrelated work between its four key components. These four interrelated components need to be coordinated within and across sectors and multiple levels for the system to work effectively and to include a feedback mechanism for continuous improvement. Failure in one component or a lack of coordination across them could lead to the failure of the whole system.

Strengthening of the Impact Based Forecasting (IBF) Approaches as part of the MHEWS

An impact-based hydro-meteorological forecast and warning has three distinct elements:

- A description of meteorological and/or hydrological conditions;
- A description of the generalised impacts of the meteorological and/or hydrological conditions
- A description of local opportunities and vulnerabilities arising from the meteorological and/or hydrological conditions.

In implementing IBF, all four components of Fiji's MHEWS will make important contributions. Mandated agencies responsible for "detection, monitoring and forecasting" required to define hazards, will work with NDMO and local communities to 'analyse the risks' arising from extreme events and to disseminate timely IBFs to the 'last mile' users. Additionally MHEWS will provide forecast and warning support targeted at those carrying out response to disasters.

Local ownership and bottom up design. Early Warning Systems have in the past been typically designed from the top-down. This however results in flawed systems that don't meet the cultural and contextual needs of end-user communities. In Fiji, a 'bottom-up' approach was taken, and the project team immersed themselves in the Fijian communities most at risk from coastal inundation to identify their fundamental needs. Deeply understanding the weaknesses and strengths of the nation's communities was key in developing this system. We found that communities were always looking for the following fundamental information such as:

- What is coming?
- How long will it stay?
- What will be the extent of the impact?
- What do I need to do to keep safe? (I.e., do I need to evacuate?)
- What will be the damage to my livelihood? (I.e., home, land, crops)

The MHEW system must be designed with community needs at the forefront and should meet these fundamental needs. NDMO is well placed to work together with communities to prepare and respond to a cyclone quickly, and appropriately.

Integrated and inclusive measures that prevents and reduce individual or community exposure and vulnerability to hydro-meteorological hazard. The International Risk Governance Council has recommended that stakeholder involvement is a dominant characteristic of a disaster risk reduction (DRR) strategy. To reach the most exposed and often hard-to-reach population, commonly called the last mile, an integrated approach built on multi-level cooperation for early warning must be based on and include the needs, priorities, capacities, and cultures of those people at risk. Thus, a people-centred approach is imperative.

Involvement of local communities and participation of the people at risk is critical in the design of an early warning systems and the generation and use of risk information and advisory and warning messages. EWS should be tailored to the different needs of specific groups, including mechanisms to integrate local and indigenous knowledge and to provide feedback learning for system improvement

Harmonized operational procedures. The four components of the MHEWS need to be coordinated across many agencies at national and local levels for the system to function effectively. Failure of one component or lack of coordination across agencies and

communities could lead to the failure of the whole system. As the issuance of warning is a national responsibility, the roles of individual agencies and actors that are a part of MHEWS need to be clarified, documented and underpinned by agreed Standard Operating Procedures.

Increased availability of and access to the multi-hazard early warning system EWS are implementing a range of specific initiatives to enable Fiji and all weather- and climate-sensitive business to take advantage of the rapidly advancing meteorological and hydrological science and technology and the underlying digital transformation that will increasingly make new products and services available to all.

Key initiatives aimed at expansion of network coverage to include 100% of population:

1. Enhance the Fiji Meteorological System (FMS) observation network and forecasting systems' underlying Information and Communication Technology (ICT).
2. Systematically eliminate 'black spots" in Fiji's weather, climate, hydrological and ocean observing networks.
3. Collaborate with research partners in the Academic Sector to bring the latest scientific developments in meteorology, hydrology and oceanography to Fiji and the region
4. Undertake applied research projects, in collaboration with end-users of EWS services to better meet their needs.

Preparedness. Focus of community preparedness includes the following:

- Lead and Coordinate: include local authorities, civil society and communities
- Identify, Assess and Monitor All Risk: by analyses of hazards, exposure, vulnerability and capacities using sex- and age-disaggregated data (e.g. for hydrometeorological, geophysical, biological and technological hazards)
- Put Early Warning Systems in Place: ensure the participation and needs of all.
- Assess and Collect Needs of All: manage and disseminate information including sex- and age-disaggregated data, including disability, accessibility, and functional needs (requires needs assessment and information management).
- Assess Operational and Human Capacities: identify who knows and does what where, and what's needed where, across sectors and communities.
- Formulate Risk-informed Emergency Response, Contingency and Business Continuity Plans: ensure plans are based on risk assessments of multi-hazard, specific hazard and climate scenarios, and identification of accountabilities for maintaining relevance of the plans.
- Plan for External Assistance and Support: consider sub-national, national, regional and international levels.
- Prepare to Make Funding and Alternative Relief Arrangements: understand available mechanisms for disaster preparedness and contingency funds for emergency response.
- Plans are developed with stakeholders, communicated, and capacity and understanding built among all actors.
- Conduct Simulations: "stress-test" plans and to ensure individuals and organizations understand their roles and the roles of others
- Stockpile Relief Supplies: Ensure a reserve of required supplies and/or establish arrangements for timely acquisition of relief supplies.
- Identify and Advise Requirements to Change Standard Arrangements: including standard operating procedures for initial phases of response, implemented as part of basic disaster preparedness actions.

In summary, to ensure national uptake and sustainability after the end of the MHEWS project, the following key factors must be in place during the design stage:

- **Governance and institutional arrangements** – These are encouraged by robust legal and regulatory frameworks which are supported by long-term political commitment and should encourage local decision making and participation.
- **Individual hazard early warning systems (EWS) should be nationally owned, inclusive and have a clear mandate** – At the national level, EWS should be located within government structures and operate within a clear legal framework. However, EWS should also operate and be integrated at a range of levels including communities, private sector, local and regional government.
- **Involvement of local communities** – There needs to be direct participation of the people at risk. The successful community-based early warning systems built on existing community structures with broad stakeholder buy-in are more effective in protecting lives and livelihoods during disasters.
- **Trust** The analysis and warnings provided must have the confidence of its users.
- **Accountability and transparency** – For example, the accuracy of forecasts, if produced, and the effectiveness of the responses to warnings, should be assessed and be transparent. This helps to strengthen and improve trust in the EWS.
- **Sustainability** – The EWS should be both financially and technically sustainable.

- **An effective end-to-end Early Warning Systems** necessitate strong communications channels from the national and local levels.

In summary, sustainability considerations vary according to local contexts but in order to ensure effectiveness it is critical to include the following approaches as part of the project implementation.

- **Identify the right stakeholders** (decision makers, owners, institutions, financing mechanisms, direct beneficiaries);
- **Engaging key stakeholders in the project design** and implementation using co-design and co-production approaches and participatory decision making,
- S**upport learning and capacity building**; using an effective MEL system and constant learning loops
- **Use existing national systems**, where governance architecture and processes are already in place
- **Ensure an effective communication plan and budget to ensure transparency and accountability** for results and proper dissemination of project deliverables.

[1] International Network for Multi-hazard Early Warning Systems (2018). Multi-hazard Early-warning Systems: A Checklist. Switzerland, Geneva: World Meteorological Organization; and Luther, Jochen, and others (2017). World Meteorological Organization (WMO)—Concerted International Efforts for Advancing Multi-hazard Early Warning Systems. Geneva: World Meteorological Organization (WMO).

Project Implementation (Word Limit 500)	**This section provides an overview of the management (and stakeholder coordination) arrangements for this project - key organisations, roles, scope of work and resource allocation. Where applicable it defines the need for recruitment of experts.**

Given the complex governance architecture involved in the design of an effective MHEWS additional partners will be needed - this section outlines their role, activities and expected outputs. Monitoring arrangements are also described.

Fiji requires a multi-disciplinary, collaborative approach to the design of a MHEWS thus, lead by NDMO and the lead Implementing Partner Live & Learn - atmospheric, coastal hydrological, oceanographic, and meteorological communities will be brought together to develop the enhanced capabilities required to design and deliver the MHEWS roadmap. This means bringing together an unprecedented range of different expertise and data into one single platform.

This will include Fiji Meteorological Office, Mineral Resources Division (MRD), Ministry of Agriculture, Ministry of Health and other key stakeholders relevant to disaster planning, such as the private sector -

The following text describes the operational roles and resource allocation of the project lead, the Implementing partner and key stakeholders.

Project Implementing Partner : Live and Learn

Live & Learn is a network of local organisations operating across the Pacific, South East Asia and the Indian Ocean working towards an equitable and sustainable world free from poverty. Local knowledge and global understanding are the starting points in developing an ethic of environmental and development education. Local ownership of environmental and development education programs, open participation and equality remain the foundations of our organisation. Live & Learn works with communities throughout Asia and the Pacific to design, implement and learn from community-based development projects. These projects are specific to each community and cover a number of thematic program areas, including:

• water, sanitation and hygiene (WASH)

• sustainable use of biodiversity

• environmental governance

• natural resource-based conflict management and peace building

• understanding climate change

• sustainable energy options

• community-based waste reduction management

• human rights

• community disaster prevention and preparedness.

Live & Learn (Fiji) is registered locally under the Charitable Trust Act since September, 1999.

Project Government of Fiji (GoF) lead: NDMO

The NDMO is a permanent body within the Fijian Government responsible for disaster management where the day-to-day functions of the disaster management organizations are conducted. It functions as the central agency to implement and coordinate the implementation of policies of the National Disaster Management Council (NDMC) including disaster mitigation and preparedness. During emergencies, the NDMO sets up within its precincts the National Emergency Operations Centre (NEOC) to coordinate the activities of disaster monitoring, warning and immediate post-disaster response including emergency relief work.

Under implementation, key expert consultants may be recruited against specific skill sets – to be embedded in NDMO and/or the implementing partner to undertake specific tasks.

Technical Partner TFL

The role of a technical office in auditing early warning system equipment involves assessing the functionality, effectiveness, and compliance of the equipment with established standards and requirements. The technical office is responsible for conducting thorough evaluations to ensure that the early warning system equipment is operating optimally and capable of effectively detecting, monitoring, and communicating potential hazards or risks.

Specific responsibilities of a technical office in auditing early warning system equipment may include: |

- Equipment Assessment: Conducting comprehensive inspections of the equipment to verify its condition, accuracy, and reliability. This may involve reviewing technical specifications, conducting performance tests, and inspecting maintenance records.
- Compliance Verification: Ensuring that the equipment adheres to relevant industry standards, guidelines, and regulations. This may involve assessing compliance with safety protocols, data integrity standards, and interoperability requirements.
- System Integration: Assessing the integration of various components within the early warning system, such as sensors, communication networks, and data processing systems. This involves evaluating the compatibility and efficiency of these components in working together to deliver timely and accurate warnings.
- Troubleshooting and Maintenance: Identifying any technical issues, faults, or malfunctions in the equipment and recommending appropriate corrective measures. This may involve coordinating repairs, maintenance, or upgrades to ensure the continuous operation of the early warning system.
- Documentation and Reporting: Documenting audit findings, observations, and recommendations in detailed reports. These reports are used to communicate the status of the equipment and provide guidance for necessary improvements or enhancements.
- Collaboration and Coordination: Collaborating with relevant stakeholders, including equipment manufacturers, system operators, and disaster management authorities, to exchange information, share best practices, and ensure a coordinated approach to auditing and maintaining the early warning system equipment.

The audit conducted by the technical officer will assess the overall performance and reliability of the early warning systems, ensuring their readiness to effectively mitigate and respond to potential hazards and protect the affected communities.

Expected Outcome:

- List and Map all EWS system within Government agencies
- Develop maintenance plan for all this systems
- Develop comprehensive roadmap that will outline what exist now, when they should change and what future investment should be
- Report to also include gaps.
- Develop report detailing protocols and cost for a common platform for all EWS.

The project management structure will include key roles:

The project manager will focus on writing and developing of the actual document, while the TO will review the system in place and provide analysis to provide insight how the system can read off each other. The AO will focus on admin work which includes workshops, documentation etc (the same could also be done by the PM itself)

Project Manager/Coordinator (1.0FTE) – The project manager will focus on writing and developing of the actual document, to coordinate all project activity implementation by participating agencies; directly liaise with TAs and report to Director NDMO (technical component) Director LLF (contractual); based at NDMO;

Project Technical Officer (TFL) (1.0FTE) – review the system in place and provide analysis to provide insight how the system can read off each other, to support coordination and partners network management for implementation of multi-partner activities; support M&E, based at NDMO;

Logistics & Admin Officer (1.0FTE) – facilitate all requisitions, acquittals and logistics for project implementation in consultation with NDMO, PM/PC and PTO; based at LLF;

Technical Advisor (0.5FTE) – lead the collaborative approach and bring together communities of practice for atmospheric, coastal hydrological, oceanographic, and meteorological communities and develop the enhanced capabilities required to deliver accessible, understandable, and actionable warnings. The community of practice will include bringing together a range of different expertise and data into one single platform. Consultancy for 6 month period (210 days)

Full details of the resource allocations and individuals will be made available prior to the start of the project.

It will also be important to establish a coordinating body - Advisory Group of key stakeholders that will guide the design and process of development of MHEWS.
Proposed composition of Advisory Group should include: NDMO, Mineral Resources Department, Fiji Meteorological Service, Ministry of Agriculture, Ministry of Health and Medical Services. Technical experts in Gender, Disability, Traditional Knowledge and CBDRM should be a part of Advisory Group from the outset. Technical agencies supporting this effort should include: UNDRR, IFRC and FAO.

Examples of other ministry roles include;

Fiji Meteorological Service (FMS) role in EWS is to Monitor, analyse, prepare and issue routine forecast of meteorological phenomenon, tropical cyclone forecasts, warnings and advisories for the public, marine and aviation sectors for Fiji and the Southwest Pacific region in accordance with the World Meteorological Organisation (WMO) and International Civil Aviation Organisation (ICAO) required standards. Monitor and analyse ocean and coastal condition from state of seas, swells and coastal inundation. Provide media briefings/updates via telephone for both local and regional media, public and other government agencies' queries on severe weather events and tropical cyclone information affecting the region. Conduct stakeholder engagement for improvement of Public Weather Service, IBF, MHEWS and WRN products, MOUs on data sharing, etc. Plans to develop MOUs and SOP with key stakeholders like NDMO, SPC, WAF, EFL, MOA, FHTA etc.

The Mineral Resources Division (MRD) role in EWS comprises the **seismology unit of the Mineral Resources Department** current tasks involves monitoring for any potential earthquake or tsunami warnings. It is crucial to quickly disseminate any alerts to the public to ensure their safety and wellbeing.

Geological Survey division one of the division's responsibility is to provide geological information and advice through assessments on geotechnical or ground stability issues, seismic events, and geohazard such as landslides, coastal inundation and river bank erosion. The service is provided to developers, government agencies and the public at large.

Both FMS and MRD will be critical partners in the implementation of this work and the development of both the MHEWS and NbS roadmaps.

UNDRR will also be a key technical partner in both the implementation and coordination of this work

Project Timeline (Word Limit 500)	**Please see GANTT document (upload) illustrating project timeline.** **The process of development of Multi-hazard Early Warning System Roadmap and NbS action plan should involve the following steps:** **MHEWS and NbS – Roadmap** Forecasting and early warning responsibilities and systems: 1. Review of international experience. This should include: - **Learning from best practices** in early warning, including in those areas such as monitoring, forecasting and risk communication that leverage the latest technologies and standards (e.g. communication and information technologies, mobile phone solutions, social media, standards such as the Common Alerting Protocol (CAP) for all hazards alerting); - Strengthening the Early Warning/ Early Action (EWEA) and Anticipatory Action chains, taking on an **impact-based forecasting** approach in early warning to enable organizations and communities to **formulate understandable and actionable messages** and take respective preparedness and response measures. 2. Joint (Line Ministries and Consultant) stock take and gap analysis of existing forecasting and early warning responsibilities and systems in Fiji. 3. Generate Recommendations to strengthening collaborative governance and systems that channel forecasting and EWS information in the country to a centralised dashboard to support impact-based forecasting. **Expected outputs:** - Mapping, gap analysis and review of existing Early Warning Systems (EWS) in Fiji. This should include challenges that Government may come across in the development and implementation of people-centred, end-to-end and multi-hazard early warning systems (including capturing cascading effects of hazards/disasters) that ensure interoperability with local to national scales as well as transboundary regional scales. - Review of existing institutional structure, policy and legislation relevant to EWSs. - Review of exiting EWS should include (1) Risk Knowledge, (2) Monitoring, Forecasting and warning, (3) Dissemination and Communication, (4) Response capability, (5) Technical and financial sustainability, (6) end user feedback, (7) Potential contribution of existing EWS to proposed Multi Hazard National Early Warning System. - Mapping of responsible agencies and policy action for different hazards. - Analysis of barriers and gaps to the provision of a MHEWS including: **Gaps in governance and finance** - Legal mandate for issuing of warning and warning protocols - Coordination of the response and accountability - Financing EWS and MHEWS **Technical assessment, challenges and gaps** - Appropriate indicators and thresholds - Technical Assessment of various systems for EW - Stakeholder's perception of the main barriers to establishing a MHEWS **Mandate and policy related issues - to be covered in the Final Report and Roadmap Matrix** - What MOUs would need to be establish to steer the development of a multi hazard National Early Warning System (NEWS)? - SOPs to guide the process of development of MHEWS. - Clarify decision making structures with all stakeholders providing warnings and information to NEOC. - Establish how NEWS will be linked to response mechanisms - Establish the economic benefits of MHEWS - Integrate and develop agreements with the private sector - Establish the warning chains between different ministries within government policy and legislation - Capacity assessment of responsible EWS actors at the subnational level in charge of issuing warning and delivering response - Integrate MHEWS into economic planning at a national level **Communication related issues - to be covered in the Final Report and Roadmap Matrix** - NEOC Website updates

- Establish agreements between different actors to ensure that the warnings are delivered in a coherent manner
- Public awareness campaign to improve awareness of the NEWS
- Establish the roles and responsibilities of all the organisations envolved in the warning process for each hazard and how they interact with NEOC and NEWS.
- Establish a coherent set of warning messages in conjunction with the relevant ministry for each hazard

Monitoring and Evaluation related issues - to be covered in the Final Report and Roadmap Matrix

- Evaluation of the effectiveness of EWSs
- Evaluation of the effectiveness of the dissemination of early warning messages.

Expected Outputs NbS Road Map and Action Plan

The action plan is to have a holistic "**National 20-year Waterways Project and Plan" that provides a programmatic solution to water-related problems in Fiji.** These include:

1. An Action Plan , identified projects and an action plan for coastal protection in Fiji using both traditional engineering structures and Nature-based solutions (NbS) with project costings for 20 years;
2. An Action Plan, identified projects, global standards and an action plan for Nature-Based Solution projects with costings for 20 years;
3. An Action Plan, identified projects and an action plan for riverbank protection using NbS and traditional structures with project costings for 20 years;
4. An Action Plan, identified projects and an action plan for watershed management using NbS and traditional structures (dams, reservoirs) with project costings for 20 years;
5. An Action Plan, identified projects and an action plan for dredging of rivers using NbS and traditional structures with project costings for 20 years;
6. An Action Plan, identified projects and an action plan for flash/flood mitigation using NbS and traditional structures with project costings for 20 years;
7. An Action Plan, identified projects and an action plan for drainage schemes throughout Fiji using innovative methods with project costings for 20 years;
8. An Action Plan, identified projects and an action plan for irrigation schemes (farmers) using innovative and traditional methods with project costings for 20 years;
9. An Action Plan, identified projects and an action plan for gravity-fed irrigation systems using NbS and traditional structures with project costings for 20 years;
10. An Action Plan, identified projects and an action plan for the development and maintenance of floodgate structures using innovative and traditional methods with project costings for 20 years;
11. Action Plan on establishing a robust monitoring and evaluation system for all projects and plans
12. Action Plan on mainstreaming gender policies and planning for all projects in MoW;
13. Action Plan on mainstreaming all Environmental and Social Management Systems (ESMS) for all projects at MoW;

Project Procurement plan

Description of goods and services	Procurement category	Type of contract	Unit of measure	Quantity	Estimated Unit price in USD	Estimated budget	Selection process
Technical Advisors	Consultancy	Individual	days	210	904	197,000	Tender
Consultations & Workshops	Services	Institutional	days	16	8,750	140,000	Tender

SDG Targets

Target	Description
Main Goals	
Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	
TARGET_9.1	9.1 Develop quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all
TARGET_9.4	9.4 By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities
TARGET_9.5	9.5 Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending
TARGET_9.a	9.a Facilitate sustainable and resilient infrastructure development in developing countries through enhanced financial, technological and technical support to African countries, least developed countries, landlocked developing countries and small island developing States
TARGET_9.b	9.b Support domestic technology development, research and innovation in developing countries, including by ensuring a conducive policy environment for, inter alia, industrial diversification and value addition to commodities
TARGET_9.c	9.c Significantly increase access to information and communications technology and strive to provide universal and affordable access to the Internet in least developed countries by 2020
Goal 17. Strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development	
TARGET_17.1	17.1 Strengthen domestic resource mobilization, including through international support to developing countries, to improve domestic capacity for tax and other revenue collection
TARGET_17.14	17.14 Enhance policy coherence for sustainable development
TARGET_17.18	17.18 By 2020, enhance capacity-building support to developing countries, including for least developed countries and small island developing States, to increase significantly the availability of high-quality, timely and reliable data disaggregated by income, gender, age, race, ethnicity, migratory status, disability, geographic location and other characteristics relevant in national contexts
TARGET_17.9	17.9 Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the Sustainable Development Goals, including through North-South, South-South and triangular cooperation

SDG Indicators

Indicator Code	Description
No data available.	

Contribution to SDGs

Participating Organization	% TARGET_9.a	% TARGET_17.14	% TARGET_9.b	% TARGET_9.1	% TARGET_17.18	% TARGET_9.4	% TARGET_17.9	% TARGET_9.5	% TARGET_9.c	% TARGET_17.1	% Total
Live & Learn	10	10	10	10	10	10	10	10	10	10	100
Total contribution by target	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	
Project contribution to SDG by target	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**10**	**100**

List of documents

Document	Document Type	Document Source	Document Abstract	Document Date	Classification	Featured	Status	Modified By	Modified On
ProDoc_Fiji_-_signed Government.pdf	Pro Doc	Project	Prodoc signed by Government of Fiji	04-Jul-2024	External	No	Finalized	sophie.baranes@undp.org	05-Jul-2024 4:39:43 AM
MPTF IRAF 00012 MHEAS capabilities in Fiji_LLFiji signed.pdf	Pro Doc	Project		12-Feb-2024	External	Yes	Finalized	doris.susau@livelearn.org	11-Feb-2024 6:53:03 PM
MPTF IRAF 00012 MHEAS capabilities in Fiji_LLFiji signed.pdf	Pro Doc	Project		12-Feb-2024	External	No	Finalized	doris.susau@livelearn.org	11-Feb-2024 6:25:38 PM
Doris Signature.docx	Other Docs	Project		18-Jan-2024	Internal	No	Finalized - Signature Redacted	kolosa.matebalavu@livelearn.org	18-Jan-2024 4:11:03 AM
CDRI IRIS IPR Live & Learn.pdf	Other Docs	Project	CDRI IRIS IPR LIVE AND LEARN	09-Jan-2024	Internal	No	Finalized	kolosa.matebalavu@livelearn.org	08-Jan-2024 5:43:00 PM
Electronic Signature-Country Manager- Live & Learn Fiji.pdf	Other Docs	Project		16-Jun-2023	Internal	No	Finalized - Signature Redacted	kolosa.matebalavu@livelearn.org	16-Jun-2023 2:42:34 AM
Certificate of Incorporation Live & Learn.pdf	Other Docs	Project	Live & Learn certificate of incorporation.	16-Jun-2023	Internal	No	Finalized	kolosa.matebalavu@livelearn.org	15-Jun-2023 8:31:06 PM
ECAP 2021 Interim Narrative Report_Final_Submitted.pdf	Other Docs	Project	Interim project report	16-Jun-2023	Internal	No	Finalized	kolosa.matebalavu@livelearn.org	15-Jun-2023 8:29:18 PM
CDRI Govt Support Letter.pdf	Other Docs	Project	Government Support Letter	15-Jun-2023	Internal	No	Finalized - Signature Redacted	vasiti.soko@gmail.com	15-Jun-2023 4:19:24 AM
MHEWS (V2) Project Timeline .pdf	Other Docs	Project Narrative	GANTT illustrating high level activities under project implementation	15-Jun-2023	Internal	No	Draft	katherine.cooke.200@gmail.com	15-Jun-2023 8:18:53 AM

[Stakeholders and Management Arangements for MHEWS Roadmap_NDMO. pdf](#)	Other Docs	Project Narrative	Key Stakeholder arrangements for MHEWS roadmap in Fiji _NDMO	15-Jun-2023	Internal	No	Draft	katherine. cooke.20 0@gmail. com	15-Jun-2023 7:46:29 AM
[Gender Policy Live & Learn.pdf](#)	Other Docs	Project Narrative	Live & Learn GEDSI policy	15-Jun-2023	Internal	No	Draft	katherine. cooke.20 0@gmail. com	15-Jun-2023 9:43:10 AM
[UNDRR_Presentat ion_Sendai_Frame work-GGA6_(1) [1].pdf](#)	Other Docs	Project Narrative	Sendai Framework by UNDRR - Technical Partner	15-Jun-2023	Internal	No	Draft	katherine. cooke.20 0@gmail. com	15-Jun-2023 9:42:24 AM
[IRIS Proposal NDMO MoW Final 14 Feb 23.pdf](#)	Concept Note	Project	Concept note submitted under this call	15-Jun-2023	Confidential	No	Finaliz ed	katherine. cooke.20 0@gmail. com	15-Jun-2023 9:38:09 AM

Project Results

Outcome	Output	Description
IRAF OUTCOME 3 - Countries have increased access to knowledge and resources to increase the resilience and inclusivity of their existing and future critical infrastructure systems by 2030		CDRI offers direct technical assistance and grants to countries to develop and adopt enhanced disaster resilent and inclusive standards and practices for infrastructure system development through direct calls for proposals, access to relevant knowledge products and solutions meant to address specific geographical or sectoral vulnerabilities, and advisory services.
	Output 3.1 SIDS are better equipped with knowledge and resources to increase the resilience and inclusivity of their critical infrastructure systems	CDRI will support SIDS countries or regions with the development and adoption of DRI country systems, standards and practices, and access to knowledge products and advisory services that are locally relevant in SIDS contexts.

Outcome	Output	Description			
	Activities				
	Title	**Description**	**Lead Participating Organization**	**Participating Organization**	**Other Organizations**
	Mapping, gap analysis and review of existing Early Warning Systems (EWS) in Fiji	Joint stock take/gap analysis of existing forecasting and early warning responsibilities and systems in Fiji. Determine the objectives for an effective MHEWS that reflects Fiji context needs. Advise on the degree to which existing project activities are able to deliver any or all of the components, highlighting any technical or institutional obstacles	Live & Learn - Live & Learn Environmental Education		NDMO UNDRR Fiji Met Mineral Resources Division (MRD) Ministry of Waterways (MoW) Ministry of Agriculture Ministry of Health
	Preparations for consultation Workshop and Presentation to Advisory Group	Initial Stakeholders Workshop Stakeholder's perception of the main opportunities and barriers to establishing a MHEWS Agree on a process for the development of a MHEWS, which identifies key partners and processes. Establish an Advisory Group of Key stakeholders	Live & Learn - Live & Learn Environmental Education		NDMO UNDRR Fiji Met Mineral Resources Division (MRD) Ministry of Waterways (MoW) Ministry of Agriculture Ministry of Health
	Development of Final Report and Roadmap	Pull together all information, undertake analysis and conduct write up of MHEWS roadmap	Live & Learn - Live & Learn Environmental Education		Live & Learn (contracted technical expert), with NDMO management sign off
	Development of M&E system for the Roadmap	Mobilise all resources and set baseline data and M&E plan for robust Monitoring Evaluation and Learning - for continuous improvement of MHEWS	Live & Learn - Live & Learn Environmental Education		Live & Learn - Contracted M&E expert TFL NDMO
	Road Map for NbS policy in Fiji	Undertake analysis on all activities included under analysis under NbS stock take and NbS Road Map	Live & Learn - Live & Learn Environmental Education		Live and Learn NDMO Ministry of Waterways (MoW)

Outcome	Output	Description
Enabling environment for evidence based, risk informed, inclusive Multi-Hazard Early Warning System (MHEWS) in Fiji		Fiji uses the Coalition for Disaster Resilient Infrastructure (CDRI) launched the Infrastructure Resilience Accelerator Fund (IRAF) under IRIS call to create enabling environment for MHEWS in Fiji
	Improved data availability and stakeholder coordination for MHEWS Roadmap in Fiji	All relevant stakeholders engaged to prepare for design and planning

Activities

Title	Description	Lead Participating Organization	Participating Organization	Other Organizations
joint stock take/gap analysis of existing forecasting and early warning systems in Fiji	Joint stock take/gap analysis of existing forecasting and early warning responsibilities and systems in Fiji. Determine the objectives for an effective MHEWS that reflects Fiji context needs. Advise on the degree to which existing project activities are able to deliver any or all of the components, highlighting any technical or institutional obstacles	Live & Learn - Live & Learn Environmental Education		NDMO TFL Fiji Met MRD MoW

Signature Indicators

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year	Linked Outcome / Output
No signature indicators available.												

Imported Fund Outcome / Output Indicators

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year	Linked Outcome / Output
IRAF OUTCOME 3 INDICATOR 1 (country systems)		Increase in Nb. of countries that have adopted enhanced disaster resilient and inclusive standards for infrastructure system development and post disaster recovery	CDRI IRAF annual report on direct support to countries	Capacity	Yearly	Country	Number	0	2022	40 countries have adopted enhanced disaster resilient and inclusive standards for infrastructure system development	2027	**Outcome**: IRAF OUTCOME 3 - Countries have increased access to knowledge and resources to increase the resilience and inclusivity of their existing and future critical infrastructure systems by 2030 **Output**: Output 3.1 SIDS are better equipped with knowledge and resources to increase the resilience and inclusivity of their critical infrastructure systems

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year	Linked Outcome / Output
IRAF SIDS OUTPUT 3.1 - INDICATOR 1 (governance & information)		Nb. of SIDS countries with enhanced DRI inclusive policies, plans, standards and/or enhanced DRI gender and age disagregated and open-source datasets	CDRI IRAF annual report IRIS impact monitoring reports	Capacity	Yearly	Country	Number	0	2022	20 SIDS countries with enhanced DRI inclusive policies, plans, standards and/or enhanced DRI gender and age disagregated and open-source datasets	2027	**Outcome**: IRAF OUTCOME 3 - Countries have increased access to knowledge and resources to increase the resilience and inclusivity of their existing and future critical infrastructure systems by 2030 **Output**: Output 3.1 SIDS are better equipped with knowledge and resources to increase the resilience and inclusivity of their critical infrastructure systems

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year	Linked Outcome / Output
IRAF SIDS OUTPUT 3.1 - INDICATOR 2 (advisory services)		Nb. of technical experts deployed to SIDS countries to support institution and people skill develoment in inclusive DRI	CDRI IRAF annual report IRIS impact monitoring reports	Capacity	Yearly	Country	Number	0	2022	30 deployments of technical expertise services to support institution building and people skill developpment in inclsuive DRI benefiting 10 countries	2027	**Outcome**: IRAF OUTCOME 3 - Countries have increased access to knowledge and resources to increase the resilience and inclusivity of their existing and future critical infrastructure systems by 2030. **Output**: Output 3.1 SIDS are better equipped with knowledge and resources to increase the resilience and inclusivity of their critical infrastructure systems

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year	Linked Outcome / Output
IRAF OUTCOME 3 - INDICATOR 2 (locally relevant knowledge)		Increase in Nb. of knowledge products and innovation that offer locally relevant solutions to address specific geographical vulnerabilities (SIDS, urban, mountains) or critical infrastructure vulnerabilities disseminated to countries	CDRI public website and DRI platform	Capacity	Yearly	Country	Number	0	2022	20 locally relevant solutions to address specific geographical vulnerabilities (SIDS, urban, mountains) or critical infrastructure vulnerabilities, disseminated through global and regional networks	2027	**Outcome**: IRAF OUTCOME 3 - Countries have increased access to knowledge and resources to increase the resilience and inclusivity of their existing and future critical infrastructure systems by 2030 **Output**: Output 3.1 SIDS are better equipped with knowledge and resources to increase the resilience and inclusivity of their critical infrastructure systems

Project Indicators

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year	Li O /
# of roadmaps / action plans for MHEWS and NbS approaches in Fiji		creation of enabling environment for MHEWS	evaluation of roadmap	Policy	Twice a year	Country	Number	0	2023	1	2024	
	No components available.											

Indicator Title	Component Title	Description	Means of Verification	Category	Cycle	Scope	Value Type	Baseline Value	Baseline Year	Target Value	Target Year	Li O /
# M&E systems in place to monitor , evaluate and apply lessons to MHEWS		Mobilization of robust M&E system to ensure continuous improvement and learning	operational M&E system	Capacity	Yearly	Country	Number	0	2023	1	2024	
	No components available.											

Risks

Event	Category	Level	Likelihood	Impact	Mitigating Measures	Risk Owner
Challenges exist at the policy level leading to financing gaps. While it is easy to survey and estimate the damage and losses post-disaster, it is often more difficult to demonstrate the "preventable or avoidable damages" that an effective early warning s	- Financial - Political - Operational - Regulatory	Medium	Possible	Moderate	Public finances should be allocated to transition from essential EWS (saving lives) to the next level of an effective EWS (saving lives and reducing damages, impacts and disruptions), especially given the evolving uncertainties of the climate and resulting cascading hazards	NDMO
At the technical level, innovation and new science needs to be championed. Tangible benefits come to fruition when multi-sectoral cooperation is fostered, which is sometimes difficult when forecasting uncertainties are misunderstood. Linking scientific ad	- Strategic - Operational	Low	Possible	Major	Technological innovations and scientific advancements are necessary and should be encouraged in order to recognize the inherent uncertainties in science around many hazard hotspots.	NDMO Live & Learn
Staff Turnover	- Organizational - Operational	High	Possible	Moderate	Capacity Building across the board	NDMO
Inclement Weather - Tropical Cyclones Fiji cyclone season – Nov to April – if there is an event then the support from NDMO will be affected as the whole office focus on response.	Operational	Medium	Likely	Moderate	Make provisions for less deliverables and focus during height of cyclone season	
Competing priorities within implementing/partner agencies	Operational	Low	Possible	Minor	Manage and monitor project work plan and identification of key focal points within agencies to work closely with project team and technical advisor	Live & Learn
Sexual Exploitation and Abuse (SEAH)	- Social and Environmental - Political - Operational	High	Unlikely	Major	Induction, Awareness and Training for the Prevention of SEAH to also address inclusion in project implementation	Live & Learn

Cyber Security: As automated systems increasingly become With the 24 hours a day, 7 days a week (24/7) forecast and warning systems, computer security becomes of paramount concern. This means that data leaks and cyber-attacks can have major consequences f	• Social and Environmental • Strategic • Political • Operational	Medium	Unlikely	Major	This risk requires cyber security and privacy protection to be put in place on all EWS systems. Increased commercial use of data, and use of community vulnerability data in impact-based warnings demand an ethically sound approach to processing and storing information.	NDMO Live & Learn
Network coverage presents significant opportunities and challenges with regards to EWS.	• Social and Environmental • Strategic • Political • Operational	Medium	Possible	Moderate	Expansion of network coverage to include 100% of population. (1) Enhance the FMS observation network and forecasting systems' underlying Information and Communication Technology (ICT). (2) Systematically eliminate 'black spots' in Fiji's weather, climate, hydrological and ocean observing networks. (3) Collaborate with research partners in the Academic Sector to bring the latest scientific developments in meteorology, hydrology and oceanography to Fiji and the region Undertake applied research projects, in collaboration with end-users of EWS services to better meet their needs	NDMON Live & Learn
Collective learning is needed to ensure that responses to early warnings are informed more by EWS and less by recent experiences as some disasters are beyond living memory, while other more	• Social and Environmental • Strategic • Political • Regulatory	Medium	Possible	Moderate	Trust and community engagement is imperative to ensure that life-saving early action will be triggered through people-centred early warnings.	NDMO Live & Learn
Differing framework between ministries and stakeholders on multi-hazards	• Operational	Medium	Possible	Moderate	Harmonize operational procedures for MHEWS	NDMO
Lack of or unserviceable observation networks (Manual, Automatic, Ocean)	• Operational	Medium	Possible	Moderate	Acquire durable and advance observation network	NDMO Fiji Met
Availability of technical expertise in the field of risk assessment and developing early warning system	• Strategic • Operational	Medium	Possible	Major	Equip and train local personnel	NDMO Live & Learn
Communicating risk information to disability group and gender groups	• Social and Environmental • Political	High	Unlikely	Major	Inclusive MHEWS Attention to socio-cultural aspects and extensive community-based volunteer and communications network that expedite the delivery of warning messages will be critical to the success of MHEWS.	NDMO
Lack of Political will	• Strategic • Political	Medium	Possible	Major	It should be ensured that there is strong political recognition of the institutional capacities and the need for the establishment of a coordinated structure and process for the MHEWS by the Fiji Government, relevant ministries and donors	NDMO GoF

Budget by UNSDG Categories: Over all

Budget Lines		Live & Learn (7%) *	Total
1. Staff and other personnel		$70,000.00	$70,000.00
2. Supplies, Commodities, Materials		$10,000.00	$10,000.00
3. Equipment, Vehicles, and Furniture, incl. Depreciation		$10,000.00	$10,000.00
4. Contractual services		$197,000.00	$197,000.00
5. Travel		$12,290.00	$12,290.00
6. Transfers and Grants to Counterparts		$140,000.00	$140,000.00
7. General Operating and other Direct Costs		$28,000.00	$28,000.00
Project Costs Sub Total		**$467,290.00**	**$467,290.00**
8. Indirect Support Costs		$32,710.30	$32,710.30
Total		**$500,000.30**	**$500,000.30**

Budget by UNSDG Categories: 2024

Budget Lines	Fiscal Year *	Description	Live & Learn (7%) *	Total
1. Staff and other personnel	2024		$70,000.00	$70,000.00
2. Supplies, Commodities, Materials	2024	Communications & Visibility	$10,000.00	$10,000.00
3. Equipment, Vehicles, and Furniture, incl. Depreciation	2024	Laptops & Vehicle Maintenance	$10,000.00	$10,000.00
4. Contractual services	2024	Technical Advisor & Technical officer	$197,000.00	$197,000.00
5. Travel	2024		$12,290.00	$12,290.00
6. Transfers and Grants to Counterparts	2024	Consultations & workshops	$140,000.00	$140,000.00
7. General Operating and other Direct Costs	2024		$28,000.00	$28,000.00
Project Costs Sub Total			**$467,290.00**	**$467,290.00**
8. Indirect Support Costs			$32,710.30	$32,710.30
Total			**$500,000.30**	**$500,000.30**

Budget by UNSDG Categories: 2025

Budget Lines	Fiscal Year *	Description	Live & Learn (7%) *	Total
1. Staff and other personnel	2025			$0.00
2. Supplies, Commodities, Materials	2025			$0.00
3. Equipment, Vehicles, and Furniture, incl. Depreciation	2025			$0.00
4. Contractual services	2025			$0.00
5. Travel	2025			$0.00
6. Transfers and Grants to Counterparts	2025			$0.00
7. General Operating and other Direct Costs	2025			$0.00

Budget Lines	Fiscal Year *	Description	Live & Learn (7%) *	Total
Project Costs Sub Total			**$0.00**	**$0.00**
8. Indirect Support Costs			$0.00	$0.00
Total			**$0.00**	**$0.00**

Budget by UNSDG Categories: 2026

Budget Lines	Fiscal Year *	Description	Live & Learn (7%) *	Total
1. Staff and other personnel	2026			$0.00
2. Supplies, Commodities, Materials	2026			$0.00
3. Equipment, Vehicles, and Furniture, incl. Depreciation	2026			$0.00
4. Contractual services	2026			$0.00
5. Travel	2026			$0.00
6. Transfers and Grants to Counterparts	2026			$0.00
7. General Operating and other Direct Costs	2026			$0.00
Project Costs Sub Total			**$0.00**	**$0.00**
8. Indirect Support Costs			$0.00	$0.00
Total			**$0.00**	**$0.00**

Performance-based Tranches Breakdown

Tranche		Total
Tranche 1	Live & Learn (20%) $100,000.00	$100,000.00
Tranche 2	Live & Learn (50%) $250,000.00	$250,000.00
Tranche 3	Live & Learn (30%) $150,000.00	$150,000.00
		$500,000.00

Results based budget

Outcome *	Output *	Activity *	Agency *	Budget (USD) *
IRAF OUTCOME 3 - Countries have increased access to knowledge and resources to increase the resilience and inclusivity of their existing and future critical infrastructure systems by 2030			**Sub Total**	**$112,000.00**
	Output 3.1 SIDS are better equipped with knowledge and resources to increase the resilience and inclusivity of their critical infrastructure systems		**Sub Total**	**$112,000.00**
		Mapping, gap analysis and review of existing Early Warning Systems (EWS) in Fiji	Live & Learn (7%)	$28,000.00
		Preparations for consultation Workshop and Presentation to Advisory Group	Live & Learn (7%)	$14,000.00
		Development of Final Report and Roadmap	Live & Learn (7%)	$28,000.00
		Development of M&E system for the Roadmap	Live & Learn (7%)	$14,000.00
		Road Map for NbS policy in Fiji	Live & Learn (7%)	$28,000.00
Enabling environment for evidence based, risk informed, inclusive Multi-Hazard Early Warning System (MHEWS) in Fiji			**Sub Total**	**$28,000.00**

	Improved data availability and stakeholder coordination for MHEWS Roadmap in Fiji	**Sub Total**	**$28,000.00**
	joint stock take/gap analysis of existing forecasting and early warning systems in Fiji	Live & Learn (7%)	$28,000.00
Total			**$140,000.00**

Programme Outcome Costs

Outcome	Output	Activity	Implementing Agent	Time Frame								
				2024				**2025**				**2026**
				1	**2**	**3**	**4**	**1**	**2**	**3**	**4**	**1**
IRAF OUTCOME 3 - Countries have increased access to knowledge and resources to increase the resilience and inclusivity of their existing and future critical infrastructure systems by 2030												
	Output 3.1 SIDS are better equipped with knowledge and resources to increase the resilience and inclusivity of their critical infrastructure systems											
		Mapping, gap analysis and review of existing Early Warning Systems (EWS) in Fiji										
			Live & Learn	☑	☑	☐	☐	☐	☐	☐	☐	☐
		Preparations for consultation Workshop and Presentation to Advisory Group										
			Live & Learn	☑	☑	☑	☐	☐	☐	☐	☐	☐
		Development of Final Report and Roadmap										
			Live & Learn	☑	☑	☑	☐	☐	☐	☐	☐	☐
		Development of M&E system for the Roadmap										
			Live & Learn	☑	☑	☑	☐	☐	☐	☐	☐	☐
		Road Map for NbS policy in Fiji										
			Live & Learn	☑	☑	☑	☐	☐	☐	☐	☐	☐
Enabling environment for evidence based, risk informed, inclusive Multi-Hazard Early Warning System (MHEWS) in Fiji												
	Improved data availability and stakeholder coordination for MHEWS Roadmap in Fiji											
		joint stock take/gap analysis of existing forecasting and early warning systems in Fiji										
			Live & Learn	☑	☑	☐	☐	☐	☐	☐	☐	☐