Pacific Community (SPC)

Government of the Republic of Palau

EUROPEAN UNION – NORTH PACIFIC - READINESS FOR EL NIŇO (RENI) PROJECT

PROJECT DESIGN DOCUMENT

Securing water resources ahead of drought in Palau

October 2018

Securing water security ahead of drought

Project Summary

The overall objective of the project is to enhance the resilience of those living in Palau to the shocks and insecurities resulting from droughts. The specific objective is to strengthen water security using a sustainable, multi-sector and gender sensitive/rights-based approach. The three outputs are: (1) individual and community behaviours around drought resilience enhanced; (2) water security measures to support drought resilience implemented; and (3) planning and technical measures undertaken to prepare for future droughts.

Against the background of the State of Emergency declared during the 2015/2016 drought, and the announcement in May 2017 that Palau was placed on an El Niño watch with a 65% chance of another drought later in 2017, it was determined by the National Emergency Committee in Palau that the RENI Project would focus on water security. The states of Ngatpang and Aimeliik, which are within a 30-minutes driving distance from the large population centres of Koror and Airai, were initially selected. The project will directly benefit the 282 persons in Ngatpang State and will also benefit the 13,899 residents of Koror and Airai States.

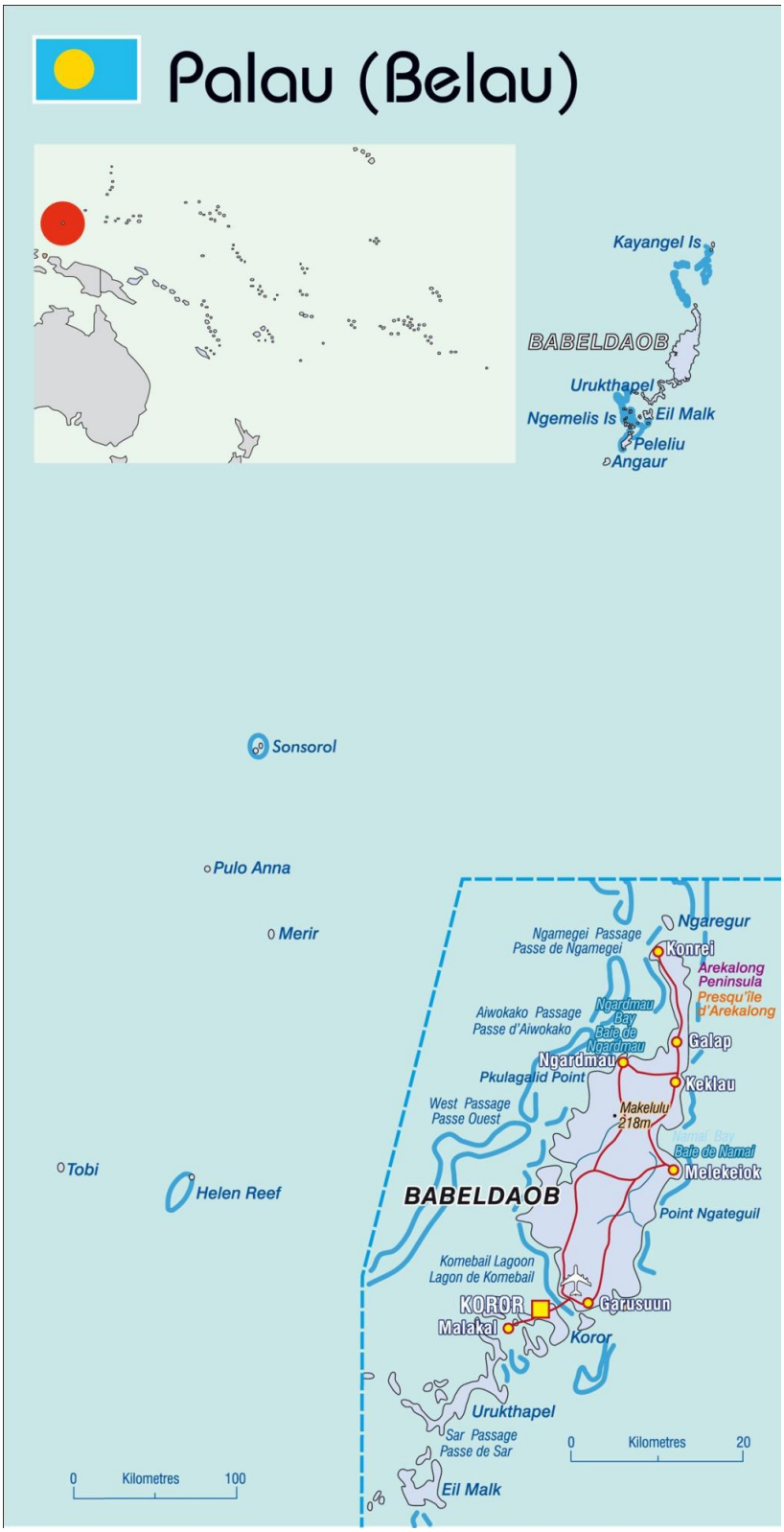
The project will involve the state government, national government agencies and wherever possible the private sector too. The project is about enhancing the resilience of people and communities, and in this respect a participatory and community-led approach is adopted throughout the design and implementation with a particular emphasis on applying a gender-sensitive/rights-based approach.

Following a hydrological assessment of two watershed, the Tabecheding watershed was selected as the site for construction of a 30,000 gallons automatic valveless gravity filter water storage system, to be positioned near the Compact Road. This water will be available to the nearby communities in Ngatpang State as well as other residents of Palau during times of drought. The Palau Public Utilities Corporation will maintain the water storage system, and training in monitoring and maintenance will be provided to water operators. One (possibly two depending on quotations) 2,113 gallons (8000 litre) water tanker delivery truck will also be purchased. This will facilitate the distribution of water during future droughts, particularly to households where people such as the elderly and those with disabilities cannot easily access communal water distribution systems.

An environmental assessment will be conducted of the Tabecheding watershed prior to procurement and implementation and the findings will guide the final design. The project will also support activities for National Preparedness Month (September) centred around the theme "Disasters happen. Prepare now. Learn how".

The implementation period of this project will commence on the date of signature of this Project Design Document and end on 30 June 2020. The project will be implemented by the National Emergency Management Office, in collaboration with the Bureau of Public Works and the Palau Public Utilities Corporation. The project is consistent with Palau's 2020 National Master Development Plan, the 2016 National Disaster and Risk Management Framework, and the 2015 Climate Change Policy for Climate and Disaster Resilient Low Emissions Development.

MAP OF PALAU


Palau (Belau)
Kayangel Is
BABELDAOB
Urukthapel
Ngemelis Is
Eil Malk
Peleliu
Angaur
Sonsorol
Pulo Anna
Merir
Tobi
Helen Reef
Ngaregur
Ngamegei Passage
Passe de Ngamegei
Konrei
Arekalong
Peninsula
Presqu'île
d'Arekalong
Aiwokako Passage
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Bay
Baie de
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Galap
Ngardmau
Pkulagalid Point
Keklau
West Passage
Passe Ouest
Makelulu
218m
Baie de Namai
Melekeiok
BABELDAOB
Point Ngateguil
Komebail Lagoon
Lagon de Komebail
KOROR
Garusuun
Malakal
Koror
Urukthapel
Sar Passage
Passe de Sar
Eil Malk
0 Kilometres 100
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List of Abbreviations

ACP	Africa, Caribbean, Pacific countries
ACSE	Adapting to Climate Change and Sustainable Energy
ADB	Asian Development
AVGF	Automatic valveless gravity filter
BPW	Bureau of Public Works
BSRP	Building Safety and Resilience in the Pacific
CSIRO	Commonwealth Scientific, Industrial Research Organisation (Australia)
DRM	Disaster Risk Management
EPS	Ecological Purification System
EQPB	Environmental Quality Protection Board
EU	European Union
EUR	Euros
FRDP	Framework for Resilient Development in the Pacific
FSM	Federated States of Micronesia
GDP	Gross Domestic Product
GCCA: PSIS	Global Climate Change Alliance: Pacific Small Island States project
MAP	Palau Management Action Plan
M&E	monitoring and evaluation
NDRFM	National Disaster and Risk Management Framework
NEC	National Emergency Committee
NGO	Non-governmental organisation
PAN	Protected Area Network
PPUC	Palau Public Utilities Corporation
R2R	Ridge to Reef
RENI	Readiness for El Niño
RESPAC	Disaster Resilience for Pacific Small Island Developing States
RMI	Republic of the Marshall Islands
SDG	Sustainable Development Goal
SPC	Pacific Community
SPC-GEM	Pacific Community Geosciences, Energy and Maritime Division
SPC-LRD	Pacific Community Land Resources Division
SPC-RRRT	Pacific Community Regional Rights Resources Team
SPC-SDP	Pacific Community Social Development Programme
UN	United Nations
UNDP	United Nations Development Programme
USAID	United States Agency for International Development

1. INTRODUCTION

This section describes the background to Palau and the background to the RENI Project.

Background to Palau

Geographical setting

The Republic of Palau is located in the north-west tropical Pacific, 500 miles (800 km) east of the Philippines. There are over 500 islands in Palau most of which are the small, uninhabited Rock Islands. Only nine islands are currently inhabited and the country is divided into 16 states. The total land area is 206 square miles (535 km^2). The capital is in Melekeok state on the island of Babeldaob to the north, which replaced Koror as the capital in October 2006.

The population of Palau is 17,661 (2015 Census) and around 65% (11,444 persons) live in Koror, with a further 14% (2,455 persons) living in the adjacent state of Airai. The economy is dominated by tourism, fishing, and subsistence agriculture. Government is a major employer of the work force relying on financial assistance from the US under the Compact of Free Association (Compact) with the US that took effect after the end of the UN trusteeship on 1 October 1994. Tourism arrivals in 2016 were 138,408. The service sector dominates the economy, contributing more than 80% of gross domestic product (GDP) and employing around half of the population. Palau's per capita GDP of $ 13,415 in 2017 makes it one of the wealthier Pacific Island States. The principal economic challenge confronting the country is to ensure the long-term viability of its economy in the face of decreasing external support.

Agriculture is mainly on a subsistence level. Fishing is a significant source of revenue, but the country's tuna output dropped by over one third during the 1990s. The greatest opportunity for sustained growth in the Palauan economy is believed to lie in tourism. While development of additional tourism infrastructure is a major priority of government, attention is also being given to preserving the country's renowned marine environment, and these efforts have recently received positive publicity worldwide.

Vulnerability and climate change projections for Palau

Climate projections for Palau based on the global climate models show that for the period to 2100:

- There is *very high confidence* that El Niño and La Niña events will continue to occur in the future, but there is little consensus on whether these events will change in intensity or frequency.
- There is *very high confidence* in the direction of long-term change in a number of key climate variables, namely an increase in mean and extremely high temperatures, sea level and ocean acidification.
- There is *high confidence* that the frequency and intensity of extreme rainfall will increase.
- There is *medium confidence* that mean rainfall will increase, especially in the wet season and *medium confidence* in a decrease in drought frequency.

- Global climate model projections for changes in typhoons in the Northern Pacific basin show inconsistent results.

(These climate projections are based on the 2014 Australian Bureau of Meteorology and CSIRO Report: Climate variability, extremes and changes in the Western Tropical Pacific: New science and updated country reports).

These changes in climate are likely to exacerbate water security issues in Palau.

National policies and strategies

Climate change and disaster risk management, food and water security, and social inclusion are among the key priorities for Palau and critical to achieve various policy and strategic objectives to achieve sustainable development. Among the key policies are the following:

- Palau Management Action Plan (MAP) 2013-2017. This provides a strategic roadmap for the Executive Branch of the Government of Palau.
- 2020 National Master Development Plan that was developed in 1996. While this has officially expired it is still relevant for informing policy actions.
- Actions for Palau's Future: The Medium-Term Development Strategy 2009 – 2014. Options are presently being discussed for the preparation of a Medium Term Development Strategy and National Master Development Plan.
- Palau's National Disaster and Risk Management Framework (NDRMF) 2010. This was amended in 2016 with the Palau National Disaster and Risk Management Framework.
- Palau Climate Change Policy for Climate and Disaster Resilient Low Emissions Development 2015.
- June 28, 2017, Executive Order 401. This establishes water use and conservation policies for all government ministries, agencies and offices.

Ongoing projects and activities relating to water security

Listed below are some of key related projects and activities that are presently ongoing in Palau.

Project/Activity	Status
UNDP/RESPAC Disaster Resilience for Pacific Small Island Developing States (RESPAC) Project – disaster preparedness and planning	Ongoing
GEF/Ridge to Reef (R2R): Regional component focuses on demonstrations, governance and knowledge management. The national component focuses on management of the Protected Areas Network (PAN) in Palau.	Ongoing
UN Women, Increasing Community Resilience through Empowerment of Women to Address Climate Change and Natural Hazards Programme.	Ongoing

Project/Activity	Status
EU-GIZ/ - Adapting to climate change and sustainable energy (ACSE) – Enhancing sustainable livelihoods through demonstration of environmentally friendly integrated food production systems in Palau for sustainable land management and climate change/ El Nino mitigation	Ongoing
EU Intra ACP/NDMO/SPC, Building Safety & Resilience in the Pacific (BSRP) – Planning for community based disaster risk resilience	Ongoing
Italian Government/Ministry of Public Infrastructure, Industries and Commerce: (i) Identify and develop new groundwater sources in Airai, Palau; (ii) Education programme to promote water conservation.	Ongoing
ADB Koror/Airai Sanitation Project	Ongoing

About the RENI Project

Description of the overall RENI project

The El Niño extreme weather event in 2015 - 2016 affected countries and regions around the world with events such as protracted droughts and floods. On 3 November 2016, the European Commission, through the 11th European Development Fund, allocated EUR 150,135,000 million to 21 African, Caribbean and Pacific (ACP) countries for the Pro-Resilience Special Measure in response to food insecurity. Of this total amount, EUR 4.5 million was reserved for the North Pacific ACP countries, namely, Federated States of Micronesia (FSM), Marshall Islands and Palau.

The global objective of the Pro-Resilience Special Measure is to structurally and sustainably reduce food and nutrition insecurity by tackling the root and underlying causes of vulnerability and reducing the negative impacts of stresses and shocks.

The European Union (EU) – North Pacific – Readiness for El Niño (RENI) project is about communities working to secure food and water resources ahead of drought. The three-year (2017 - 2020) project is implemented by the Pacific Community (SPC) in collaboration with the governments and peoples of FSM, Marshall Islands and Palau.

The overall objective of the EU – North Pacific – Readiness for El Niño (RENI) project is to enhance the resilience of the people of the FSM, Marshall Islands and Palau to the shocks and insecurities resulting from extreme El Niño events. The specific objective is to strengthen the implementation of a sustainable, multi sectoral, multi stakeholder approach to readiness for future El Niño events.

The three key outputs for the RENI project are:

- Uptake of key individual and community behaviours that support El Niño resilience.
- Local area structural measures implemented to support El Niño resilience building in water and food security and paying special attention to the rights of women and vulnerable groups in outer islands.
- National measures - institutional, planning and technical – implemented to support readiness for future El Niño events

The activities in each country focus on water security, or water and food security, since the shortage of fresh water has been identified as the most severe stress in the North Pacific.

Building on the activities linked to El Niño readiness already implemented in the countries and the region supported by EU and other development partners, the project develops a rights-based, gender sensitive approach focusing on water and food security primarily in outer islands.

By strengthening readiness for future El Niño events, the three countries will be in a better position to respond to such events and it is anticipated that the adverse impacts of these events on human lives will be lessened.

The action will enhance the capacity of national and sub-national government and civil society stakeholders, and contribute to the *Framework for Resilient Development in the Pacific* (*FRDP)*, the *Sendai Framework for Disaster Risk Reduction*, the *Paris Agreement* to the *United Nations Framework Convention on Climate Change*, and the *Sustainable Development Goals*, especially Goal 2: zero hunger, Goal 6: clean water and sanitation and Goal 13: climate action.

The RENI project in Palau

Following the 2015-2016 drought in Palau several reports and assessments were prepared, most notably:

- 2017: PPUC Drought Action Plan: Lessons learnt (Palau Public Utilities Corporation)
- 28 June 2017: Executive Order No. 40, Establishing Water Use and Conservation Policies for all government ministries, agencies and offices.
- July 14, 2016: 2016 Drought Report, compiled by the Planning and Logistics Sub-Committee of the National Emergency Management Council.
- 13 July 2016: PPUC, State of Emergency: The 2016 Extreme Drought Emergency, PPUC Final Report
- 25 March 2016: PPUC Drought Assessment Report: Water Shortage Contingency Plan

The reports describe the declining water levels at the two main water sources for the Koror-Airai water system during the early months of 2016, and the emergency rationing system that had been put in place for Koror and Airai. There was also a decline in water levels in other parts of Babeldaob. The reports detail issues around the impacts for health and education, and concern was expressed that the water supplies might be inadequate for the projected visitor arrivals. A 10-day State of Emergency was declared on 22 March 2016 and was later extended for a further 10-days. Extensive relief efforts were put in place, coordinated by the National Emergency Committee.

The 2017 Drought Action Plan proposed: (i) A series of educational and awareness measures; and (ii) Operational measures. The operational measures included:

- Surveying existing facilities
- Cleaning and monitoring of water sources
- Monitoring the distribution network
- Water treatment plan assessment
- Monitoring storage tanks
- Investigation new well sites
- Investigating new surface water sources
- Reverse osmosis units
- Upgrading rolling stock

Against this background, and the announcement that on 17 May 2017 Palau was placed on an El Niño watch as there was a 65% chance that Palau would face another drought later in 2017, it was determined by the National Emergency Committee (NEC) in Palau that the RENI Project would focus on water security, particularly in the states near Koror and Airai and within a 30-minutes driving distance.

A sub-committee of the NEC was formed to oversee the RENI project, named the RENI Steering Committee. Together with the SPC-RENI team it was decided to focus the water security activities on two of the operational measures detailed in the 2017 Drought Action Plan: accessing new surface water sources and upgrading the rolling stock. Two watersheds that did not dry up during the 2015-2016 drought were identified – the Ngerderar watershed in Aimeliik State and the Tabecheding watershed in Ngatpang State. Plans were formulated to build new water storage systems adjacent to where these rivers meet the Compact Road. The water would be available to nearby communities, and during drought, residents of Koror and Airai could also access these water storage systems. Additional water tanker trucks would also be purchased to facilitate the distribution of water during future droughts, particularly to households where people, such as the elderly and those with disabilities, could not access communal water distribution systems.

In reaching this decision, the RENI Steering Committee took into account the short timeframe for RENI and that a separate project, funded by the Italian Government, was identifying new groundwater sources in Airai. The Committee also recognised the importance of maintenance of the new systems, and proposed that the PPUC would take responsibility for maintenance when the water security measures were handed over at the end of the RENI project.

Other project activities will include awareness about drought preparedness and water conservation; parallel measures designed and implemented by women and vulnerable groups; environmental assessments of potential impacts of the water storage systems; hydrological assessments and further planning/technical activities as required.

The 2015 population estimate for the two states where potentially new water storage systems will be built are shown in the table below. These are the direct beneficiaries of the project, but it is also anticipated that the population of Koror and Airai will also benefit from the RENI water security measures.

Population figures (2015 census) for the direct and indirect beneficiaries of the RENI Project

State	Total population 2015 census	Number of households 2015 census
Direct beneficiaries		
Aimeliik	334	96
Ngatpang	282	63
Total	616	159
Indirect beneficiaries		
Koror	11,444	3,070
Airai	2,455	617
Total	13,899	3,687

The RENI project will be implemented using a gender-sensitive/rights based approach. For several years, development work in the Pacific islands, and indeed around the world, has included gender equality as one of the critical aspects of sustainable development. However, more recently in development work it has been recognised that gender equality is only one of the human rights that need to be considered in equitable development work. Thus the RENI project will adopt a gender-sensitive/rights based approach throughout the design and implementation with the assistance of SPC's Social Development Programme and Regional Rights Resources Team.

Rationale

Based on the foregoing the justification and rationale for the RENI project in Palau is as follows:

- The geography and location of Palau makes its people highly vulnerable to disaster and climate risks.

- Future projections for climate changes show a very high confidence in the El Niño/La Niña patterns continuing through to 2100; added to which there is a very high confidence in the projected increase in mean and extreme temperatures, and in sea level rise. These projections will continue to increase the vulnerability of persons living in Palau.
- The government of the Palau, through its policies, strategies and plans, places a high priority on strengthening food and water security.
- Given the country-wide impact of the 2015-2016 drought, and the El Niño Watch conditions in 2017, the need to focus on water security is evident.
- The RENI project will provide tangible outcomes that will help the people of Palau cope with future water shortages and droughts.
- Adopting a gender-sensitive/rights-based approach will ensure that the principles of equality and equity are provided to rights holders in Palau.

2. PROJECT SELECTION PROCESS

This section provides a timeline of the planning activities that have led to this Project Design Document. Activities are listed below in chronological order.

August 2017: The RENI project was introduced to numerous stakeholders in the Palau.

September 2017: A RENI Project Steering Committee comprising 11 members was assigned by the National Emergency Committee. Members represent the following agencies:

- National Weather Service: Chairperson
- National Emergency Management Office
- Bureau of Budget and Planning. Ministry of Finance
- Division of Property and Supply, Ministry of Finance
- National Public Information Office
- Bureau of Public Works
- Environmental Quality and Protection Board
- Bureau of Foreign Affairs, Ministry of State
- Palau Red Cross
- Palau Public Utilities Corporation
- Palau Chamber of Commerce

October 2017: The government of the Palau, through the Coordinator of the National Emergency Management Office (NEMO) advised that the RENI Steering Committee had decided that the RENI project should focus on water security. A comparative matrix of priorities had been compiled, see next page.

November 2017 to March 2018: Discussions were held between the SPC-RENI team and the Palau RENI Steering Committee, and Palau Committee decided to move ahead with 3 options:

- Ngerderar storage system
- Tabecheding storage system
- Water tanker trucks

The decision was confirmed by letter dated 19 March 2018.

April 2018: The Project Concept Note was finalised.

May 2018: During a visit to Palau, scoping visits were made to the sites at Ngerderar and Tabecheding together with representatives from Bureau of Public Works and the Palau Public Utilities Corporation, and preliminary plans and costings were prepared. It was confirmed for SPC's Geosciences, Energy and Maritime (GEM) Division to undertake a preliminary hydrological assessment of the two catchments. Meetings were also held with representatives of the State Government for Aimeliik State and Ngatpang State, both of whom welcomed the project's proposed activities.

June – July 2018: A preliminary feasibility assessment for drought response storages – Tabecheding and Ngerderar Rivers was prepared by SPC-GEM Division. Preliminary designs and costings were prepared for the two water storage systems.

COMPARATIVE MATRIX
RENI PROJECT - PALAU

PROJECT NAME	PROS	CONS	CAPITAL COST
1 ***WATER TANKER TRUCKS***	1. Can reach most, if not all, residents 2. Easy to operate 3. Can be useful during nonemergency situations	1. Maintenance and upkeep when not in use needs to be established. 2. Where is water source 3. Depending on size, may not be practical for accessibility 4. May be costly on fuel and manpower as experienced from last drought 5. Need to synergize with Ngerderar, Tabechding, Melekeok and Ngchesar watering holes to enhance efficiency. (Caveat)	$25,000 EACH
2 ***STAND PIPE NEAR MELEKEOK POLICE SUBSTATION***	1. Long term solution 2. Water filled up and available 3. Easy access to water 4. Quick road side filling station for water trucks and individuals 5. Low capital cost and almost maintenance free 6. Can be done In-house by PPUC	1. Maintenance/vandalism 2. Can become traffic hindrance if improperly planned and positioned.	$5,000.00
3 ***STAND PIPE NEAR SHIMIZU WATER TREATMENT PLANT***	1. Long term solution 2. Water filled up and available 3. Easy access to water 4. Quick road side filling station for water trucks and individuals 5. Low capital cost and almost maintenance free 6. Can be done In-house by PPUC	1. Maintenance/vandalism 2. Can become traffic hindrance if improperly planned and positioned.	$5,000.00
4 ***MOBILE REVERSE OSMOSIS / DESALINATION UNIT***	1.Self contained if installed with solar panels 2. Removes 95-99% total dissolved solids, chlorine, fluoride & other impurities 3. Energy efficient 4. More environmentally responsible 5. Simple maintenance 6. Desal is effective; 7. Uses ocean as source 8. Turns salt water to potable water 9. Low capital cost	1. Needs a trained technician to maintain 2. Initial payment is high, maintenance & labor fees to be considered 3. Depending on RO size, may not be practical for accessibility 4. Can be some clogging 5. Chlorine can damage system 6. Takes patience & time due to using household water pressure & requires time to go thru the membrane as well as refill the tank 7. Parts and filter media may not always be available 8. Short usable life due to working in and exposed to the elements	$7,000.00
5 ***EXISTING WATER WELLS***	1. Water is potable already 2. Abundant supply 3. 80% of infrastructure is there already. 4. Proposed project is to enhance output	1. Limited capacity 2. Treatment, access, quantity	$150,000
6 ***NGERDERAR WATER FILTER AND TANK***	1. Long term solution 2. Closer to Koror/serve West 3. Easy to access water 4. Low maintenance 5. Can be full time water supply system for existing residents of area 6. Fosters development by “build it and they will come” concept	1. Downstream impacts, permanent structure 2. May be costly 3. Maintenance/vandalism 4. Proposed site is an active PAN site 5. High capital cost 6. “Down the road” costs will be required to extend a distribution line to the residents.	$115,000.00
7 ***TABECHEDING WATER FILTER AND TANK***	1. Long term solution 2. Closer to Koror 3. Easy access to water 4. Low maintenance 5. Can be full time water supply system for existing residents of area 6. Fosters development by “build it and they will come” concept	1. Downstream impacts, permanent structure 2. May be costly	$132,000.00

August 2018: During a visit to Palau, the SPC RENI team and the Palau RENI Steering Committee met (14 August 2018) to review the results of the hydrological assessment and the preliminary costings for the water security measures. It was decided to focus on the Tabecheding water storage system only, in view of the following results:

- Streamflow data exists for the Tabecheding River (for an 11-year period) while there are no comparable data for the Ngerderar River.
- The mean low flow for the Tabecheding River, allowing for 80% retention in the river system, allows for the extraction of 397,440 litres, easily sufficient for the proposed water storage system. (Figures for the Ngerderar River were significantly lower).
- The Ngerderar Watershed is part of the Protected Area Network, and may require more stringent environmental safeguards, which given the time frame to complete the RENI project, may pose added challenges.

Further, the Committee decided, that subject to adequate funding, the Automatic Valveless Gravity Filter (AVGF) option was the selected option over the Ecological Purification System (EPS). The AVGF system is significantly more expensive than the EPS system as it is larger and made of steel. The reasons for the selection were:

- All of the rural water systems in Palau use the AGVF system and so operators are familiar with its operation and maintenance.
- The footprint of the ACGF system is smaller.

The higher cost of the AGVF system was another factor influencing the decision to focus on just one site, Tabecheding.

The Palau Public Utilities Corporation will take responsibility for the maintenance of the Tabecheding water system once it is handed over by SPC. An assurance letter will be issued by Palau Public Utilities Corporation confirming this arrangement before procurement is commenced.

The draft list of activities and budget for the three outputs was discussed and clarified at the 14 August 2018 meeting. Following on this, the Project Design Document was prepared and circulated for final comment on 14 September 2018.

3. DETAILED PROJECT DESCRIPTION

This section describes the overall objective, specific objective and outputs, as well as the logical framework that is used to monitor progress. The section also includes the project budget and the schedule.

Overall Objective

The overall objective is to enhance the resilience of those living in Koror and the southern states of Babeldaob to the shocks and insecurities resulting from droughts. The project adopts a national perspective by enhancing water security for as many people as possible. While the residents of Ngatpang State will be direct beneficiaries, the activities will also enhance the resilience of more than 80% of Palau's population.

Specific Objective

The specific objective is to strengthen water security using a sustainable, multi-sector and gender sensitive/rights-based approach. Within the framework of the EU Pro-Resilience Special Measure in response to food insecurity, under which the RENI project is funded the activities in Palau will focus on water security. The project will involve state government, national government agencies and wherever possible the private sector too. The project is ultimately about enhancing the resilience of people and communities to drought.

Key outputs and activities

Output 1: Individual and community behaviours around drought resilience enhanced.

1.1 Establish and regularly convene Palau RENI Steering Committee

The Palau RENI Steering Committee was established by the National Emergency Committee. Members represent the following agencies and organisations:

- National Weather Service: Chairperson
- National Emergency Management Office
- Bureau of Budget and Planning, Ministry of Finance
- Division of Property and Supply, Ministry of Finance
- National Public Information Office
- Bureau of Public Works
- Environmental Quality and Protection Board
- Bureau of Foreign Affairs, Ministry of State
- Palau Red Cross
- Palau Public Utilities Corporation
- Palau Chamber of Commerce

The Committee meets to design and oversee project activities.

1.2 Establish and regularly convene a Technical Working Group

Key agencies directly involved in the implementation of the water security measures meet on an as-needed basis to oversee the construction and maintenance of the water security measures described in Output 2. The key agencies are:

- National Emergency Management Office
- Bureau of Public Works
- Palau Public Utilities Corporation

1.3 Conduct community consultations in Ngatpang State

Preliminary consultations have already been conducted with State representatives. Further consultations will be held with the communities in Ngatpang State to understand their water security needs and obtain their input on the design of the proposed water security measures.

1.4 Recruit and employ a National Coordinator

It is planned to fill this position by November 2018. This individual will coordinate, implement and report on RENI project activities in Palau and will be placed in the National Emergency Management Office.

1.5 Provide logistics and support for the National Coordinator

A Grant Agreement will be prepared between the Government of Palau and SPC to provide support funds for the National Coordinator, community consultations, and to provide design, inspection and oversight services by inspectors and engineers from the Bureau of Public Works (Activities 2.2.2, 2.2.8).

Output 2: Water security measures to support drought resilience implemented

2.1 Procure, purchase and deliver one 8,000 litre water tanker trunk

One 8,000 litre water tanker delivery truck will be procured and delivered to the PPUC for the delivery of water to residents of Palau, especially Koror, during times of drought. Depending on the cost of items described in 2.2 below, there may be sufficient funds in the project budget to purchase two water tanker delivery trucks.

2.2 Design and Construct 30,000 gallons AVGF, water storage system at Tabecheding River

It is expected that all the materials (e.g. AVGF system, pumps) outlined in 2.2.1 to 2.2.8 will be procured by SPC, and in addition there will be one installation procurement package advertised to cover the installation, assembly and construction work. That is with the exception

of 2.2.7 which will be installed by the supplier and 2.2.8 which will be covered by the Grant Agreement mentioned above in 1.5.

2.2.1 *Land easement arrangements for the placement of the water storage system*

The site is on public land so arrangements will be made with the State Public Land Authority for the placement of the water storage system.

2.2.2 *Prepare the full and final design for the water storage system*

The final design will be prepared by engineers from BPW in collaboration with the RENI project engineer.

2.2.3 *Purchase, arrange delivery and install the AVGF system*

The purchase and delivery off the AVGF system will be undertaken by the RENI project team using SPC's procurement procedures. Assembly and installation, including the construction of the concrete base will be part of the installation procurement package.

2.2.4 *Construct a 30,000 gallons concrete water storage*

A 30,000 gallons capacity concrete water storage system will be constructed, again as part of the installation procurement package.

2.2.5 *Construct the water intake*

This will include the purchase and installation of the culvert water intake, connecting pipes and the excavation near the river.

2.2.6 *Purchase and installation of the standpipes and connecting pipes*

This will include two standpipes for easy access near the road, and the piping connecting the intake culvert, the AVGF system and the concrete water storage. All pipes will be placed underground.

2.2.7 *Purchase two solar-powered submersible pumps and install one pump*

Purchase two solar powered submersible pumps (one is for back-up) and install one pump.

2.2.8 *Supervision of the construction of the water storage system*

The construction of the water storage system will be supervised by engineers from BPW, who will also keep the RENI project engineer in Suva updated.

2.3 Parallel measures to support drought preparedness designed and implemented by women's groups

A request for proposals will be issued for women's groups to design and implement activities that complement the RENI project and that also empower women and vulnerable groups to address climate and disaster risk.

2.4 Training in monitoring and maintenance

2.4.1 *Provision of a letter of assurance from PPUC*

The PPUC will be responsible for the monitoring and maintenance of the water tanker delivery trucks and the water storage system on the Tabecheding River. A letter of assurance is to be issued by PPUC guaranteeing this service at the start of project implementation.

2.4.2 *Training in monitoring and maintenance*

Training in the operation and maintenance of the AVGF water system will be provided to PPUC water operators.

Output 3: Planning and technical measures to support El Niño readiness

3.1 Hydrological assessments of Ngerderar and Tabecheding watersheds

Hydrological assessments of the two watersheds were prepared in June 2018. These were based on existing rainfall and streamflow data. These assessments informed the prioritisation of the Tabecheding River.

3.2 Environmental assessment and application for earth moving permit at Tabecheding River

An environmental assessment of the Tabecheding River will be prepared and submitted with permit application documents for Part I (General Information) and Part II (Earth Moving Permit and Public Water Supply) of the Environmental Quality Protection Board permit application.

3.3 Design and implement activities for National Preparedness Month (September)

Presidential Proclamation 18-241 has declared September 2018 as National Preparedness Month, and this will likely be repeated in 2019 and 2020. Various activities to support the theme "Disasters happen. Prepare now. Learn how" will be conducted with support from the RENI project.

The logical framework for the Palau RENI project is presented in Annex 1.

The activities and budget is presented in Annex 2. (The budget is in Euros).

The schedule for the activities is presented in Annex 3.

4. INSTITUTIONAL ARRANGEMENTS, RISK MANAGEMENT AND EXIT STRATEGY

Institutional Arrangements

Implementation of this project in Palau will be the responsibility of the National Emergency Management Office in conjunction with BPW and PPUC. The RENI project in Palau is being implemented under the ambit of the Pro-Resilience Special Measure in response to food insecurity in ACP countries, CRIS number: PAL FED/2016/39694, and under the Delegation Agreement (Ref. Ares (2017) 3249058 – 29/06/2017) which was signed by representatives from the European Union Delegation to the Pacific and SPC on 5th July 2017.

Project Steering Committee

A national Project Steering Committee has already been established by the National Emergency Committee and comprises representatives from 11 agencies, listed in Section 3, Activity 1.1. Other members may be added as required. The Palau RENI National Coordinator will be responsible for establishing and providing administrative support for this Committee. (The position of Palau RENI National Coordinator is expected to be filled by November 2018). It is expected that the Project Steering Committee will meet regularly or as required. Their main responsibility is the initial selection of activities and guidance and oversight during project implementation.

Reporting

The Palau RENI National Coordinator will be responsible for providing quarterly narrative and financial progress reports to the RENI project team in SPC in Suva. A template for reporting will be provided. Short monthly progress reports will also be prepared.

Day to Day Implementation of the Project

The Palau RENI National Coordinator situated in the National Emergency Management Office will have responsibility for overall coordination of the RENI activities, including regular financial and narrative reporting to Palau government and to SPC as required. The National Coordinator is also responsible for day-to-day coordination of the delivery of the three outputs. The National Coordinator reports to the Coordinator of the National Emergency Management Office, and the RENI Project Manager in SPC.

Risk Management

Risk	Risk level	Mitigating Measures
Extreme events		
Project implementation delayed by an extreme weather event e.g. typhoon, ocean surge, severe El Niño drought, or major social/cultural events	High	• Ensure planning of activities contains sufficient buffering for minimum one severe and disruptive weather event. • Despite the above mitigating measure, a severe drought in 2019/2020 will likely delay full delivery of all activities. • Major social and cultural events to be included in schedules during inception and planning.
Time constraints		
Insufficient time (3 years and 4 months) to complete the Action.	Moderate/High	• Regularly monitor and revise Action Plans; • Regularly remind countries of limited time framework. • Apply lessons learnt from previous projects e.g. GCCA: PSIS project.
National capacity and challenges to full stakeholder involvement		
Countries have insufficient capacity to fully implement the project activities	Moderate	• Ensure in design phase that activities are selected that are fully feasible using lessons learnt from other projects. • Supply support for a National Coordinator so as not to burden existing staff with heavy workloads.
Little involvement of women and vulnerable groups.	Low/moderate	• Using experience from previous projects and programmes, and with the help of SPC's gender advisors and the Regional Rights Resource Team, tried and tested ways of adopting a gender-sensitive/rights based approach have been built into the design and implementation.
Challenges with implementation		

Risk	Risk level	Mitigating Measures
Logistical challenges of implementing activities become overwhelming.	Moderate	• Build on lessons learnt about scheduling and logistics from previous projects; adopt flexible and back-up planning approaches such that alternatives (e.g. reducing the number of sites) can be prioritised if and when necessary.

Assumptions

- Global economic conditions and national governance do not prevent economic growth.
- Global support for the Paris Agreement and Sendai Framework is maintained.
- Continual high-level national government commitment to prioritising climate change and disaster risk management in the national development agendas.
- Social and political stability is maintained in each country.
- Continuous collaboration amongst development partners occurs and is documented to ensure coherence, complementarity and efficiency amongst climate change and disaster risk management interventions.

Exit Strategy

Strategy 1: Mainstreaming and learning from past activities

By transferring knowledge and application of water security and disaster and climate risk resilience measures from past activities and projects, disaster risk management, and especially preparation and preparedness, can be enhanced in Palau.

Through the RENI project, Palau will be testing some of the recommendations and lessons learnt from the 2015-2016 drought and thereby contribute to the intrinsic strengthening of disaster risk management in Palau. It is through the transference of planning recommendations into activities on-the-ground that knowledge, experience and skills can enhance the sector.

Sharing of knowledge about new technologies, such as the Ecological Purification System, provides long term benefit for the water sector, as this technology has potential for application to remote rural communities in Palau and especially in the outer island States of Palau.

In keeping with the Framework for Resilient Development for the Pacific (FRDP), the integration of measures that address climate risk and disaster risk within a sector is another example of a mainstreaming approach that contributes to sector resilience beyond project life.

Strategy 2: Further Funding

Identifying alternative sources of grant funding or loan finance, or national government funds in order to continue a project's activity is a second exit strategy.

RENI is working closely with a number of disaster risk management and climate change adaptation projects being implemented by SPC, as well as other projects implemented by regional and international organisations. Throughout the course of the project, routes to create synergies with other longer running activities will be pursued and where appropriate, developed.

Strategy 3: Private Enterprise

Developing an alternative business and/or operational model, through commercialising aspects of the project, is a third exit strategy.

Within the scope of RENI, private sector involvement in disaster risk management and climate change adaptation interventions will be encouraged where appropriate.

Strategy 4: Project Closure

Winding down a project's activities as efficiently and effectively as possible in order not to impact adversely on the project's staff and its stakeholders, and to capture the benefits and any lessons learned is a fourth exit strategy.

The project will work to efficiently wind down the activities as the end date is approached. Lessons learnt from the Global Climate Change Alliance: Pacific Small Island States (GCCA: PSIS) project will be applied and include allowing sufficient time and staff for an efficient and complete closure process, complete documentation of all narrative and financial materials, and perhaps most importantly the compilation and sharing of lessons learnt through interactive discussion sessions with national stakeholders and regional partners.

Annex 1 Indicative Logframe Matrix RENI Activities in Palau

The activities, the expected outputs and all the indicators, targets and baselines included in the logframe matrix are indicative and may be updated during the implementation of the action. Note also that indicators will be disaggregated by sex whenever relevant.

	Intervention logic	Indicators	Baselines (2017)	Targets (2020)	Sources and means of verification	Assumptions
Overall objective: Impact	**Overall objective**: To enhance the resilience of those living in Koror and the southern states of Babeldaob, Palau, to the shocks and insecurities resulting from droughts.	• Recommendations and lessons learnt from the 2015-2016 drought assessment reports implemented and tested. • Capacity of national stakeholders to address disaster and climate risk strengthened. • Capacity of women to assume leadership roles enhanced.	• 2016 Drought Final Report • 2016 PPUC Drought report • 2017 Drought Action Plan • 2016 Palau Gender stocktake • 2018 Review of the Palau Climate Change Policy Action Plan	• 2 recommen-dations /lessons learnt applied and assessed. • 30 stakeholders. • 1 water security activity designed and led by women.	• Reporting on SDGs especially 6, 13. • Reporting on Sendai Framework and FRDP priorities. • Reporting on SPC's development & strategic goals. • Reporting on national and sector policies & plans. • Baseline questionnaires. • Capacity surveys and interviews. • Workshop reports • Pre and post surveys.	

	Intervention logic	Indicators	Baselines (2017)	Targets (2020)	Sources and means of verification	Assumptions
Specific objective: Outcome	**Specific objective**: To strengthen water security using a sustainable, multi-sector and gender sensitive/rights-based approach.	• Persons in Koror and the southern states of Babeldaob have additional access to water during drought. • Government and non-governmental agencies collaborate to enhance water security. .	•2016 Drought Final Report •2016 PPUC Drought report •2017 Drought Action Plan •2018 Review of the Palau Climate Change Policy Action Plan	•1 new water storage system. • Measures publicised using 2 different media formats. • Minimum 3 meetings/ year of RENI Steering Committee. •Regular meetings of Technical Working Group during implementation.	•Reporting on Sendai Framework priorities •Reporting on national and sector policies & plans •Pre and post surveys and interviews •Training and workshop reports •Meeting minutes of RENI Steering Committee and Technical Working Group •Project reports •Media reports	•Beneficiary governments and stakeholder groups are committed to taking action to build El Niño resilience and focus on collaborative activities. •Climate change adaptation and disaster risk management remain as high priorities for Palau.

Outputs	**Output 1:** Individual and community behaviours around drought resilience enhanced.	• Residents of Ngatpang State contribute to the design of water storage systems. • RENI project activities effectively coordinated and delivered.	• Consultations conducted by NEMO on disaster risk management pre-2018	• 2 community consultations documented. • 1 Project Coordinator hired.	• Pre and post surveys and interviews • Documentation on community consultations • Monthly reports from National Coordinator • Training and workshop reports • Meeting minutes • Project reports	• Country beneficiaries remain committed to taking action to build El Niño resilience.
	Output 2: Water security measures to support drought resilience implemented.	• Rolling stock of PPUC to supply water to vulnerable persons during drought increased. • Capacity of PPUC to maintain Tabecheding water storage system enhanced. • Persons in Ngatpang State have improved access to water all year round and especially during drought.	• Asset register of PPUC • Rural water system maintenance schedule	• 1 water tanker truck that can access vulnerable groups. • 2 training sessions with maintenance personnel • Water storage system constructed at Tabecheding with easy access for residents and persons with disabilities..	• List of assets of PPUC • Reports on maintenance training • Close out reports on construction of water storage system at Tabecheding. • Procurement plan • Concept notes and design documents for all structural measures • Asset registers and handover reports. • Project reports	• Governments and communities willing to proceed with project implementation • Sufficient local resources and skills available • Natural and man-made hazards, especially a drought, do not adversely affect project delivery

	Output 3: Planning and technical measures undertaken to support El Niño readiness	• Design of water storage systems informed by technical and environmental studies. • Palauan residents more knowledgeable about minimum one preparedness measure. • New water conservation measure adopted by Palauan residents.	• Literature review of water resources for Palau	• Hydrological assessments conducted of 2 catchments. • 1 environment-al assessment conducted. • 30% of Palauan residents familiar with one "new" preparedness measure. • One measure adopted by 5% of Palauan residents.	• Hydrological assessments • Environmental assessments • Documentation on awareness and uptake of water conservation measures. • Project reports	• Beneficiaries (Palauan residents) are open and willing to adopt water conservation measures. • Further severe El Niño events do not occur during project time frame

Annex II Activities and Indicative Budget - Palau	
Activity	**Budget Items (Euros)**
Output 1: Individual and community behaviours around drought resilience enhanced	
1.1 Establish and regularly convene Palau RENI Steering Committee	0
1.2 Establish and regularly convene a Technical Working Group	0
1.3 Conduct community consultations in Ngatpang State	2,000
1.4 Recruit and employ a National Coordinator (21 months)	65,000
1.5 Provide logistics and support for the National Coordinator	11,500
Contingency	6,500
Sub-total Output 1	**85,000**
Output 2: Water security measures to support drought resilience implemented	
2.1 Procure, purchase and deliver one 8,000 litre water tanker truck + contingency	46,000
2.2 Construction of 30,000 gallons AVGF, water storage system at Tabecheding River +10% contingency	
2.2.1 Land easement arrangements for placement of the water storage system	0
2.2.2 Prepare the full and final design for the water storage system (BPW)	10,000
2.2.3 Purchase, arrange delivery and install the AVGF system	113,000
2.2.4 Construct a 30,000 gallons concrete water storage	119,000
2.2.5 Construct the water intake	13,000
2.2.6 Purchase and installation of the stand pipes and connecting pipes	8,700
2.2.7 Purchase 2 solar powered submersible pumps and install one pump	8,700
2.2.8 Supervision of the construction of the water storage system (BPW)	30,000
2.3 Parallel measure to support drought preparedness designed and led by women's group	10,000
2.4 Training in monitoring and maintenance	
2.4.1 Provision of a letter of assurance from PPUC	0
2.4.2 Training in monitoring and maintenance	4,400
Sub-Total Output 2	**362,800**
Output 3: Planning and technical measures undertaken to support El Niño readiness	
3.1 Hydrological assessments of Ngerderar and Tabecheding watersheds	3,000
3.2 Environmental assessments and application for earth moving permit at Tabecheding River	15,000
3.3 Design and implement activities for National Preparedness Month (September)	16,253
Contingency	2,000
Sub-total Output 3	**36,253**
Overall total	**484,053**

Acquittals of funds received must be supported by copies of all receipts and substantiating documents.

Annual government audits will be sufficient unless any accounting or financial problems emerge. Any interest accruing from any advances paid by SPC shall be considered as income for the purpose of operating this project. It may be used to cover eligible costs of the operation.

The Government shall oversee accurate and regular records and accounts of the implementation of the operation. Financial transactions and financial statements shall be subject to the internal and external-auditing procedures laid down in the financial regulations, rules and directives of SPC.

Fixed Assets: All fixed assets purchased by the project (equipment) will remain the property of SPC until the closure of the project. On closure of the project the assets will be officially handed over by SPC to the respective stakeholders in the country. An asset register of all assets purchased should be kept in the office of the Government.

Annex 3 Schedule of activities

	2017		2018				2019				2020		
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Selection of sector													
Preparation & finalisation of matrix of activities													
Concept Note finalised													
Project Design Document													
Output 1: Individual and community behaviours around drought resilience enhanced													
1.1 Establish and regularly convene Palau RENI Steering Committee													
1.2 Establish and regularly convene a Technical Working Group													
1.3 Conduct community consultations in Ngatpang State													
1.4 Recruit and employ National Coordinator (21 months)													
1.5 Provide logistics and support for National Coordinator													
Output 2: Water security measures to support drought resilience implemented													
2.1 Procure, purchase and deliver one 8,000 litre water tanker truck													
2.2 Design and construct 30,000 gallons AVGF, water storage system at Tabecheding River													
2.2.1 Land easement arrangements for placement of the water storage system													
2.2.2 Prepare the full and final design for the water storage system													
2.2.3 Purchase, arrange delivery and install the AVGF system													
2.2.4 Construct a 30,000 gallons concrete water storage													
2.2.5 Construct the water intake													
2.2.6 Purchase and installation of the stand pipes and connecting pipes													
2.2.7 Purchase 2 solar powered submersible pumps and install one pump													
2.2.8 Supervision of the construction of the water storage system													
2.3 Parallel measure to support drought preparedness designed and led by women's group													
2.4 Training in monitoring and maintenance													
2.4.1 Provision of a letter of assurance from PPUC													
2.4.2 Training in monitoring and maintenance													
Output 3: Planning and technical measures undertaken to support El Niño readiness													
3.1 Hydrological assessments of Ngerderar and Tabecheding Watersheds													
3.2 Environmental assessments and permits for the Tabecheding watershed													
3.3 Design and implement activities for Preparedness Month (September) 2018, 2019 and 2020													