Secretariat of the Pacific Community

Government of the Republic of Palau

GLOBAL CLIMATE CHANGE ALLIANCE: PACIFIC SMALL ISLAND STATES

PROJECT DESIGN DOCUMENT

Addressing Water Sector Climate Change Vulnerabilities in the Outlying States of Palau

Project Summary

The overall objective of the project is to increase the resilience of the water sector to climate change impacts in Palau. The purpose is to help ensure water quality and supply meets the needs of the people in the outlying island states of Palau and contributes to these communities' adaptation plans for the impacts of climate change on fresh water resources. The implementation period for this project will begin immediately after the required parties have signed the agreement and ends on 19th November 2014. However, a request for extension of the entire Global Climate Change Alliance: Pacific Small Island States project is currently being submitted by SPC to the European Union.

The key result areas (KRAs) are as follows: (i) Capacity of key stakeholders in Palau is enhanced for monitoring and maintaining water systems in the outlying island states (ii) Appropriate water sector infrastructure improvements are made in the outlying island states (iii) Availability and quality of water resources in the outlying island states assessed; and (iv) Level of awareness on water conservation raised and appropriate water security measures implemented by Palauan residents.

The project will provide the Palau Water and Sewer Corporation (PWSC) with the necessary staff support, equipment, and training opportunities to enhance strengthen and improve the water systems operations in the outlying island states to ensure that maintenance and monitoring programs are in place. Specifically, the project will provide technical assistance, capacity building and training, including maintenance and operations, to the key water sector stakeholders in the outlying island states of Palau, in collaboration with SPC Applied Geoscience Technical Division and other partners. The project will also enable the PWSC and outlying island states to enhance water quality, access, availability, and safety, with upgrading of both ground water and rainwater catchment and storage systems in Angaur, Hatohobei, and Sonsorol, and enhancement of water sector infrastructure in Kayangel and Peleliu. Hydrological assessments in the outlying island states will be undertaken to provide additional information for better water management and conservation to support long term water supply. Involvement of community members is important for this project. Public education and outreach, relating to water conservation, efficiency and management throughout Palau will also be conducted. This will especially target vulnerable groups such as women, children and the disabled. The project may also link with a proposed feasibility study into a water efficiency loan incentive programme together with the National Development Bank of Palau that may be funded under the GCCA: PSIS mainstreaming stream.

This project is consistent with the climate change adaptation needs and priorities for Palau as identified in the 2012 Water Policy and recent national consultation processes as well as Palau's Medium Term Development Strategy: Action for Palau's Future 2009–2014, linked to the National Master Development Plan – Palau 2020. Intensive participatory consultations have informed the development of the project.


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
Passe d'Aiwokako
Ngardmau Bay
Baie de Ngardmau
Galap
Ngardmau
Pkulagalid Point
Keklau
West Passage
Passe Ouest
Makelulu 218m
Baie de Namai
Melekeiok
BABELDAOB
Point Ngateguil
Komebail Lagoon
Lagon de Komebail
KOROR
Malakal
Garusuun
Koror
Urukthapel
Sar Passage
Passe de Sar
Eil Malk
0 Kilometres 100
0 Kilometres 20

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SIGNATURE PAGE

Country: Republic of Palau

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Dr. Gillian Cambers, Project Manager Date:
Global Climate Change Alliance: Pacific Small Islands States Project

1. INTRODUCTION

The Global Climate Change Alliance: Pacific Small Island States (GCCA: PSIS) project is a three-year project funded by the European Union and executed by the Secretariat of the Pacific Community (SPC). The overall objective of the GCCA: PSIS project is to support the governments of nine smaller Pacific Island States, namely Cook Islands, Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Niue, Palau, Tonga and Tuvalu, in their efforts to tackle the adverse effects of climate change. The purpose of the project is to promote long-term strategies and approaches to adaptation planning and pave the way for more effective and coordinated aid delivery to address climate change at the national and regional level.

The GCCA: PSIS project is implemented by SPC as part of its 'whole of organization approach' and is one of the activities contributing to the SPC Climate Change Engagement Strategy. The four key result areas (KRA) of the GCCA: PSIS project are:

National Level Key Result Areas

- KRA 1: Supporting national efforts to successfully mainstream climate change into national and sector response strategies.
- KRA 2: Identifying, designing and supporting the implementation of adaptation activities.

Regional Level Key Result Areas

- KRA 3: Enhancing the contribution of regional organisations to national adaptation responses.
- KRA 4: Building regional capacity to coordinate the delivery of streamlined adaptation finance and technical assistance to countries

Palau, one of the countries participating in this project, has highlighted many of its adaptation needs in official documents and at various regional and international fora. Palau's involvement in a number of climate change projects in the last decade has helped shape how climate change adaptation is dealt with in the country. Palau's approach to climate change adaptation is based on a no-regrets approach and it will pursue a strategy for precautionary adaptation since it is difficult to predict far in advance how climate change will affect a particular site, sector or island community. The strategy ensures that implementing adaptation measures now would be justified even in the absence of site-specific climate change data, as it would lead to better management of natural resources and sustainable development.

Given the foregoing, Palau has identified 'Addressing Water Sector Climate Change Vulnerabilities in the Outlying States of Palau' as its focus for a national climate change adaptation project to be implemented under the GCCA: PSIS project.

This project design document (PDD) outlines the overall objective, purpose, key result areas and activities that comprise the project. The project design follows the logical framework approach. This first section of the PDD outlines the background to the project, its rationale and related projects. Section 2 describes how the project was identified. The third section describes the project's overall objectives, purpose, key result areas and activities using a logical framework approach while the fourth and fifth sections of the document provide a schedule and budget for the project activities. Institutional arrangements and risk management and exit strategies are the content of sections 6 and 7 respectively.

Background

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 divided into 16 states. The total land area is 206 square miles (535 km^2). About 80% of the approximately 20,000 population live on Koror Island, which is also a state. The capital is in Melekeok state on the bigger but less developed island of Babeldaob to the north, which replaced Koror as the capital in October 2006.

Tourism, government services and fishing are the main forms of formal economic activity in Palau. 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 $8,812 (2008) makes it one of the wealthier Pacific Island States. Government employs nearly 26% of the work force. 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 island'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 worldwide positive publicity.

Palau is highly exposed to external economic shocks, particularly surges in food and fuel commodity prices, due to its limited revenue base and high dependency on imports. Due to the development environment and the priorities of the Medium Term Development Strategy (MTDS) 2009–2014, Palau currently relies on development partners to supplement its national budget. Palau's relationship with the USA is formalised through the Compact of Free Association (Compact), an agreement that went into effect in 1994, and was subject to a bilateral review in 2009. The Compact provides funding for government services; building basic infrastructure (such as roads, power and communication facilities) and creating a Compact Trust Fund. An important element of the Compact is that the USA remains responsible for Palau's defence for 50 years. Development aid inclusive of the Compact funds plays a key role in the social and

economic development of Palau, providing approximately 50% of the annual government budget expenditures, equivalent to more than one-third of GDP.

Climate and Climate Change Projections for Palau

Overall, Palau has a hot (mean daily air temperature is about 82ºF (28°C), humid (average relative humidity is 82%) tropical climate, with little seasonal variation. Average rainfall remains above 8 inches (200 mm) per month in all months of the year due to Palau's location within the West Pacific Warm Pool and the year-long influence of the Inter-Tropical Convergence Zone (ITCZ). February, March and April are the driest months in Koror and the main wet season is from May to October. The West Pacific Monsoon is usually most active and brings heavy rainfall between June and August.

Inter-annual variability in rainfall at Koror is high and is mainly influenced by the El Niño-Southern Oscillation (ENSO). Generally, El Niño years are drier than average with a shortened wet season and La Niña years are wetter. An extended dry season can lead to water rationing, as was the case during El Niño events in 1997/98 and the first half of 2010.

Winds are generally moderate, and the north-easterly trades prevail from December through to March. Palau is south of the normal typhoon belt of the Western North Pacific, and consequently typhoons rarely hit Palau, although Typhoon Bopha caused significant damage in December 2012. Highest tides tend to occur around the equinoxes, with the September peak the larger of the two. There is a strong ENSO influence with sea levels higher by over 0.3 ft (0.1 m) during La Niña years and the increase is most pronounced from July to January.

Future projections of climate change for Palau[i] generally show the following changes over the next 20 to 30 years: (i) average air temperature will increase by 0.4^0C to 1.8^0C[i]; (ii) slight increase in average annual and seasonal rainfall; (iii) increase in sea surface temperature; (iv) increase in ocean acidification; and (v) sea level will continue to rise. Projections about the future behaviour of extremes including typhoons and ENSO show a range of uncertainties at the moment.

Rationale

The recent Palau Water Policy 2012 states that clean and safe water is essential for the health of the people of Palau. The policy provides a framework whereby Palau's water resources can be managed in ways that will continue to support healthy ecosystems, and that the finances of Palau's water management will support adequate investment, operation, and maintenance, so that the environmental and financial health of Palau's water systems are maintained for generations to come.

Sea-level rise, shifting rainfall patterns and warmer temperatures are impacting the water lenses of the outlying island states, by decreasing the quantity and quality of available water. The residents are dependent on groundwater supply or roof catchment that is already insufficient in

volume and poor in quality. The poor quality water affects health, tourism as well as agricultural productivity.

While there are major water sector activities commencing for Babeldaob and Koror drawing on support from the Government of Japan and the Asian Development Bank (ADB), there has not yet been any activity implemented in the outlying island states.

Outlying states including Angaur, Sonsorol and Hatohobei have been urgently seeking assistance with addressing water issues related to climate change and variability and this project provides a timely opportunity for developing an effective comprehensive and replicable approach rather than piecemeal water sector development that does not fully incorporate climate change.

The availability and access to a supply of good quality water in the outlying states has been degrading over the last couple of decades. Several underground aquifers tapped by wells are considered no longer fit for human use having become stagnant with an unpleasant sulphuric stench or having become salty as a result of saltwater intrusion. This groundwater supply has been declared unsafe for human consumption and food preparation by the Environmental Quality Protection Board. Poor water quality is not confined to underground sources since household and community water tanks have been tested and found to have unsafe levels of e-coli contamination.

Insufficient water supply and poor quality are also related to a lack of maintenance, difficulties with obtaining spare parts, incorrectly sized generators and the remoteness of the outlying island states. Against this background the improvement of water services to the outlying island states by the PWSC is a serious challenge.

The project supports the conservation and protection of natural resources; contributes to the supply of a reliable, quality water supply for people living in the outlying island states; and enhances human health.

Palau has a population of 20,643 (2011 estimate) and the entire population will benefit from some of the activities in this project, e.g. raising the level of awareness about water conservation and the promotion of water conservation measures; improved monitoring and maintenance and the water operations certification course. The approximately 1,354 people (based on 2005 census figures) living in the outlying island states will directly benefit from the improvements in water infrastructure.

Related Projects

A number of climate change and water related projects are currently being implemented in Palau. The following list provides brief information about selected and specific projects where opportunities for direct collaboration and building synergy exist and are being developed.

1) *Implementing Sustainable Water Resources and Wastewater Management in Pacific Island Countries (Pacific IWRM)* Global Environment Facility (GEF), SPC Applied Technical and Geosciences Division. 2008–2013 with Phase 2 (2013-2015) and 3 (2015-2018) being planned. Pacific IWRM has developed Ridge to Reef – Community to Catchment activities to improve water resource and wastewater management and water use efficiency in Pacific Island Countries. In Palau the main focus has been the development of water policy, legislation and a watershed management demonstration activity.

2) *Pacific Environment Community Fund* (PEC) 2012–2014. Palau will receive US$4 million from the Government of Japan through the Pacific Islands Forum Secretariat, to establish a solar-powered desalination project, to ensure a regular and reliable supply of safe drinking water to residents in Peleliu, Palau. The project includes the installation of a solar-powered Reverse Osmosis plant that desalinates brackish groundwater using solar energy, producing fresh water. Palau's Ministry of Public Infrastructure, Industries and Commerce through the Energy Office will be the focal point for the project, and the Bureau of Public Works will operate and maintain the systems upon completion.

3) *SIDS DOCK Solar PV System for Kayangel State water resources,* May 2013–2015. This initiative promotes renewable energy, energy efficiency, and contributes towards sustainable development with support from the United Nations Development Programme (UNDP), World Bank and the Government of Denmark. Activities include technical evaluation and engineering design of the solar powered water pumping systems, including the water storage tank, procurement of required hardware and components, and installation, testing, commissioning, operation, monitoring and evaluation of the solar power water pumping system, as well as development of a sustainable follow-up plan.

4) *Water Sector Improvement Program,* 2011-2015, ADB. A loan fund equivalent to $16 million to address regulatory, management, technical and pricing problems that currently result in high water losses and undermine cost recovery in the states of Arai and Koror. This project supported the establishment of the PWSC and will provide other training and technical assistance in areas such as leak detection that could be expanded to the outer island states with the support of the GCCA: PSIS project

5) *Pacific Regional Integrated Sciences and Assessments* (Pacific RISA) started in 1995 and still ongoing strives to enhance Pacific Island communities' abilities to understand, plan for, and respond to a changing climate. Emphasizing the engagement of communities, governments, businesses, and scientists by translating scientific research into information

and materials that are valuable for stakeholders in key sectors such as water resources. Climate focused water sector education and outreach is part of Pacific RISA's core mission with the National Oceanic and Atmospheric Administration (NOAA).

6) *Water and Environmental Research Institute* of the Western Pacific (WERI) at the University of Guam. Their mission is to seek solutions through research, teaching and outreach programs, to issues and problems associated with the location, production, distribution and management of freshwater resources in Micronesia. Current projects and programmes include watershed management program, rooftop rain catchment sizing, groundwater and aquifer research, atoll hydrologic modelling, water quality production and distribution, water resources management and GIS.

7) *Schools of the Pacific Rainfall Climate Experiment (SPaRCE)* 1995–ongoing. The University of Oklahoma SPaRCE programme seeks to increase awareness of the younger generations about global environmental issues, such as climate change, with hands-on experience by involving them in the collection of rainfall data.

8) *National Climate Change and Health Action Plan (NCCHAP)* 2011-2013, prepared with assistance from World Health Organisation, and includes recommendations on improvements to environmental health monitoring related to for water sources and storage.

9) *North Pacific ACP Renewable Energy and Energy Efficiency Project (North-REP)* 2010 – 2015. The overall objective of the North-REP 11 million Euro project funded by EU and implemented through SPC is to improve the quality of life on the outer islands by increasing access to basic electricity and reducing dependency on fossil fuels through energy efficiency and increased penetration of matured renewable energy technologies in the North-REP countries (FSM, RMI and Palau). In Palau pumps for water treatment plants and reticulated systems are a key electricity demand.

10) *Pacific Adaption to Climate Change (PACC), 2013:* AusAID and GEF funding through Secretariat of the Pacific Regional Environment Programme (SPREP) is supporting delivery of practical community-based adaptation measures and building capacity to adapt to climate change. In Palau the focus is to work with farmers to test and introduce salt water tolerant taro varieties in Ngatpang State, to reduce the impacts of climate change. (It has been proposed that the PACC oversight committee also serves as the GCCA: PSIS project oversight committee with some additional representatives).

11) *Coping with Climate Change in the Pacific Island Region (CCCPIR)* 2009–2015 German Ministry for Economic Cooperation and Development (BMZ, funding), German International Cooperation (GIZ, implementing agency), SPC (regional partner). In Palau CCCPIR focuses on mainstreaming climate change, and integrated land and marine resource management at the national and local level. Project activities may extend to solar thermal water heating and water conservation education.

12) *Palau Joint National Action Plan for Climate Change Adaptation and Disaster Risk Management 2013-2018:* Following a request by Palau in 2013, CROP agencies are organising assistance for Palau with the development of this plan which will be closely linked to the Climate Change Policy Framework currently being developed with support from GCCA: PSIS and CCCPIR

2. PROJECT SELECTION PROCESS

The project selection process involved a number of activities which are listed below in chronological order.

February – June 2012: Review of Background Information

A literature review was conducted of the projects, programmes and activities relating to climate change that were ongoing or recently implemented in the country. Information from the review was compiled into a climate change profile for Palau now available at http://www.spc.int/en/our-work/climate-change/gcca.html. The document provided a useful background for identification of a focus area for the adaptation project in Palau.

A mission had been scheduled for April, however had to be postponed by request of Palau due to other commitments of key stakeholders at the time.

May 2012: Discussions at GCCA: PSIS Steering Committee Meeting

At the first GCCA: PSIS steering committee meeting, 28-29 May, 2012, specific consultations were conducted with country representatives to clarify adaptation needs and priorities. In the case of Palau, adaptation in water, marine resources, human health, agriculture and food security were discussed. The representative from the Office of the President, Protected Areas Network indicated the need for further consultations.

July 2012 Consultative Mission to Palau

A consultative mission with other SPC climate change projects was conducted to Palau. A list of project concepts was generated from discussions at the one-on-one meetings. This list was then discussed with the Environmental Consortium and PACC Core Group on 24th July 2012. During this mission most stakeholders highlighted adapting to climate change in the water sector as a gap and noted the recommendations from completed/ongoing work on sustainable land management, the national climate change and health framework, and integrated water resources management. However, stakeholders identified a need to seek higher level endorsement from the Minister of State and the Vice-President.

August 2012: Confirmation from Government of Palau of the Water Sector as focus for GCCA: PSIS Adaptation Activity

E-mail correspondence with the Office of Environmental Response and Coordination (OERC) and discussions during other meetings with Palau representatives confirmed the selection of the water sector particularly selected outlying island states for the climate change adaptation project for the GCCA: PSIS project.

September -October 2012: Project Concept Note Preparation and Approval

A consultative mission was conducted 24th September - 3rd October 2012. Following consultations with a broad range of stakeholders, a draft project concept was prepared on Addressing Water Sector Climate Change Vulnerabilities in the Outlying States of Palau.

The project concept outlined the key activities, implementing agencies and partners, estimated cost, objectives, justification/rationale and how the project fits with certain key criteria which include feasibility, scientific validity, cost, urgency, equity, replication, measurability, scope and supporting documentation. Technical content and assessment reports provided by Barry Pollock, formerly USEPA, were discussed via teleconference. The PWSC submitted the project concept note to the GCCA: PSIS Project and the European Union for approval. The Concept Note was approved on 27th October 2012.

November 2012 – March 2013

The project concept was discussed with SPC-Applied Geoscience and Technology Division Water Sanitation Programme, IWRM, WERI and other partners.

Palau was struck by Typhoon Bopha in early December 2012 and OERC representatives were unable to participate in the SPC-GCCA: PSIS Regional Steering Committee Meeting.

The project concept was confirmed by letter from President Johnson Toribiong dated 14th December 2012.

Palau national elections took place in November 2012 and there was a change in Government, with associated movement of personnel and institutional restructuring. Work on project design had to await the appointment of new officials and establishment of administrative arrangements.

April – June 2013: Project Design Process

From 24 April - 3 May 2013 SPC's GCCA: PSIS project visited Palau to help develop the PDD. The process involved field visits to Peleliu and Angaur, meetings, consultations, a participatory planning workshop, and collection of related documents.

A Participatory Planning Workshop was held from 1-2 May 2013 in the Ministry of Marine Resources Conference room in Koror State and involved 27 participants from government agencies, NGOs and State Government representatives.

The Project Concept Note was used as a starting point for project planning using the Logical Framework Approach. Participants worked to develop the overall objective, purpose, key result areas and specific activities and developed a preliminary project log frame. The workshop was extremely successful in providing an opportunity for different stakeholders to contribute to the planning process. Following the workshop, a preliminary budget and schedule was developed with PWSC officials.

A number of issues were highlighted in the consultations including that a water policy has been developed for Palau which included climate change. This may need to be revised with the formation of the PWSC and other changes in institutional arrangements. Similarly parallel activities in the water sector need to be coordinated by Palau to maximise synergies. Discussions on project oversight using existing national arrangements, where possible, were also conducted.

Further meetings and teleconferences were held to advance the PDD.

3. PROJECT DESCRIPTION

Overall Objective

The overall objective of the project is to **increase the resilience of the water sector to climate change impacts in Palau**. The overall objective is in line with the high-level aspirations of the Government of Palau as outlined in the Medium Term Development Strategy (MTDS), Action for Palau's Future 2009–2014, which sets out key strategies and actions to help achieve economic, social, environmental and cultural goals and is linked to the National Master Development Plan – Palau 2020. Underpinning the MTDS is the overall goal of a sustained and widespread improvement in general standards of living while preserving cultural and environmental value for the people of Palau'. One of five priority policy actions identified is: Making critical investments in sanitation, water and power with a prioritisation of maintenance.

The other MTDS major outcomes are also consistent with the overall objective of the project: (i) fostering sustainable agriculture and fisheries, (ii) environmentally sound tourism, (iii) refining foreign investment policies and (iv) governance reforms for efficiency. Implementation arrangements and monitoring and evaluation are also included in the development plan, especially as they relate to the Millennium Development Goals (MDGs).

The overall objective is also in line with Community Plans and Island State Governors' requests, sectoral development plans and the PWSC and EPA annual report, budget plans and work programmes.

Purpose

The project purpose is **to help ensure water quality and supply meets the needs of the people in the outlying island states of Palau**. The project results relating to capacity building and awareness raising for water resources will have benefits for the whole of the population (20,643) of Palau, while the assessments and enhanced water quality and supply will benefit the outlying states population (approximately 15% of total, although there tends to be a lot of movement to outlying states on weekends and holidays). The project will provide the key water sector stakeholders, particularly PWSC, with the necessary staff support, equipment, and training opportunities so that they can monitor, maintain, and improve water systems operations in the outlying island states in the face of climate variability and change.

Specifically, the project will provide technical assistance, capacity building and training, including in maintenance and operations, to the key water sector stakeholders in the outlying island states of Palau, in collaboration with SPC Applied Geoscience Technical Division and other partners. The project will also enable the PWSC and outlying island states to enhance water access, availability, and safety, with upgrading of both ground water and rainwater catchment and storage systems in Angaur, Hatohobei, and Sonsorol, and enhancement of water sector infrastructure in Kayangel and Peleliu. Hydrological assessments in the outlying states will be undertaken to enhance existing information on long term water supply. Public

education and outreach, relating to water conservation, efficiency and management throughout Palau will be conducted.

The project will also target vulnerable groups such as women, children, and the disabled. The project closely links with a proposed feasibility study into a water efficiency loan incentive programme together with the National Development Bank of Palau that may be funded under the GCCA: PSIS mainstreaming component. Additionally the integration of climate change into sectoral policies and plans will be useful for the ongoing preparation of the Palau Climate Change Policy Framework and the Joint National Action Plan on Climate Change and Disaster Risk Management.

Key Result Areas (KRA) and Activities

The KRAs identified for this project are as follows:

1) **KRA1: Enhanced capacity of key stakeholders in Palau to monitor and maintain water systems in the outlying states**

   This component includes the following activities.

1.1 Develop and implement water operations certification programs by PWSC. Programs will focus on monitoring and maintenance and will involve training of state water operators in improvements and equipment maintenance as well as collation of data so that trends and risk thresholds can be detected. PWSC will identify a suitable training programme utilising the relevant technical assistance within SPC and other partners where appropriate.

1.2 Prepare a report on a mechanism for sustainable water maintenance at the national level, giving the states the capacity to maintain equipment and troubleshoot problems. A local consultancy to identify a mechanism for planning, budgeting and scheduling of water sector operations and maintenance, including sharing information between national and international experts and agencies will be developed, building on the National Water Policy, which is relevant for several Palau government agencies and programmes, including PWSC, EPQB and the Ministry of Public Infrastructure, Industries and Commerce.

1.3 Recruit a project manager/coordinator to drive and oversee the implementation of this project within the PWSC. A staff member is to be situated in PWSC working with the CEO to coordinate and support the finance and accounting aspects the project and carry out day-to-day operations relating to project implementation.

2) **KRA2: Appropriate improvements made in water sector infrastructure in the outlying states**

   PWSC will undertake the specification, procurement, delivery, installation and maintenance of equipment for water extraction, catchment and storage systems on the outlying island

states. Additional technical assistance and guidelines on equipment specification and locally appropriate technologies may be provided by SPC divisions and other partners.

2.1 Contribute to the water sector infrastructure needs in Angaur, which is a particular focus of the GCCA: PSIS given limited involvement of other partners in the water sector in this state. To address likely climate change impacts there is to be an effort to improve and diversify the water sources being exploited in Angaur. The infrastructure needs for this include; the development of an effective community water catchment demonstration site, repair of water leaks, repair of existing pumps and filters, procurement of a new back-up generator for the coastguard well, a new aerator and carbon filter system to address sulphuric smell of water, repair of existing holding tanks, and new solar power systems as main or back-up energy sources for pumps.

2.2. Contribute to the water sector infrastructure needs in Sonsorol by repairing or replacing existing water storage tanks and installing pumps with labour and other support to be provided by the community.

2.3 Contribute to the water sector infrastructure needs in Hatohobei through the purchase, transport and installation of household stainless steel tanks and repair of two community storage tanks, increasing water availability and taking into account the island often has additional temporary population residing there.

2.4 Contribute to the water sector infrastructure needs in Kayangel and Peleliu including some of the following: installation or replacement of pumps, chlorinator, generator, and voltmeter and provision of additional water tanks. Synergies with parallel externally funded activities like SIDSDOCK and PEC Fund will be important.

3) KRA 3: Availability and quality of water resources in the outlying states assessed

3.1 Conduct a hydrological study into the sustainability of the water lens and the quality of ground water in each outlying island states. Building on previous assessments, a hydrologist will be recruited to further investigate the capacity and recharge rate of the underground water lens, incorporating climate change projections and prepare a report. This information will be provided to water sector stakeholders and available for incorporation by PWSC into water operations planning by the end of the project. This will be undertaken together with regional and international organisations engaged in similar work.

4) KRA 4: Level of awareness about water conservation raised and appropriate measures implemented by Palauan residents

4.1 Develop an awareness raising plan about water conservation for all Palauan states. This will link with ongoing relevant work in climate change and water sector education and awareness through the Palau National and State Government Agencies, NGOs, IWRM

project, Micronesian Conservation Trust, WERI, SPC, SPREP, Pacific RISA, PREL and other partners. Some of these organisations and projects have already undertaken water demand surveys and community participatory assessments that form a baseline.

4.2 Implement and evaluate the awareness plan. It is expected that at least one new effective communication tool will be prepared collaboratively and used widely in the communities during the duration of the project. Regular updates of information and data relating to water conservation and climate change resilience building activities will be available via the web, local television and radio, community noticeboards, printed materials and other appropriate means. This will complement the information disseminated during existing household and community inspections conducted by Government staff. Events such as World Water Day will provide further opportunities. A questionnaire and exit workshop will be conducted to evaluate the effectiveness of the awareness plan for water conservation and management as well as to identify future needs at the end of the project.

The project log frame is presented below:

Log frame addressing water sector climate change vulnerabilities in the outlying states of Palau

Description	Verifiable Indicators	Verification Sources	Assumptions
Overall Objective To increase the resilience of the water sector to climate change impacts in Palau	• Climate variability and change incorporated into PWSC long term planning and operations by 06/2015*.	• Annual reports PWSC • Annual budget submissions • Annual PWSC work plans • Climate Change Policy • Water Policy • JNAP	
Purpose To help ensure water quality and supply meets the needs of the people in the outlying island states of Palau	• More than 20% of the population of two of the outlying states of Palau have improved water storage capacity by 06/2015. • Community water catchments area increased by 10% in one outlying island state by 06/2015 • 10% of population adopt a long term water conservation measure by 03/2015	• Project progress reports • Annual reports PWSC • Annual budget submissions • Annual PWSC work plans • Questionnaires	• Plans, policies and strategies have a stakeholder or community buy-in and willingness to implement. • Communities receptive to information and willing to take proactive action.
Key Result Area 1 Enhanced capacity of key stakeholders in Palau to monitor and maintain water systems in the outlying states	• Four water technicians successfully complete water operations certification course by 06/2015. • Water operations maintenance schedule prepared for the outlying island states for Jan-Dec 2015 by 10/2014	• Certification course • Course results • Annual reports PWSC • Annual budget submissions • Annual PWSC work plans	• Existing water operations staff available for training and in place throughout the project.
Key Result Area 2 Appropriate improvements made in water sector infrastructure in the outlying states	• 1 new community water catchment demonstration site operational in Angaur by 12/2014 • Rainwater catchment capacity increased by at least 20% in Sonsorol and Hatohobei by 06/2015	• Annual reports PWSC • Annual budget submissions • Annual PWSC work plans • Project progress reports	• Suitable staff available for timely recruitment. • Basic logistics: materials, transport available within project timeframe

Description	Verifiable Indicators	Verification Sources	Assumptions
Key Result Area 3 Availability and quality of water resources in the outlying states assessed	• Information about capacity and recharge rate of underground water lens applied by PWSC in water operations planning by 03/2015.	• Annual reports PWSC • Annual budget submissions • Annual PWSC work plans • Community plans • Consultancy report • Project progress reports	• Hydrological study can be undertaken without the need for new drilling.
Key Result Area 4 Level of awareness about water conservation raised and appropriate measures implemented by Palauan residents	• Awareness raising plan by 09/2014 • At least 2 water conservation awareness activities implemented and evaluated by 12/2014	• Annual reports PWSC • Annual budget submissions • Annual PWSC work plans • Awareness raising reports and awareness materials • Project progress reports	• Residents willing to adopt water conservation measures • Water efficiency and conservation equipment available via the private sector
<u>Activities</u> 1.1 Develop and implement water operations certification programs by PWSC. Programs will focus on monitoring and maintenance 1.2 Prepare a report on a mechanism for sustainable water maintenance at the national level, giving the states the capacity to maintain and troubleshoot. 1.3 Recruit a project manager/coordinator to oversee the implementation of this project within the PWSC. 2.1 Contribute to the water sector infrastructure needs in Angaur: effective community water catchment demonstration site, repair of water leaks, repair existing pumps and filters, new back-up generator for coastguard well, new aerator and carbon filter system, repair existing holding tanks, new solar power system as back-up for pumps. 2.2. Contribute to the water sector	<u>Means</u> Technical assistance Information sharing systems Missions to countries Meetings and consultations Training activities Procurement of equipment and transportation Media involvement Reporting and evaluation	Indicative cost €0.5 million	

Description	Verifiable Indicators	Verification Sources	Assumptions
infrastructure needs in Sonsorol: repair existing water storage tanks and install pumps 2.3 Contribute to the water sector infrastructure needs in Tobi: purchase and install household stainless steel tanks, repair two community storage tanks 2.4 Contribute to the water sector infrastructure needs in Kyangel and Peleliu: install/replace pumps, chlorinator, generator, additional water tank, voltmeter 3.1 Conduct a hydrological study into the sustainability of the water lens and the quality of ground water in each outlying island states. 4.1 Develop an awareness raising plan about water conservation for all Palauan states. 4.2 Implement and evaluate the awareness plan			

*The project finishes in December 2014, however SPC is requesting an extension of the project.

4. PROJECT BUDGET

Activity	Budget (USD)	Total (AUD)	Total (Euros)
KRA 1: Enhanced capacity of key stakeholders in Palau to monitor and maintain water systems in the outlying states		**145,000**	
KRA 2: Appropriate water sector infrastructure improvements made in the outlying states			
KRA 3: Availability and quality of water resources in the outlying states assessed		**90,000**	
KRA 4: Level of awareness about water conservation raised and appropriate measures implemented by Palauan residents		**45,000**	
Sub-Total			
Total			
Contingency 6.2%	40,000		
Overall Cost	**650,000**		**500,000**

The sum allocated to Palau for this project is the USD equivalent of €500,000. The detailed budget has been displayed above in USD, however there may be some slight adjustments required due to currency fluctuations.

The first payment will be made to Palau once this Project Design Document is signed by all parties. Payments shall be made into the Government's account. All payments will be made in the currency of the Government of Palau. The second payment can be requested once 80% of the first payment has been fully acquitted. Acquittals must be supported by copies of all receipts. Annual government audits will be sufficient unless any accounting or financial problems emerge. Any interest accruing from the 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.

- Copies of substantiating documents relating to each financial transaction shall form part of the monthly acquittal.

- Reimbursements of funds shall only be made on receipt of the proper acquittal of the funds already advanced.

- Fixed Assets (equipment): All fixed assets (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.
- Quarterly financial reporting to SPC is required and a reporting template will be supplied once the PDD is signed.

5. PROJECT SCHEDULE

Key Result Areas/Activities	2013				2014				2015	
	1Q Jan	2Q April	3Q July	4Q Oct	1Q Jan	2Q April	3Q July	4Q Oct	1Q Jan	2Q April
KRA1: Enhanced capacity of key stakeholders in Palau to monitor and maintain water systems in the outlying states										
1.1 Develop and implement water operations certification programs by PWSC. Programs will focus on monitoring and maintenance										
1.2 Prepare a report on a mechanism for sustainable water maintenance at the national level, giving the states the capacity to maintain and troubleshoot.										
1.3 Recruit a project manager/coordinator to oversee the implementation of this project within the PWSC.										
KRA2. Appropriate water sector infrastructure improvements made in the outlying states										
2.1 Contribute to the water sector infrastructure needs in Angaur: effective community water catchment demonstration site, repair of water leaks, repair existing pumps and filters, new back-up generator for coastguard well, new aerator and carbon filter system, repair existing holding tanks, new solar power system as back-up for pumps.										
2.2. Contribute to the water sector infrastructure needs in Sonsorol: repair existing water storage tanks and install pumps										

Key Result Areas/Activities	2013				2014				2015	
	1Q Jan	2Q April	3Q July	4Q Oct	1Q Jan	2Q April	3Q July	4Q Oct	1Q Jan	2Q April
2.3 Contribute to the water sector infrastructure needs in Hatohobei: purchase and install household stainless steel tanks, repair two community storage tanks										
2.4 Contribute to the water sector infrastructure needs in Kayangel and Peleliu: install/replace pumps, chlorinator, generator, additional water tank, voltmeter										
KRA3. Availability and quality of water resources in the outlying states assessed										
3.1 Conduct a hydrological study into the sustainability of the water lens and the quality of ground water in each outlying island states.										
KRA4. Level of awareness about water conservation raised and appropriate measures implemented by Palauan residents										
4.1 Develop an awareness raising plan about water conservation for all Palauan states.										
4.2 Implement and evaluate the awareness plan										

6. INSTITUTIONAL ARRANGEMENTS

The project will be managed and implemented by PWSC and coordinated at the national level by the Office of Environmental Response and Coordination, Office of the President. The GCCA: PSIS project is being implemented under the ambit of the Letter of Agreement signed on 2nd May 2013 by SPC and the Government of the Republic of Palau. The Palauan Kiribati signatories to the Letter of Agreement are the President of Palau and the Minister of Finance.

Project Oversight Committee

Project oversight will be provided by a Project Oversight Committee (name still to be confirmed) whose membership will comprise representatives from the Office of the President OERC, Ministry of Public Infrastructure, Industries and Commerce, PWSC, Palau Energy Office, Ministry of Finance, Island State Governors and the SPC GCCA: PSIS Designated Climate Change Adviser. The Project Oversight Committee will be responsible for providing technical and policy advice on the implementation of the project. The Oversight Committee will meet (face-to-face meetings and skype/teleconference) once every quarter and/or on needs basis. The Oversight Committee will be chaired by the representative from PWSC. The SPC GCCA: PSIS Palau Coordinator, situated in OERC, and/or the Project Manager/Coordinator recruited for this project will provide secretarial support to the Oversight Committees.

Reporting

The SPC GCCA: PSIS Palau CC Coordinator and the PWSC based Project Manager/Coordinator will be responsible for overseeing the implementation of project activities and providing quarterly progress reports to the Oversight Committee. A template for the quarterly report is presented as Annex 1.

Day to Day Implementation of the Project

A project manager/coordinator will be based in PWSC to implement and manage the project activities. S/he will work closely with the SPC GCCA: PSIS Palau Climate Change Coordinator.

7. RISK MANAGEMENT AND EXIT STRATEGY

Risk Management

Risk and mitigation measures are listed in the table below.

Risk and consequence	Likelihood	Seriousness (Impact)	Mitigation actions	Responsible Person
1. Natural hazards				
Droughts affecting water supply and quality, resulting in focus shifts from project activities to emergency response	Medium	Medium	A number of other projects and programmes are already in place to address water supply issues on Palau	
Typhoons and other extreme events may damage existing water supply infrastructure.	Medium	Medium	Sound early warning systems	Palau-National Meteorological Services

Risk and consequence	Likelihood	Seriousness (Impact)	Mitigation actions	Responsible Person
			Qualified support from NOAA, SPC-AGTD	
2. Remoteness				
Implementing project activities on outlying island states in Palau may be delayed by transportation difficulties and costs.	High	Medium	Extra funding and contingency provisions have been built into the project budget to cope with this risk Opportunities exist for collaboration with existing government transportation systems to the outlying island states.	PWSC State Governors and PWSC
3. **Funding for equipment maintenance**				
Continuous operation and maintenance of the water supply infrastructure and the need for financial resources beyond project life	High	Medium	Project addresses capacity building of water operators in the outlying island states	PWSC
			PWSC to develop a maintenance plan as part of the project Other projects working in Palau in the water sector will also contribute to maintenance Plans by Government of Palau for PWSC to become a self-financing agency by 2015	PWSC ADB, IWRM Government of Palau, MPW, PWSC
4. Lack of stakeholder involvement				
Unclear division of roles between in-country stakeholders and multiple climate change projects	Medium	High	Ensuring key existing committees take on specific project related roles, and new working	Office of the President, OERC, PWSC

Risk and consequence	Likelihood	Seriousness (Impact)	Mitigation actions	Responsible Person
and relevant activities. Limited involvement of civil society Staff turnover and loss of institutional memory			groups only be established as required Project activities involve all civil society in awareness raising activities; media involvement. Training and capacity building provided for PWSC Documentation and record keeping for handover. Sectoral strategic plan development.	 PWSC, OERC, NGOs. SPC and partners PWSC PWSC
5. Duplication/Overlap with other ongoing development or climate change adaptation activities				
Inefficient use of resources, limited sustainability of initiatives beyond project life	Medium	High	Continuous collaboration with other partners and sound project design Ensure project activities and results are shared widely with climate change funding partners	All Donors, SPC

Exit Strategy

The supply of new water supply infrastructure, together with the strengthening PWSC's capacity to maintain the water infrastructure will pave the way for the more effective supply of water to the outlying island states of Palau during and beyond project life. The overall strengthening of the PWSC provided by this project is another part of the exit strategy.

The project's efforts to raise the level of awareness about water conservation and the wise use of water, especially in the face of climate variability and climate change, will assist all Palauans in planning for and coping with future changes.

Collaboration with other projects such IWRM, ADB water project, and with organisations such as SPC-AGTD will enhance the scope and reach of the project beyond project life.

The hydrological studies and assessments that will be undertaken as part of this project will also provide important information that will inform the planning of water supply in the outlying island states beyond project life.

A broader part of the exit strategy is the integration of the water sector issues into the ongoing work on the preparation of a Climate Change Policy and a Joint National Action Plan for Climate Change Adaptation and Disaster Risk Management.

Annex 1 Quarterly Reporting Template

Activities	Progress in Quarter X	Planned Activities in Quarter X+1
Key Result Area 1: Enhanced capacity of key stakeholders in Palau to monitor and maintain water systems in the outlying states		
1.1 Develop and implement water operations certification programs by PWSC. Programs will focus on monitoring and maintenance		•
1.2 Prepare a report on a mechanism for sustainable water maintenance at the national level, giving the states the capacity to maintain and troubleshoot	•	•
1.3 Recruit a project manager/coordinator to oversee the implementation of this project within the PWSC	•	•
Key Result Area 2: KRA 2: Appropriate water sector infrastructure improvements made in the outlying states		
2.1 Contribute to the water sector infrastructure needs in Angaur: effective community water catchment demonstration site, repair of water leaks, repair existing pumps and filters, new back-up generator for coastguard well, new aerator and carbon filter system, repair existing holding tanks, new solar power system as back-up for pumps.	•	
2.2. Contribute to the water sector infrastructure needs in Sonsorol: repair existing water storage tanks and install pumps	•	
2.3 Contribute to the water sector infrastructure needs in Hatohobei: purchase and install household stainless steel tanks, repair two community storage tanks	•	
2.4 Contribute to the water sector infrastructure needs in Kayangel and Peleliu: install/replace pumps, chlorinator, generator, additional water tank, voltmeter	•	
Key Result Area 3: KRA 3: Availability and quality of water resources in the outlying states assessed		

Activities	Progress in Quarter X	Planned Activities in Quarter X+1
3.1 Conduct a hydrological study into the sustainability of the water lens and the quality of ground water in each outlying island states.	•	
Key Result Area 4: KRA 4: Level of awareness about water conservation raised and appropriate measures implemented by Palauan residents		
4.1 Develop an awareness raising plan about water conservation for all Palauan states.	•	
4.2 Implement and evaluate the awareness plan	•	

References

[i] Australian Bureau of Meteorology and CSIRO. 2011. Climate change in the Pacific: Scientific assessment and new research. Volume 1 Regional overview; Volume 2 Country reports.