

Annex 6b

Environmental and Social Safeguards Report



Enhancing Climate Information and Knowledge Services for resilience in 5 island countries of the Pacific Ocean

Environmental and Social Safeguards
(ESS) for Cook Islands, Niue, Palau,
Republic of the Marshall Islands and
Tuvalu

August 2019, updated in October 2020

About Enveco

Enveco provides expert advice on environmental economics, sustainability and carbon credits to a broad range of individuals, companies and government agencies. We are committed to high-quality services and ensure the most appropriate solutions for our clients' challenges.

Authorship

This document was written by Chris Andrew. For further information email chris@enveco.co.nz or phone + 63 (0) 966 879 6356.

Citation

Andrew, C. (2019). Enhancing Climate Information and Knowledge Services for Resilience. Environmental and Social Safeguards for the Cook Islands, Niue, Palau, Republic of the Marshall Islands and Tuvalu. Enveco Ltd, New Zealand.

Disclaimer

Although every effort has been made to ensure the accuracy of the material and the integrity of the analysis presented in this proposal, Enveco Ltd accepts no liability for any actions taken based on its contents.

Any view or opinions expressed do not necessarily represent the official view of Enveco. The information in this proposal and any accompanying documentation is accurate to the best of the knowledge and belief of Enveco.

While the Consultant has exercised all reasonable skill and care in the preparation of this proposal, Enveco does not accept any liability in contract or otherwise for any loss, damage, injury or expense, whether direct, indirect or consequential, arising out of the provision of information in this proposal.

© Copyright 2019 Enveco Ltd. All rights reserved.



Enveco Limited

1 Lily street, Pasig 1604, Metro Manila, Philippines
+63 (0)966 879 6356 www.enveco.co.nz

Table of Contents

List of Abbreviations	7
1 Overview	8
1.1 Introduction	8
1.2 Programme Results	8
1.3 Purpose of Assessment	9
2 Background	10
2.1 Policy, Legal and Administrative Framework	10
2.2 Country Context	11
2.3 Summary of Proposed Interventions	12
3 Environmental and Social Safeguards	14
3.1 Approach.....	14
3.2 Anticipated Environmental Impacts and Mitigation Measures	14
3.2.1 Environmental and Social Action Plan (ESAP) Matrix	14
3.2.2 Cook Islands	16
3.2.3 Niue	17
3.2.4 Palau	18
3.2.5 Republic of the Marshall Islands	18
3.2.6 Tuvalu.....	18
3.3 Assessment of Risk Category	20
3.4 Analysis of Alternatives	20
3.5 Information Disclosure, Consultation and Participation	21
3.6 Grievance Redress Mechanism	22
4 Conclusions and Recommendations.....	24
References	26
Appendix One	27

List of Abbreviations

GCF - Green Climate Fund

UNEP – United Nations Environment Programme

SIDS – Small Island Developing States

RMI – Republic of the Marshall Islands

SPREP – Secretariat of the Pacific Regional Environment Programme

EE – Executing Entity

ESERN – Environmental, Social and Economic Review Note

ESS – Environmental and Social Safeguards

ESIA – Environmental and Social Impact Assessment

ESMP – Environmental and Social Management Plan

ESAP – Environmental and Social Action Plan

ESES – Environmental, Social, and Economic Sustainability

ICCAI – International Climate Change Adaptation Initiative

PCCSP – Pacific Climate Change Science Program

CliDE – Climate Data for the Environment

CIMS – Cook Islands Meteorological Service

AWS – Automatic Weather Station

UNFCCC – United Nations Framework Convention on Climate Change

CRS – Cotton Region Shelters

GRM – Grievance Redress Mechanism

GFP – Grievance Focal Point

PMU – Programme Management Unit

BoM – Bureau of Meteorology (Australia)

TPWD – Tonga Public Works Department

1 Overview

1.1 Introduction

Since the beginning of the 1950s, natural disasters in the Pacific region have affected over 9 million people, causing 9,811 reported deaths (World Bank, 2012). Small Island Developing States (SIDS) across the Pacific Ocean are threatened by an increasing frequency and/or intensity of climate-related hazards such as tropical cyclones, coastal storm surges and droughts, which affect livelihoods, infrastructure and ecosystems (SPREP, 2016). Sea level rise exacerbates these damages through stronger coastal storm surges.

This Green Climate Fund (GCF) and United Nations Environment Programme (UNEP) programme proposes to enhance climate information and knowledge services in Pacific SIDS. The aim is to make the region more resilient to climate-related impacts and hazards. Better climate-related information and knowledge improve security and economic livelihoods through appropriate adaptation interventions to address climate change threats, requiring tailored climate information and people-centred multi-hazard early warning services covering oceans and islands for all sectors.

The proposed Programme aims to provide climate services for five vulnerable Pacific Island Countries by using a multi-country approach. The Cook Islands, Niue, Palau, Republic of the Marshall Islands (RMI) and Tuvalu are highly vulnerable to natural hazards. The Programme aims to build capacity to provide climate and knowledge services for governments, sectors and local communities. UNEP will convene several technical partners and Executing Entities.¹

1.2 Programme Results

The proposed GCF Programme will develop strategic frameworks for sustainable climate information services supported by institutional, legal, policy and planning, and private sector engagement. The proposed Programme involves five island countries, the Cook Islands, Niue, Palau, the Republic of the Marshall Islands (RMI) and Tuvalu, with the following four Results areas:

- Result 1: Strengthened delivery model for climate information services and MHEWS covering oceans and islands.
- Result 2: Strengthened observations, monitoring, modelling and prediction of climate and its impacts on ocean areas and islands.
- Result 3: Improved community preparedness, response capabilities and resilience to climate risks.
- Result 4: Enhanced regional knowledge management and cooperation for climate services and MHEWS.

¹ UNEP Environmental, Social and Economic Review Note (ESERN).

Results 1 and 4 are purely policy and information based and will have no physical impacts to be considered. Results 2 and 3 include some infrastructure building on several islands in Tuvalu, and the installation/deployment of instrumentation of varying types in various locations across the five countries. These interventions have been assessed under GCF and UNEP guidelines. Social safeguards have been assessed for all relevant components.

1.3 Purpose of Assessment

This Environmental and Social Safeguards (ESS) Screening aims to identify the risk category that the components of the proposed programme will fall into. The scope and depth of the environmental and social assessment is proportional to the level of risks and impacts determined in the screening as per Environmental and Social Safeguards (ESS) standards and GCF policies. The potential categories defined by these policies are:

- **Category A activities**, which are likely to have **significant environmental and social impacts**, including transboundary risks and impacts: a full and comprehensive Environmental and Social Impact Assessment (ESIA) and Environmental and Social Management Plan (ESMP) is required.
- **Category B activities**, with **potential environmental or social impacts** that may be avoided, reduced, or mitigated, require a fit-for-purpose ESIA and ESMP, narrower in scope describing the potential impacts, mitigation, monitoring and reporting measures.
- **Category C activities**, which have **no expected significant environmental and social impacts** and therefore may not require any assessments, although a pre-assessment or screening confirms that the activities are indeed in Category C (GCF, 2018).

An Environmental, Social and Economic Review Note (ESERN) initial screening carried out by UNEP has indicated that this programme is likely to be categorised as C. The ESERN checklist can be found in Annex 6c.

2 Background

2.1 Policy, Legal and Administrative Framework

This section discusses the national and local legal and institutional framework within which the environmental assessment has been carried out for the five countries. It also identifies relevant international environmental agreements to which the country is party.

This ESS is based around GCF and UNEP policy frameworks, which are compliant with existing environmental legislation of the five countries involved.

UN Environment's Policy Framework for Environmental, Social, and Economic Sustainability (ESES) is their basis for identifying and avoiding or mitigating environmental, social and economic risks, and also for identifying opportunities to enhance positive associated outcomes. The ESES Framework focuses on safeguard requirements (UNEP, 2015).

GCF policy broadly overlaps that of UNEP and requires that all GCF-supported activities commit to the following in terms of ESS risks and impacts:

- Avoid, and where avoidance is impossible, mitigate adverse impacts to people and the environment;
- Enhance equitable access to development benefits; and
- Give due consideration to vulnerable and marginalised populations, groups, and individuals, local communities, indigenous peoples, and other marginalized groups of people and individuals that are affected or potentially affected by GCF-financed activities (GCF, 2018).

As per GCF guidelines, activities adherent to the proposed Programme have been screened to assign the appropriate risk category, subjected to due diligence and oversight, consistent with environmental and social management systems and the GCF ESS standards (GCF, 2018). Accredited entities² need to ensure that adequate management systems, processes, and capacities are in place to manage environmental and social risks and impacts. When screening activities, all risks and impacts were considered. These included direct and indirect, induced, long-term and cumulative impacts, and potential environmental risks and social risks involved with the activities.

All five countries involved in this Programme are signatories to the Paris Agreement of 2015, which has a central aim of strengthening the global response to the threat of climate change (UNFCCC, 2019). Each member country pledges to work towards mitigation of global warming through 'Nationally Determined Contributions', which are the individual programmes put forward by each country party to the Agreement.

² An entity that is accredited by the GCF Board in accordance with the Governing Instrument and relevant Board Decisions. The Accredited Entity needs to manage and oversee the funding proposal and programme implementation process until its conclusion (GCF, 2018).

Additionally, these five countries are parties to the Inform project, Environmental Information for Decision Making, executed by SPREP and funded by the Global Environment Facility (GEF) through UNEP. This project, in 15 Pacific island countries, aims to build frameworks within which climate and weather information can be collected, monitored, analysed and shared (SPREP, 2019). This data will be used for forecasting and environmental planning purposes, as well as to meet national and international reporting obligations, such as those required by the Paris Agreement and the Rio Conventions.

2.2 Country Context

The five countries are Small Island Developing States (SIDS) in the Pacific Ocean. Geologically, they vary in type from chains of low coral atolls and sand islands to large coral islands and hilly, volcanic islands. All are subject to the extremes of Pacific tropical cyclones and severe rain events (Britannica, 2019).

Many of the inhabited islands face difficulties in the disposal of landfill waste due to remote locations and small land mass, low height above sea level, and rocky makeup. Proper treatment of human waste is also limited. The Marshall Islands contain former US nuclear test sites that remain uninhabitable (CIA, 2019).

The five countries are independently governed. Palau and the Republic of the Marshall Islands (RMI) operate under Compacts of Free Association with the USA, and Niue and the Cook Islands fall under the constituency of New Zealand. Tuvalu is an independent member of the Commonwealth. RMI, Palau, and Tuvalu are members of the United Nations. All five countries rely heavily on foreign aid to support their economies, which are largely based around tourism, fishing, and subsistence farming, with some commercial crops, such as copra, viable in some areas (CIA, 2019).

Under the International Climate Change Adaptation Initiative (ICCAI), assistance is being given to vulnerable countries in the Asia-Pacific region to meet high priority climate change adaptation needs (Martin, 2014). Fifteen countries are involved, including the five countries in the proposed Programme.

The Pacific Climate Change Science Program (PCCSP) is one of the ICCAI project components, improving understanding of the physical climate system to inform effective adaptation (BoM, 2019). CliDE (Climate Data for the Environment) is a software-based climate data management system developed to provide a user-friendly, low cost means for vulnerable countries to maintain a central database of climate records. It utilises free, open-source software with no on-going licencing or update costs.

The Secretariat of the Pacific Regional Environment Programme (SPREP) project known as Inform is designed to help Pacific islands have reliable access to their own national datasets for environmental information, as well as a process and guide for information use standards (SPREP, 2019).

2.3 Summary of Proposed Interventions

All five countries will gain Dual-polarisation X-band Doppler Weather Radar units that will greatly increase weather forecasting and real-time monitoring of weather event intensity. Land-based observation stations will be upgraded or installed to strengthen the monitoring network towards compliance with the WMO Global Basic Observing Network (GBON) standards.

The interventions in the **Cook Islands** include the refurbishment of the offices of the Cook Islands Meteorological Service (CIMS). This includes the installation of a renewable energy system and the upgrade of information technology, as well as workstation and air conditioning upgrades.

The land-based observation network will be expanded and upgraded towards compliance with the WMO Global Basic Observing Network (GBON) standards. New forecast computers will be installed in four locations and connected to a dedicated local server.

Remote information gathering will be improved by the installation of portable tidal gauges and wave buoys. Water quality loggers will also be employed. Untethered oceanographic monitoring devices will be deployed to autonomously collect and relay information on ocean conditions and temperatures etc.

The interventions in **Niue** include upgrading the land-based observation network towards compliance with the WMO Global Basic Observing Network (GBON) standards and integrating the Hanan Airport AWS with the CliDE network.

The ocean observation network will be increased with the addition of a pair of High Frequency (HF) radar units, 4 wave buoys and an environmental buoy, 2 UAVs, and 4 water quality loggers. Four forecast computers will be commissioned and connected to a dedicated local server. The HF radar units collect real-time data on waves and surface currents.

Public awareness campaigns will be launched, with compass boards and sign posts being erected in 7 and 14 locations, respectively, to help the local population understand the directions from which reported weather systems will approach, and improve accuracy of verbal reports from locals.

Land-based observation stations in **Palau** will be upgraded towards compliance with the WMO Global Basic Observing Network (GBON) standards.

Existing wave buoys in the main Southern Lagoon will be supported to enable their continued use for the next 3 years, and ocean monitoring capability will be increased with new wave profilers and pressure sensors, providing information that will also feed into a new ocean monitoring portal, which will bring in data from global networks to provide climate and meteorological information towards weather forecasting and early warning systems.

Their National Emergency Management Office (NEMO) will obtain a multi-purpose boat plus accessories for use in evacuation, search and rescue, access to disaster-affected areas, humanitarian assistance, and relief efforts, etc.

The Bureau of Marine Transport will establish a maritime safety information network to fulfil the International Hydrographic Origination's Safety of Life at Sea Convention (SOLAS). This involves the installation and commissioning of a dedicated radio network capable of receiving and broadcasting across several frequency bands.

RMI will gain new or upgraded weather observation stations on 24 outer islands/atolls to extend its land-based observation network towards compliance with the WMO Global Basic Observing Network (GBON) standards. Sea temperature and coral health monitoring equipment will add to national ocean monitoring information. This national information will feed a new ocean monitoring portal, which will also bring in data from global networks to provide climate and meteorological information towards weather forecasting and early warning systems.

A public education and education campaign will be launched, aimed at persons with disabilities and their families and communities, focussing on Disaster Early Warning systems. Education Tool Kits will be sent out to the 23 local governments to assist with this campaign.

Emergency Response Teams (ERTs) will receive resource kits to help them act on Early Warning information, and training aids, equipment to enable preparedness, and satellite communication equipment for use during disaster events.

The interventions in **Tuvalu** include upgrading the land-based observation network towards compliance with the WMO Global Basic Observing Network (GBON) standards. This includes the construction of small meteorological offices on five outer islands, the installation of a tidal gauge and four water quality loggers, and anchored wave buoys in two lagoons. An Unmanned Autonomous Vehicle (UAV) will be deployed to gather marine observations. New Automatic Weather Stations (AWS) will feed information into the country's observation network, which will be integrated into the CliDE database.

Communications between Tuvalu's islands will be upgraded for greater coverage, and resilience during disaster events. Very Small Aperture Terminal (VSAT) satellite communications systems will be installed on 8 islands to obtain observation data during severe weather. Forecast ability will be improved with the addition of four specialized computers with a dedicated local server.

3 Environmental and Social Safeguards

3.1 Approach

This section identifies the potential positive and negative direct and indirect impacts of programme activities to physical, biological and socioeconomic spheres. They range from occupational health and safety hazards and community health issues to impacts on livelihoods. Mitigation measures and any residual negative impacts that cannot be mitigated will be highlighted and any opportunities for enhancement explored.

3.2 Anticipated Environmental Impacts and Mitigation Measures

As the following country summaries and Environmental and Social Action Plan (ESAP) show, the anticipated negative impacts of this programme are low in both risk and significance when industry best practice is followed in the refurbishment, construction and equipment installation phases of the programme. Professional oversight should be engaged to ensure best practice is followed. Proper planning and management of all generated waste streams must be undertaken. Relevant health and safety guidelines must be followed for all physical interventions. The value of the improvements to climate information systems and community resilience means that the overall environmental and social impacts of the programme will be positive.

3.2.1 Environmental and Social Action Plan (ESAP) Matrix³

Risk Summary	Risk Significance*	Mitigation Measures	Person/Party Responsible	Implementation Schedule	Outputs
Landfill contamination from construction/refurbishment waste streams	2	Waste streams to be separated and disposed of to proper industry standards, recyclable or reusable materials to be properly directed. Any hazardous waste to be sent to appropriate landfill or disposal facility	Project Manager, Construction Supervisor	During construction works/renovations	No inappropriate waste sent to landfill, all potentially harmful waste safely disposed of.
Water contamination from construction site runoff	2	Potential runoff to be contained or redirected to protect waterways, hazardous waste to be managed and contained. No earthworks or vegetation removal	Project Manager, Construction Supervisor	During construction works/renovations	No contamination of waterways, groundwater or drinking water.

³ The cost of carrying out the ESAP measures has been included in the Monitoring & Evaluation budget.

		beyond the minimum necessary.			
Air pollution from decommission of old aircon units	2	Refrigerant to be removed from units and recycled/disposed of appropriately	Project Manager, Contractor	During decommissioning of aircon units	No refrigerants released to atmosphere.
Ecosystem disturbance from wave buoy anchor blocks	1	Anchor sites to be selected for least impact.	Contract divers	During installation of wave buoys	No long term seabed disturbance, no significant short term impact on ecosystems.
Health and safety issues for workers, especially during construction/renovation work and underwater work	1	Health and safety requirements to be written into contracts. Project manager to monitor compliance	Project manager, contractors	During all phases of employment	All health and safety rules followed to minimise risk to workers.
Displacement of local populace	1	All land-use components to utilise government owned land without need to relocate occupants, legal or otherwise.	Project manager, Government Liaison	During planning phase through to construction	No displacement of any persons.
Potential for women to be inequitably treated or disadvantaged during decision making and employment opportunities. Programme interventions that are not gender responsive could also exacerbate existing gender inequality and disadvantage women	2	Any potential of gender inequality to be identified in Gender assessment and mitigated with Gender Action Plan.	Gender Expert, Project Manager	From Planning phase through to implementation	Gender mainstreaming throughout the Programme and ensuring the inclusion of specific gender-responsive interventions.

*Risk significance key:

1 (Negligible) - Negligible or no adverse impacts on communities, individuals, and/or environment.

2 (Slight) - Very limited impacts in terms of magnitude (e.g. small affected area, very low number of people affected) and duration (short), may be easily avoided, managed, or mitigated.

3 (Moderate) - Impacts of low magnitude, limited in scale (site-specific) and duration (temporary), can be avoided, managed and/or mitigated with relatively uncomplicated accepted measures.

4 (Severe) - Adverse impacts on people or environment of medium to large magnitude, spatial extent and duration more limited than level 5 (e.g. predictable, mostly temporary, reversible). The potential risk impact may affect the human rights, lands, natural resources, territories, and traditional livelihoods of indigenous peoples are to be considered at a minimum potentially severe.

5 (Critical) - Significant adverse impacts on people or environment. Adverse impacts high in magnitude and/or spatial extent and duration; areas impacted include areas of high value and sensitivity; adverse impacts to rights, lands, resources and territories; significant displacement or resettlement; significant quantities of greenhouse gas emissions; impacts may give rise to significant social conflict

3.2.2 Cook Islands

The main intervention in Cook Islands is the upgrade of technology and workstations in the CIMS offices. The replacement of office furniture and fitment of new air conditioning units will improve the work environment of the staff, and a 25kW renewable energy system of solar photovoltaic (PV) panels and storage batteries will be installed, providing clean power. Updated computer systems and office technology will also be installed, including the server for the new forecast computer network.

Existing fittings and technology should be directed into appropriate waste streams, including recycling and upcycling where possible. This will reduce the environmental and social impacts of this refurbishment, while the installation of the renewable energy system allows a reduction in running costs and associated impacts. Installation of the PV system and storage batteries is considered low impact, and the batteries are recyclable at end-of-life.

The proposed installation of tidal gauges is expected to cause no significant impacts. They will be installed in Penrhyn and Pukapuka to gather tidal information in order to create accurate tide charts for the area. Certified experts will be contracted for this work.

The proposed weather radar system, a dual-polarized X-band doppler radar unit, is compact and easily relocatable. No adverse impacts are expected with the installation of this unit.

Further oceanographic and meteorological data will be collected using UAVs, autonomous long-range wind and solar powered devices. One USV will also be deployed, a higher spec model carrying more instrumentation to gather and summarise ocean information, including climate parameters, temp, bathymetry, biomass, and over time deep ocean monitoring.

Additional monitoring instrumentation including an environmental buoy and four wave buoys, six water quality loggers, and the network of four forecast computers are also not expected to involve adverse impacts. The wave buoys will provide necessary maritime information and record significant weather events. The anchors required will cause localised change to the seabed in the short term but will provide a substrate for the local ecosystem over time. The installation will be carried out by certified experts with appropriate safety measures in place.

Other environmental impacts are limited to the shipping of the devices and support equipment, and air travel of the certified technicians that will set up the systems. The base stations will be set up on government property. According to our best information there are no objects or locations of cultural heritage value on the intended sites. The ownership of the land in question is not disputed, and there are no illegal occupants on site. The participating SIDS have small close-knit communities, illegal settlers are not a common problem in these countries.

3.2.3 Niue

The proposed interventions for Niue include a hardware update to improve Climate Data for the Environment (CliDE) services. CliDE is a software-based climate data management system designed for the use of Pacific SIDS (Martin, 2014). Data feeds from existing AWS will be connected, feeding real-time data into the CliDE system.

Further oceanographic and meteorological data will be collected using UAVs, autonomous long-range wind and solar powered devices. The base stations will be set up on government property. According to our best information there are no objects or locations of cultural heritage value on the intended sites. The ownership of the land in question is not disputed, and there are no illegal occupants on site. The participating SIDS have small close-knit communities, illegal settlers are not a common problem in these countries.

Additional monitoring instrumentation including an environmental buoy and four wave buoys will provide necessary maritime information and record significant weather events. The anchors for the buoys will cause localised change to the seabed in the short term but will provide a substrate for the local ecosystem over time.

The selection of anchor locations should include site examination to ensure that no significant ecological structures will be affected. This may be done by visual inspection, or by using existing site knowledge, for example the site may be known to have a uniform sandy or muddy bed.

The HF radar system has a pair of coastal masts with small physical footprints. These installations are not expected to have significant negative impacts, and the real-time data on waves and surface currents is of high value for maritime meteorology.

The proposed weather radar system, a dual-polarized X-band doppler radar unit, is compact and easily relocatable. No adverse impacts are expected with the installation of this unit.

Physical compass points in the form of signage will be installed in 14 communities to provide better awareness within communities of which direction neighbouring islands are, and hence which direction incoming weather systems are approaching from. Various other disaster awareness and preparedness programmes will be run in vulnerable communities.

These interventions all involve low or no negative impacts. New signage will not require displacement of any authorised or unauthorised occupants, and according to our best information there are no objects or locations of cultural heritage value on the intended sites.

Positive impacts are generated by improved information systems and community preparedness and have potential to save lives and reduce the physical impacts of extreme climate events.

3.2.4 Palau

The proposed interventions for Palau include the installation of automatic rain gauges, with data loggers, in nine locations, to improve the range of observations and data availability. Also proposed is the deployment of nearshore wave gauges with wave and current direction measurement capability to provide data for the development of a wave inundation model for the islands of Palau.

The installation of this equipment is not expected to cause any negative impacts. According to our best information there are no objects or locations of cultural heritage value on the intended sites. No displacement of authorised or unauthorised occupants will result. All devices, both land and water based, will be installed by certified experts with appropriate safety measures in place.

The proposed weather radar system, a dual-polarized X-band doppler radar unit, is compact and easily relocatable. No adverse impacts are expected with the installation of this unit.

The establishment of the SOLAS radio network will use existing buildings to house the equipment and requires the erection of four radio antennas. Whether roof or mast mounted, little impact is expected from this intervention.

3.2.5 Republic of the Marshall Islands

The proposed interventions for RMI include the development of ocean monitoring capabilities for the area around Majuro, the atoll with the largest settlement. An environmental buoy anchored in Majuro Lagoon will provide tide, current, wave and temperature measurements. In addition, sea surface temperature sensors are proposed for ten atolls. The installation of these devices will be carried out by certified experts with appropriate safety measures in place.

The proposed weather radar system, a dual-polarized X-band doppler radar unit, is compact and easily relocatable. No adverse impacts are expected with the installation of this unit.

Weather observation stations for each of 24 atolls/islands will expand available data using new equipment and part-time observers. The installation of these stations and devices is not expected to cause any negative impacts. They will be installed on government land in raised cabinets known as Cotton Region Shelters (CRS). According to our best information there are no objects or locations of cultural heritage value on the intended sites. No displacement of authorised or unauthorised occupants will result.

3.2.6 Tuvalu

The main intervention proposed for Tuvalu is the establishment of new meteorological offices on each of five outer islands in Tuvalu. These are necessary infrastructure for the observation

and monitoring of local climate and meteorological conditions. The buildings⁴ are proposed to be single level with a footprint of 108 m². Construction type is concrete block and timber frame with iron roofing. The impact risks involved are low and relate to environmental impacts from construction and the transportation of materials, and social risks relating to the location of the sites and occupational health and safety.

Mitigation of environmental impact risk will be a matter of following industry best practice during the construction process. The compact size of the proposed offices (Fig 1) indicates an uncomplicated building process with minimal vegetation removal and earthworks required. All physical components are to be located on government land. According to our best information there are no objects or locations of cultural heritage value on the intended sites. The ownership of the land in question is not disputed, and there are no illegal occupants on site.

The discharge of contaminants into waterways through drainage systems is a potential risk on a building site. This risk is avoidable through proper management, and oversight of workers. Building materials should be chosen and delivered with appropriate care for the local environment, and waste should be removed to suitable landfill as necessary. Proper occupational health and safety standards should be met during the construction. Professional oversight should be engaged to ensure best practice is followed.

The proposed weather radar system, a dual-polarized X-band doppler radar unit, is compact and easily relocatable. No adverse impacts are expected with the installation of this unit.

The proposed installation of a tidal gauge at Niulakita is expected to cause no significant impacts. It will be installed to gather tidal information in order to create accurate tide charts for the area. The installation will be carried out by certified experts with appropriate safety measures in place.

The proposed installation of wave buoys in selected lagoon areas is expected to cause no significant impacts in the short or long term. They will provide necessary maritime information and record significant weather events. The anchors required will cause localised change to the seabed in the short term but will provide a substrate for the local ecosystem over time. The installation will be carried out by certified experts with appropriate safety measures in place.

The selection of anchor locations for these buoys should include site examination to ensure that no significant ecological structures will be affected. This may be done by visual inspection, or by using existing site knowledge, for example the site may be known to have a uniform sandy or muddy bed.

⁴ Proposed floorplan included in Appendix One.

3.3 Assessment of Risk Category

Across all the potential impacts noted above, none are expected to have significant environmental and social impacts. The construction components are not of significant size and do not raise flags by their nature or location, land clearance and earthworks will not be extensive. No special mitigation will be required for any of the interventions described beyond industry best practice. All land use is limited to government land and will displace no authorised or unauthorised occupants. No other adverse social impacts are forecast and no gender related implications are anticipated. According to our best information there are no objects or locations of cultural heritage value on the intended sites.

Upon evaluation of the checklist from the initial screening done for UNEP in March and April of 2018, included in Annex 6c, the only variation from the original assessment is in Safeguard Standard 7, Cultural Heritage. The variation is that some land clearance and earthworks will be necessary, in Tuvalu, for the five new Met office sites. No displacement of any occupants will be required. No environmentally or culturally sensitive or protected environments will be significantly affected.

This construction also relates to an additional safeguard noted for GCF funded programmes, per the design and construction of new buildings. However, the size and location of these new buildings means that the impacts relating to earthworks and construction are not likely to be significant or long-lasting, provided that industry best practice is followed during their construction. Building materials should be chosen and delivered with appropriate care for the local environment, and waste should be removed to suitable landfill, cleanfill, or reprocessing facilities as necessary. Proper occupational health and safety standards should be met during the construction. Professional oversight should be engaged to ensure appropriate planning is carried out and best practice is followed.

This programme can therefore be rated as Category C as per GCF policies and no ESIA or ESMP will be required, although some recommendations will be made in the appropriate section of this report. Category C activities have no significant expected environmental and social impacts and, in this case, do not require any assessments or management plans (GCF, 2018).

3.4 Analysis of Alternatives

This section examines alternatives to the proposed programme site, technology, design, and operation—including the no programme alternative—in terms of their potential environmental impacts; the feasibility of mitigating these impacts.

The Programme overall has been designed for simplicity, effectiveness, and low environmental and social impact risk. It involves policy reforms, community education, and improvement of data collection and information sharing capability. The Programme aims to reduce climate vulnerability in the partner countries with a minimum of physical interventions, and the physical interventions that there are provide high value. The alternative examined is

the 'no programme alternative', as the interventions involved have been selected with stakeholder input and agreement.

Without this Programme in place, these island nations have gaps and weaknesses in their climate policies, infrastructure, knowledge and information that leave them vulnerable to the effects of extreme weather events (World Bank, 2012). These extreme events are becoming more frequent and more powerful due to climate change. The forecasting abilities and early warning potential of the existing meteorological systems are below what could be expected (SPREP, 2016).

The existing vulnerability of public infrastructure, communities, crops, and buildings can be reduced through improved institutional and policy frameworks, information collection and sharing systems, and community education and response coordination.

The proposed physical interventions use technology chosen for its effectiveness and low environmental impact, observing and measuring the environment without affecting the environment. The 25kW solar renewable energy installation chosen for the Cook Islands is ideal considering their annual sunlight hour statistics and reduces their overall dependence on fossil fuel energy.

The potential benefits of the proposed Programme are of high value, with potential impacts low in risk and intensity. These potential impacts can be avoided, reduced, or mitigated through proper programme management.

3.5 Information Disclosure, Consultation and Participation

Two workshops during programme design and preparation elicited details on the proposed interventions and potential impacts, engaging relevant stakeholders to disclose information. No ESS consultation with affected people and other stakeholders has been conducted as no affected party has been identified. All buildings are confined within state-owned land and no private land needs to be purchased and no people are to be displaced. The Programme will not cause any physical and economic displacements nor require any land acquisition.

No vulnerable groups, including women, the poor, and Indigenous Peoples will be negatively or disproportionately affected by the Programme. No monitoring and reporting are required for land acquisition and resettlement issues as there are none. Any unanticipated issues will be dealt with in accordance with **UNEP's Safeguards Policies (UNEP, 2015)**. According to UNEP guidelines, this screening classifies the proposed programme as Category C for Involuntary Resettlement and Indigenous People.

During Programme implementation, UNEP guidelines dictate that planned information disclosure measures⁵ will need to disseminate details of Safeguard information (UNEP, 2015). If there are affected communities, they will need to be given the opportunity to review and

⁵ GCF Disclosure Form included in Annex 6a.

comment on Safeguards documents before programme documents are being finalised. If the Programme is to be revised or modified during the evaluation at mid-term and new and additional issues have been identified, any management plan needs to be redone and re-disclosed (UNEP, 2015). Outcomes of any stakeholder response or non-compliance review will need to be made public.

3.6 Grievance Redress Mechanism

This section provides guidance for the management of complaints and grievances arising during programme implementation. The Grievance Redress Mechanism (GRM) provides a streamlined process for any concerns or issues in relation to resettlement, social safeguards including gender-related issues, and environmental impacts. It will address anything raised by affected persons or community members regarding specific programme activities and unexpected impacts. It describes the scope and procedural steps and specifies roles and responsibilities of the parties involved.

The Project Cooperation Agreements with national Executing Entities (EEs) will require the EEs to put in place localised GRMs, including stakeholder consultations and national procedures related to grievance redress. The **Programme website** will also allow for reporting of allegations of complaints of wrong-doing in Programme activities by means of a **Complaints Register (CR)** and such allegations shall be addressed in line with national requirements and/or the UNEP Environmental and Social Sustainability Framework. An officer will be appointed to review such allegations and work towards resolution of each matter.

The GCF has its own avenue for receiving and responding to complaints, the Independent Redress Mechanism (IRM). Complaints or grievances regarding to programmes funded by the GCF can be filed through the GCF webpage <https://irm.greenclimate.fund/>. Similarly, UNEP has its Stakeholder Response Mechanism (SRM), which fulfils the same role through an Independent Office. Grievances through the SRM can be placed by emailing unenvironment-IOSSR@un.org. However, the Programme-specific GRM should be the first avenue used for grievance reporting and resolution, and has been designed to make further action unnecessary.

The GRM has been designed as to being able to:

- (i) record, categorize, and prioritize the grievances;
- (ii) resolve the grievances in consultation with complainant and other stakeholders;
- (iii) inform the aggrieved parties about the solutions; and
- (iv) forward any unresolved cases to higher authorities for resolution.

The GRM will address any concerns and complaints from affected parties promptly and transparently through the process with responsibilities and required activities outlined below. The GRM will be gender-responsive and readily accessible to all affected parties at no cost.

Table 1. Grievance Resolution Process

Stages in Response Handling Recipients	Required Activities
Village Head or District/Town Grievance Focal Point (GFP)	Verbally responds to questions and or complaints. May represent affected parties through discussions with contractor or safeguards team. If no response within one week, or response is unsatisfactory, the affected party files a grievance notification on the Complaints Register
National Coordination Committee (NCC)	Registers and screens the written complaint and passes it to an assigned Officer to resolve. If complaint is not resolved in 1 week, or the Officer finds resolution beyond his powers, it is passed to the Programme Management Unit (PMU) for resolution. At all stages of the process, the NCC will keep the GFP informed on progress.
Programme Management Unit (PMU)	Registers the written complaint and attempts to resolve it with the affected person within 1 week. If a solution is not reached, the PMU refers it to the CEO and appropriate Minister Responsible.
CEO & Minister	Consults with other Ministers & CEOs, the GFP and PMU in the resolution of complaints (decision within 1 week). If unacceptable to the complainant, they may choose to take it before the Court. Reasonable costs incurred as a result of lodging a legitimate complaint and/or grievance will be covered under the GRM. Should such a complaint and/or grievance be deemed ineligible, associated costs may not be covered.
Court	The court hears the case and makes a final decision that is binding on all parties.

4 Conclusions and Recommendations

This Programme has been assessed as being in Category C and will require little in the way of mitigation, as it is largely a programme of policy improvements and improved data collection and sharing. The physical interventions involve installing sensors and measurement equipment in various locations, the upgrade of an existing meteorological office, and construction of small meteorological offices on several islands.

Category C projects do not generally require an ESMP, as the impacts generated are low. An ESAP has been developed to aid planning and is included as a matrix in Section 3. The largest potential impacts associated with this programme come from the construction components, and waste streams from construction and equipment upgrades. These impacts can be managed through processes that are now considered standard in construction and waste management industries.

As with any construction component, it is better to avoid environmental and social impacts than to find mitigation methods. The physical components associated with this programme are minor, and industry best practice already includes impact avoidance and reduction strategies. Occupational health and safety regulations are designed to avoid potential social impacts from workplace injury.

Waste management and disposal remains the most significant environmental risk at the construction stage. Any toxic substances must be contained and disposed of in an approved way, and other construction wastes must be transported to an approved landfill. The discharge of contaminants into waterways through drainage systems is a potential risk on a building site.

Technology and equipment upgrades can lead to another waste stream, as the old equipment needs to be disposed of. Any of this that cannot be sold on or re-used (upcycled) should be recycled appropriately to reduce unnecessary waste to landfill.

Potential impacts from any of the above sources can be reduced through proper worksite management. It is recommended that all contractors involved are made aware of their environmental and social responsibilities, and that professional oversight is engaged where necessary in order to ensure that those responsibilities are upheld. Contracts should include clauses that highlight impact mitigation requirements.

No other mitigation plans such as for involuntary resettlement, Indigenous Peoples, or emergency response are required for the programme. The ownership of the land in question is not disputed, and there are no illegal occupants on site. The participating SIDS have small close-knit communities, illegal settlers are not a common problem in these countries. A Gender Assessment has been carried out to identify and illustrate gender and socioeconomic issues that could be addressed by the Programme Results, and forms the basis for the Gender Action Plan (Annex 8). In conclusion, all proposed climate policies, capacity building and infrastructure including all four investment components provide an overall positive environmental benefit for climate resilience. The climate infrastructure component improves

performance, safety, and better public health outcomes through more reliable services for public usage and for natural disaster events. It will improve access for stakeholders and improve sustainability and building capacity in the areas of climate adaptability, which will positively assist the communities involved to be resilient when faced with the adverse impacts of climate change.

References

- BoM. (2019, July 6). *About Climate Data for the Environment*. Retrieved from Australian Government Bureau of Meteorology web site: www.bom.gov.au/climate/pacific/about-clide.shtml
- Britannica. (2019, May 16). *Pacific Islands region, Pacific Ocean*. Retrieved from Britannica: <https://www.britannica.com/place/Pacific-Islands>
- CIA. (2019, May 16). *CIA World Factbook*. Retrieved from Central Intelligence Agency: <https://www.cia.gov/library/publications/resources/the-world-factbook/>
- GCF. (2018). *Green Climate Fund Environmental and Social Policy*. Incheon: Green Climate Fund.
- Martin, D. J. (2014). *Development and implementation of a climate data management system for western Pacific small island developing states*. Reading: Royal Meteorological Society.
- SPREP. (2019, June 19). *INFORM - Pacific Environment*. Retrieved from Secretariat of the Pacific Regional Environment Programme: <https://www.sprep.org/inform>
- TPWD. (2015). *Tuvalu Public works Dept, New Met Station Nanumea*. Vaiaku: Government of Tuvalu.
- UNEP. (2015). *ESES: Stakeholder Response Mechanism*. Nairobi: United Nations Environment Programme.
- UNEP. (2015). *United Nations Environment Programme Environmental, Social and Economic Sustainability Framework*. Nairobi: United Nations Environment Programme.
- UNFCCC. (2019, June 2). *The Paris Agreement*. Retrieved from United Nations Framework Convention on Climate Change: <https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement>

Appendix One

Proposed Floorplan for Tuvalu Meteorological Offices (TPWD, 2015)

