



**SPC**  
Secretariat  
of the Pacific  
Community

**Secretariat of the Pacific Community**

**Government of the Federated States of Micronesia**

**GLOBAL CLIMATE CHANGE ALLIANCE: PACIFIC SMALL ISLAND STATES**

**DRAFT PROJECT DESIGN DOCUMENT**

**Increasing Coastal Water and Food Security for Climate Change in Selected FSM State  
Outlying Islands**

### **Project Summary**

The **overall objective** of the project is to contribute to water security as a climate change adaptation strategy for the Federated States of Micronesia (FSM) and the **purpose** is to contribute to increased access and sustainable use of quality water in the outlying islands of FSM States. The project will be implemented over the period starting on the date of signature of this project design document and finish on 19th November 2014 – although a request for extension of the entire Global Climate Change Alliance: Pacific Small Island States project has been submitted by the Secretariat of the Pacific Community (SPC) to the European Union.

The **key result areas** (KRAs) are as follows: (i) Education and awareness on sustainable water use and conservation in the context of climate change enhanced in FSM; (ii) Improved water infrastructure for catchment, storage and emergency services in place for at least one outlying island; (iii) Household and communal water systems maintained, monitored and managed sustainably in at least one outlying island; and (iv) Improved information on available water resources in at least five outlying islands of Yap and Chuuk States.

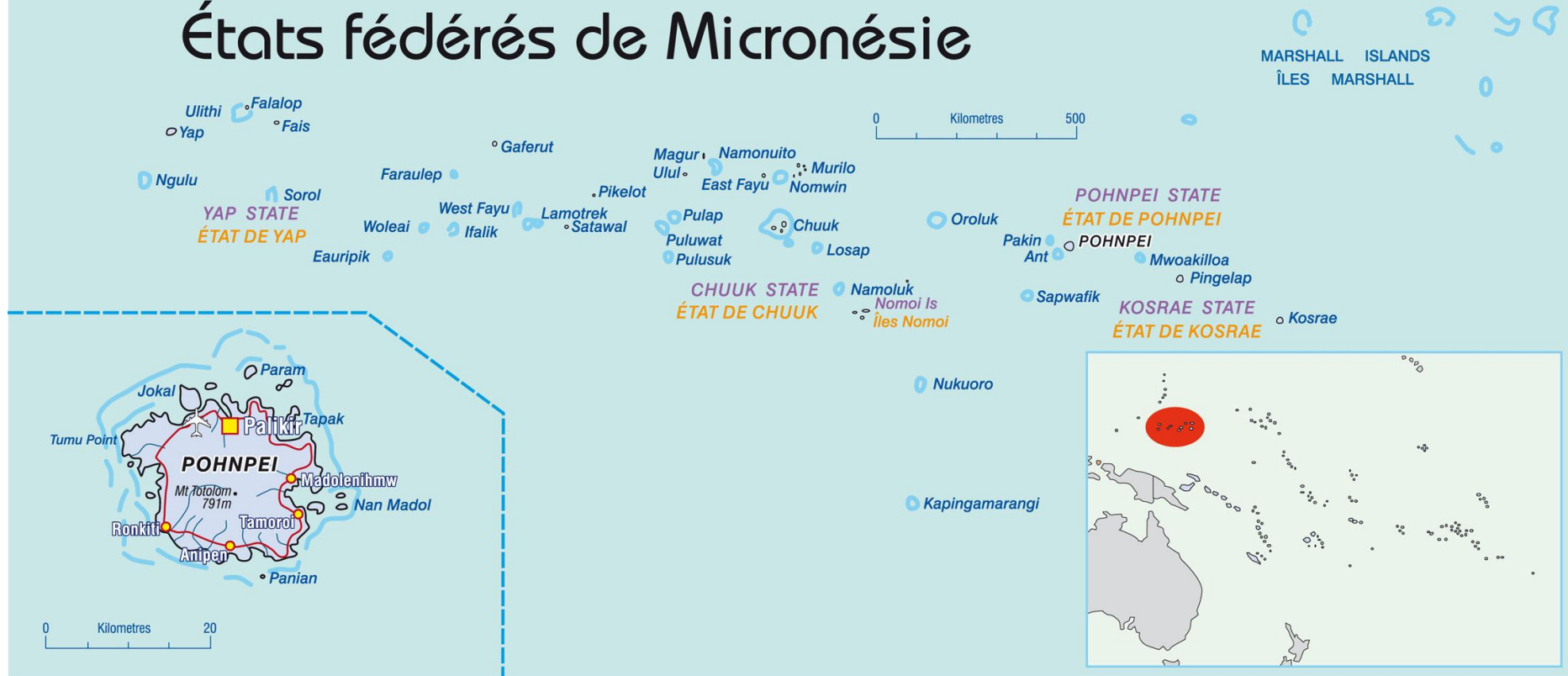
The project will provide FSM National and State Government agencies and selected outer island communities with the necessary technical assistance, staff support, equipment, and training opportunities so that they can monitor, maintain, and improve water systems including for food production in the outlying islands, in collaboration with SPC's Water and Sanitation Program- and other partners. The project will enhance water catchment and storage, together with improved access to emergency water supply in Fais Island. Hydrological assessments in other outlying islands will be undertaken to enhance existing information on long term water supply. Public education and outreach, relating to water conservation, monitoring and management throughout the outlying islands of FSM will also be conducted. This will especially target vulnerable groups such as women, children and the disabled.

This project is consistent with the climate change adaptation needs and priorities for FSM as identified in the FSM National Resolution No. 01-2011 which provides a rationale for development of a comprehensive policy, water sector investment plan and enhanced coordination across the four states. Intensive participatory consultations have informed the development of this project.



# Federated States of Micronesia

## États fédérés de Micronésie



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**SIGNATURE PAGE**

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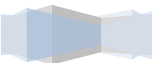
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## 1. INTRODUCTION

The Global Climate Change Alliance: Pacific Small Island States Project (GCCA: PSIS) 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 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.

The Federated States of Micronesia (FSM), as one of the countries participating in this project, has already highlighted many of its adaptation needs in official documents and at various regional and international fora. It has, during the last decade, been involved in a number of climate change projects which have helped shape how climate change adaptation is dealt within the country. The FSM'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 climate change, as it would lead to better management of natural resources and sustainable development.

Given the foregoing, FSM has identified "Increasing Coastal Water and Food Security for Climate Change in Selected FSM State Outlying Islands" as its focus for a national climate change adaptation project to be implemented under the SPC GCCA: PSIS project.

This project design document (PDD) outlines the overall objective, project purpose, key result areas and activities that comprise the project. The project design follows the logical framework approach. The first section of the PDD outlines the background to the project, its



rationale and related projects. Section two describes how the project was identified. The third section describes the project's overall objective, project purpose, key result areas and activities using a logical framework approach, while the fourth and fifth sections of the document provide a budget and schedule for the project activities. Institutional arrangements, and risk management and exit strategies are the content of sections 6 and 7 respectively.

## **Background**

The Federated States of Micronesia (FSM) is a group of 607 islands in the western Pacific Ocean. These islands vary in size from small islets that disappear at high tide to atolls to large volcanic islands of more than 80 km<sup>2</sup>, with an overall total land area of 701km<sup>2</sup>. The exclusive economic zone covered an area of 2,980,000km<sup>2</sup>. Approximately 65 of the islands and atolls are inhabited, with an estimated population of 102,360 in 2011. The most striking physical characteristic of FSM is the small land area spread over a great expanse of water from 1°S–14°N latitude, and 135°W–166°E longitude.<sup>i</sup>

The country comprises four states: Chuuk, Kosrae, Pohnpei and Yap, with each having a considerable degree of autonomy. The SPC GCCA: PSIS has been guided by the Government of FSM, through its Climate Change Country Team to focus on selected outlying islands of Yap and Chuuk States.

Yap State's outlying islands consist of 14 islands and atolls. The 2010 state-wide population was 11,376. The state has a total land area of 102 km<sup>2</sup>. Yap is fairly developed yet maintains its traditional cultural norms and practices and has a generally good quality of life. Nonetheless, ground water on the inhabited islands is mostly non-potable, especially during dry seasons, and this is a major issue that has not been resolved, despite several decades of effort.

Chuuk State, population 48,651 (2010), includes several sparsely populated outer island groups. The total land area is 99 km<sup>2</sup>, and Chuuk has one of the largest semi-closed circular oceanic atoll lagoons in the world. Water is commonly non-potable.

The mainstays of the Micronesian economy are subsistence farming and fishing. In recent years, FSM has earned between USD 18 million and 24 million annually from licensing fees paid by foreign vessels fishing for tuna in the country's exclusive economic zone. Some locally-owned fishing operations and on-shore processing have also been initiated, along with farming of giant clams and other marine products. Small-scale commercial agriculture has had some successes, especially in niche export markets, e.g. kava (sakau), betel nut, black pepper, cooked breadfruit, and processed noni. Tourism has increased in recent years with a number of small hotels opening in the states, some with facilities for diving. However, large-scale investment in this sector is constrained by limitations in major air transportation services, along with land-tenure issues and competition with other countries that are closer to major tourist markets.<sup>ii</sup>

The FSM government plays a central role in the economy; the national and state-level governments employ over half of the country's workers and Government services and public enterprises account for 38% of the Gross Domestic Product. FSM's external transactions continue to be characterised by a heavy and increasing reliance on imports without a



comparable increase in exports. In 2004, the country had a negative trade balance of more than USD 130 million. The total value of exports, including tourism, is only around 10% of the value of imports. Inequality of income and the incidence of families with incomes below the poverty line are among the highest in the Pacific region. FSM has made limited progress towards achieving the Millennium Development Goals by 2015.<sup>iii</sup> An analysis by the Asian Development Bank indicated economic growth in the medium term is not expected to exceed 0.6%. This is due to a number of factors including limited new private sector initiatives, scheduled decline in the annual Compact of Free Association grants, outward migration and volatility of commodity prices

### **Present and Future Climate for FSM**

Overall, FSM has a hot, humid tropical climate with little seasonal variation in temperature, having less than 3°F (1.5°C) variance between the average hottest and coolest months. The country has two distinct seasons — a dry season from November to April and a wet season from May to October. Due to the geographical spread of the islands in FSM, the climate can vary across the FSM region, so recent studies by the Pacific Climate Change Science Programme have divided the country on an east-west basis for analysis. Yap and Chuuk are in the western area.<sup>iv</sup>

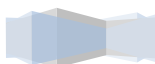
Rainfall in FSM is directly linked with the variations in climate features that are associated with the movement of the Inter-tropical Convergence Zone (ITCZ), South Pacific Convergence Zone (SPCZ) and the West Pacific Monsoon (WPM). During the wet season, the ITCZ strengthens and moves north, close to FSM. The West Pacific Monsoon also has an impact on rainfall, bringing additional rain during the wet season.<sup>v</sup>

FSM's climate varies considerably from year to year due to the El Niño-Southern Oscillation (ENSO). During El Niño events the SPCZ tends to shift towards the north-east, while the ITCZ tends to shift closer to the equator and these shifts have a profound influence on rainfall, sea level rise, including the risk of tropical storms. El Niño events are associated with drier conditions and occasional droughts. Fires, water shortages and food shortages occur during severe dry events. During La Niña events, above-average numbers of tropical storms occur as well as more rainfall. Droughts, typhoons, storm waves, flooding and landslides all affect FSM.

Future projections of climate change for FSM (based on the Pacific Climate Change Science Program 2011) over the next 15 to 35 years show (i) average air temperature will increase by 1.7 - 3.3°F (ii) an increase in the number of very hot days; (iii) a decrease in cooler weather; (iv) increase in average annual rainfall with increases in wet and dry season rainfall; (v) increase in sea surface temperature; (vi) increase in ocean acidification; and (vii) sea level will continue to rise. Projections about the future behavior of typhoons and the El Niño-Southern Oscillation show a significant range of uncertainties at the moment.

### **Rationale**

The many high islands, small atolls, and lagoon environments of FSM exhibit a range of biodiversity and geomorphology. Clean, safe water is generally scarce and this scarcity is



exacerbated by intensive use of freshwater resources and pollution of streams and water storage areas.

Freshwater supply is also subject to high variability as a result of seasonal effects, long-term drought cycles, and the El Niño/La Niña-Southern Oscillation pattern. It is generally acknowledged that each state is under-prepared to accommodate future changes in climate such as increased variability in rainfall or prolonged droughts.

Availability of water is a key factor limiting economic development and influencing public health in the four States. Each State has its own Water Utility and Environmental Protection Agency, and related water quality standards and regulations. However, the State Governments have insufficient staff, equipment, maintenance procedures and knowledge management systems to deliver on their existing programs. Furthermore, there has not been any major water related infrastructure investment in the outlying islands of each State for nearly 20 years.

A call for a national cross-sectoral coordinating body on water and sanitation to guide the sustainable management of water resources and a water sector investment plan in the four states was supported by the Micronesian Traditional Leaders. Elements of this call are being developed through the FSM Integrated Water Resources Management program with technical assistance from SPC Applied Geoscience Technical Division.

A Comprehensive National Water and Sanitation Policy outline has been developed which includes the following elements:

- Assessment of water resource status and trends and ongoing water resources data collection, management and assessment;
- The provision, maintenance and identification of future needs of water supply and sanitation services;
  - Water accessibility
  - Water safety planning and drinking water standards;
  - Water source protection and control of polluting activities;
  - Water use efficiency and demand management;
- Water sector investment planning;
  - Mainstreaming integrated water resource management and water use efficiency principles into national development planning, reporting, and budgeting;
  - Setting water sector targets development of performance targets;
  - Establishment of links with priority health, climate, and disaster management projects and programs operating in the Micronesia and broader Pacific Islands region; and
- Community awareness and engagement in water, sanitation and hygiene issues.

The Climate Change Policy 2009 outlines the integration of climate change into the Strategic Development Plan/Infrastructure Development Plan (SDP/IDP) and into other policies, strategies and action plans. The Office of Environment and Emergency Management (OEEM) is designated as the focal point for all government climate change activities by law





under Title 25, the FSM Environmental Protection Authority Act. The FSM National Resolution No. 01-2011, which followed the National and State Water Summit 2011, specifically noted the impacts of climate change on water and food security.

National policies often need additional policies or legislation to be enacted by the States for implementation to result.

Populations in Yap and Chuuk's outlying islands have been suffering from climate sensitive water shortage and quality issues. Several of these islands are about to receive electricity (solar photovoltaic) through an EU-funded project implemented by SPC. This project will result, not only in additional opportunities for the water sector, but also risks related to increased pumping of water from groundwater resources. (Currently groundwater is not widely exploited in the outlying islands due in part to the lack of electricity to run pumps, as well as the tendency for it to be brackish).

Some scientific assessments of water resources including recommendations for improvements have been conducted in a few outlying islands of Yap State, e.g. Fais Island, thereby making these islands ideal candidates for implementation under the GCCA: PSIS project. Similar studies have not yet been done for the outlying islands of Chuuk.

The GCCA: PSIS project will therefore focus on implementing water security measures that also respond to climate change and variability in the outlying islands of Yap State where hydrological assessments provide the necessary foundation for project design. Hydrological assessments will be conducted for some of the outlying islands of Chuuk State thereby paving the way for future implementation projects. All of the islands of FSM will benefit from the education and awareness activities included in the project.

## **Related Projects**

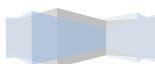
A few climate change-related and water related projects are currently being implemented in FSM, although the specific sites for implementation rarely overlap. The following list provides brief information about specific projects where opportunities for direct collaboration and building synergy exist 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. The FSM's GEF Pacific IWRM Demonstration Project entitled "Ridge to Reef: Protecting Water Quality from Source to Sea" has strengthened national coordination in the water and sanitation sector and has enhanced community collaboration to improve water resource management.
- 2) *Climate Adaptation, Disaster Risk Reduction and Education (CADRE)* 2011-2014, was initially funded through the USAID Disaster Mitigation, Relief, and Reconstruction



Program (DMRRP) for Pohnpei State and further expanded to the rest of the FSM and RMI with funding support by the AusAID. This Project is fully implemented by the International Organization for Migration (IOM): CADRE aims to build resilience of vulnerable communities to natural hazards particularly those that are climate induced. It targets students at up to 50 schools in both the FSM and RMI with climate adaptation, disaster risk reduction and education programs. The FSM OEEM, National and State Departments of Education in the FSM and the Chief Secretariat Office (CSO) and Ministry of Education in the RMI are the local partners.

- 3) *International Climate Change Adaptation Initiative-Pacific Adaptation Strategy Assistance Program (ICCAI PASAP), SPREP and SPC, 2011-2013*: funded by the Australian Department of Climate Change and Energy Efficiency (DCCEE) in all the FSM States and aims to enhance the capacity of partner country to assess key vulnerabilities and risks, formulate adaptation strategies and plans and mainstream adaptation into decision making. The major output of the PASAP project is: Country (FSM)-led vulnerability assessment and adaptive strategies informed by best practice methods and improved knowledge. The project activities included community participatory surveys conducted in Yap which included Ulithi and Fais Atolls; evidence-based field research conducted on drought and salt tolerant varieties of sweet potatoes and sweet taro in Dinay and Wugeem, Yap; etc. Activities are implemented in partnership with the COM-FSM CRE, State Departments of Agriculture, NGOs, and community members.
- 4) *Water and Environmental Research Institute of the Western Pacific (WERI), 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 programs 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.
- 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) *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.
- 7) *National Climate Change and Health Action Plan (NCCHAP)* 2011-2013, prepared with assistance from World Health Organization, and include recommendations on improvements to environmental health monitoring related to water sources and storage.



- 8) *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 FSM battery houses have been constructed on each of the outer islands where mini-grids are to be installed. Solar grids are working in at least two Yap islands. These have roofs that can provide catchments and used as supplementary community source.
- 9) *FSM Joint National Action Policy and State Action Plans for Climate Change Adaptation and Disaster Risk Management 2013-2018*: Following a request by FSM in 2012, CROP agencies are providing assistance for the FSM and its States with the development of this policy and plans.
- 10) *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 FSM CCCPIR is undertaking mainstreaming climate change, and integrated land and marine resource management at the national and local level. Project activities may extend to water conservation education and training.

## 2. PROJECT SELECTION PROCESS

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

### **February – April 2012: Review of Background Information**

A literature review was conducted of the projects, programs 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 FSM now available at <http://www.spc.int/en/our-work/climate-change/gcca.html>. The document provided a useful background for discussion with stakeholders and identification of a focus area for the adaptation project in FSM.

### **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 FSM, adaptation in water, marine resources, human health, agriculture and food security were discussed. The representative from the OEEM indicated the need for further consultations with State governments and climate change country team members.



## **June 2012: Confirmation from Government of FSM of coastal water and food security sectors as focus for GCCA: PSIS Adaptation Activity**

E-mail correspondence with OEEM and discussions during other meetings with FSM representatives confirmed the selection of the focus of coastal food and water security in particular for selected outlying islands for the climate change adaptation project for the SPC-GCCA: PSIS project.

## **July 2012: Stakeholders Consultation Meeting**

A consultative mission was conducted 25 – 30 July 2012. A GCCA: PSIS stakeholders' consultation meeting was held in Pohnpei back to back with a Hyogo Framework Review meeting facilitated by SPC Applied Geoscience Technology Division, which brought together representatives from the States and the climate change country teams.

After identifying possible activities in each state and analyzing ongoing initiatives, the participants discussed and selected the states of Chuuk and Yap. Particularly in Yap there were sufficient baseline studies to proceed with adaptation implementation. Ideas discussed were: Chuuk: hard and soft engineering coastal protection measures; rainwater harvesting; raised taro patches; Yap: modifying the existing runway at Ulithi Atoll to harvest rainwater for human consumption and agricultural use.

## **July – November 2012: Project Concept Note Preparation and Approval**

Through follow-up consultations with a broad range of stakeholders a draft project concept was prepared on "Increasing coastal food and water security for climate change in selected Federated States of Micronesia state outlying islands". Chuuk and Yap agencies held internal discussions about site selection in their outlying islands and researched all available information.

However, due to the unfortunate loss of data reports from 2010, Chuuk State was unable to access sufficient baseline data on water resources in its outlying islands to inform project design. It was therefore agreed that a feasibility assessment would be a necessary first step for any adaptation activity in Chuuk. It was further agreed that since sufficient information existed for Yap State, project activities and the bulk of the project funding would be focused on Yap, with a sixth of the total funding retained for further feasibility studies including hydrological assessments in Chuuk.

## **December 2012 – March 2013**

At the second GCCA: PSIS regional steering committee meeting in December 2012, FSM representatives confirmed the sector and advanced scheduling of project design work. Initial scheduling of missions to Yap and Fais Island in early 2013 had to be postponed for a variety of reasons including extended unavailability of the Pacific Missionary Airlines pilot, and other commitments by key FSM National and State partners.

During consultations with WERI, it was confirmed that the best option is to improve the water catchment/storage systems and develop the Sahagow well on Fais Island, Yap and other groundwater sources as emergency sources only. This was further confirmed during a meeting with WERI in Guam, 4 June 2013.



### **April 2013 Project Concept Elaboration Mission to Fais Island, Yap**

A mission was undertaken to Fais Island from 3 – 7 April 2013. This provided an opportunity for Yap State authorities and the GCCA: PSIS representatives to assess the situation on the ground, consult with communities (including Fais Island community members based in Ruu, a community on the main island of Yap), scope the project and develop an initial budget. The project concept was finalized and approved on 10 May 2013.

### **May – June 2013: Project Planning Process**

From 4 - 12 June SPC's GCCA: PSIS project staff together with OEEM Director and the FSM/SPC Coordinator undertook a mission to Yap to assist with the PDD development. The process involved meetings, consultations, participatory workshops, and collection of related documents.

The one and half day FSM-Yap Project Design Planning Workshop was held from 6 - 7 June 2013 at the Small Business Development Center in Colonia in Yap and involved 24 participants from the national and state government agencies, IGOs, NGOs and community representatives including some from Fais Island.

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 key government representatives.

A number of issues were highlighted in the consultations including the need to meet with Chuuk State representatives to detail the proposed feasibility plan and related activities. Linkages with the IWRM programme and associated water sector policy and the parallel activities in the energy sector need to be coordinated by FSM to maximize synergies. Discussions on project oversight emphasized using existing state and national arrangements, where possible.

Further meetings and teleconferences were held with other agencies and stakeholders to advance the project design. A complete log frame is presented in Section 3 of this PDD.

## **3. PROJECT DESCRIPTION**

### **Overall Objective**

The overall objective of the project is to **contribute to water security as a climate change adaptation strategy for FSM**. The overall objective is in line with the high-level aspirations of the Government of FSM. The Strategic Development Plan (SDP) for FSM provides a road map for social and economic development for 2004–2023 and has four main objectives: (i) stability and security; (ii) improved enabling environment for economic development (iii) improved education and health status; and (iv) assured self-reliance and sustainability.



The overall objective is also in line with the Government's other plans, policies and strategies including the National Climate Change Policy 2009, State Development and Disaster Risk Management Plans, sectoral development plans and particularly the Water Policy Framework and work programs. The FSM Joint Policy for Climate Change Adaptation and Disaster Risk Management (currently under development) together with Joint State Action Plans are also taking into account planned and identified needs for adaptation activities in the coastal areas, water and food security sectors as key priorities.

## **Project Purpose**

The project purpose is to **contribute to increased access and sustainable use of quality water in outlying islands of FSM States**. The project will assist the communities of the outlying islands of FSM, commencing with those that have sound scientific baseline studies, and key FSM water sector stakeholders, particularly Yap (and to a lesser extent Chuuk) State Public Service Corporations (PSC), State Resources and Development Department (RD), and Yap State Environmental Protection Agency (EPA), with necessary assessments, staff support, equipment, awareness materials and training opportunities. This should enable them to monitor, maintain, and improve water systems and water management in the outlying islands in the context of climate variability and change.

In collaboration with SPC Applied Geoscience Technical Division and other partners, the project will enable the State Government Agencies and outlying island communities to enhance water access, availability, and safety, with upgrading of both ground water and rainwater catchment and storage systems in Fais Island. Monitoring and maintenance of water systems will be a key part of the project. Assessments of water resources across other outlying islands in Yap and Chuuk State will also be conducted to enhance existing information on long term water supply. Public education and outreach, relating to water conservation, efficiency and management throughout FSM building on the National Water Policy Framework priorities will be conducted. This will especially target vulnerable groups such as women, children, and the disabled.

Lessons learnt from the project will be shared nationally and regionally. The demonstration of best practices and integration of climate change into sectoral policies and plans (through other components of the GCCA: PSIS project) will be useful for the preparation of the FSM Joint Climate Change and Disaster Risk Management Policy and the Joint State Action Plans on Climate Change and Disaster Risk Management.

## **Key Result Areas and Activities**

The key result areas (KRA) identified for this project are as follows:

### **KRA 1 Education and awareness on sustainable water use and conservation in the context of climate change enhanced in FSM**

- 1.1 Develop an education and awareness action plan for FSM with a focus on Yap; conduct baseline and end-of-project survey to determine uptake of water conservation and climate change adaptation education activities in Yap State. A communications plan will



be prepared to plan and guide this activity and will link with ongoing relevant work in climate change and water sector education and awareness being conducted by government and non-government partners and other projects. A baseline and end-of-project survey will be conducted at the beginning and end of the project implementation period to determine the effectiveness of the education and awareness activities.

- 1.2 Develop education and awareness materials and activities including: materials in English and at least four local languages using print, radio and other media for outlying islands in FSM; and conduct at least five community workshops on water conservation and climate change in Yap State. Information materials relating to water conservation and climate change adaptation will be prepared and distributed via the web, local television, radio, community noticeboards, print media and other appropriate means. (Only some of these means are available in the outlying islands). This will complement information disseminated during existing household and community inspections and during events such as World Water Day.

## **KRA 2 Improved water infrastructure for catchment, storage and emergency services in place for at least one outlying island**

This involves the specification, procurement, delivery and installation of equipment principally, although not exclusively, for water catchment and storage systems on Fais Island in Yap State. This will require input from Yap State Government agencies, SPC technical divisions and other partners. This KRA is linked very closely with KRA 3 which focuses on monitoring and maintenance, which are seen as critical for long term sustainability.

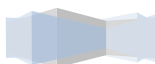
- 2.1 Update/verify household water demand/infrastructure needs in Fais Island. Building on previous work a further quantitative assessment will be undertaken to verify household and communal water infrastructure in Fais Island. This assessment will take into account the fact that the island often has additional temporary population residing there.
- 2.2 Procure, transport and install household water catchment and storage systems, including guttering, pipes, brackets, tie-down and platforms, and improvements to existing household catchment systems in Fais Island. This will include the preparation of detailed specifications. SPC will help facilitate the procurement of the equipment together with Yap State Government Agencies. The community on Fais Island will assist with labor and other support.
- 2.3 Assess groundwater specifications, procure and install solar pump system for emergency well in Fais Island. This activity will be based on the reports prepared by WERI and provides an opportunity, together with other partners such as the EU North REP project, to explore diversification of available water sources on Fais Island for use particularly during emergency situations.
- 2.4 Improve existing infrastructure for communal catchments and storage in Fais Island and four other outlying islands of Yap. Recognizing there is untapped community roof catchment area in place on most outlying islands, although in many cases the roof



catchment is degraded, there is potential to increase water availability through basic repairs and cleaning of systems. There is also an opportunity to establish community catchments at battery houses being installed by the NorthREP project and maintained by YSPSC in some of the outlying islands.

### **KRA 3 Households and communal water systems maintained, monitored and managed sustainably in at least one outlying island**

- 3.1 Coordination and oversight activities: form a Yap State Project Steering Committee; recruit a coordinator; and support project focal point in Fais Island. A project coordinator is to be recruited, situated in YSRD and working closely with YSEPA to coordinate and support the administrative, financial and accounting aspects of the project and carry out day-to-day operations relating to project implementation. A suitable person will be identified and supported with a small honorarium in Fais Island to facilitate installation of the equipment and delivery of the maintenance programs. A Project Steering Committee will also be established to provide project oversight.
- 3.2 Establish regular water quality testing; provide community training on monitoring and maintenance; and develop a monitoring and maintenance plan together with an agreement for long term maintenance on Fais Island. This is an expansion of YSEPAs current testing work. Additional activities include training of local community members on Fais Island to monitor and maintain household water systems, and the development of a schedule and agreement for maintenance by householders and the community beyond the project life.
- 3.3 Develop a community training toolkit about maintenance and monitoring of household/community catchment and storage systems in outlying islands in FSM and conduct a trial on one outlying island. This toolkit prepared under the guidance of YSEPA is to provide practical guidance for maintenance of roofs, guttering and tanks and monitoring of water quality. It will also consist of a physical toolkit with items such as patch systems and basic tools, and simple water quality monitoring kits e.g. presence/absence tests for coliform bacteria.
- 3.4 Provide technical training on monitoring and maintenance for YSPSC and agricultural extension officers. This will include technical training on the maintenance of pumps and emergency well systems and will link to the planned training of YSPSC employees to operate the mini-grid photovoltaic systems on outlying islands.
- 3.5 Develop guidelines for water infrastructure installations, monitoring and maintenance which will include the possibility of payment arrangements, for outlying islands in FSM. Building synergies with IWRM and other relevant planning and policy work at the State and National level the project will develop guidelines, and if appropriate, draft regulations, for water infrastructure installations, monitoring and maintenance. These will include identification of possible payment arrangements for maintenance of household/community water systems for outlying islands in FSM. The guidelines will also develop an agreed formula for effective distribution of water from community catchments (per person/household/day) during disasters and emergencies.





#### **KRA 4 Improved information on available water resources in at least five outlying islands of Yap and Chuuk States**

- 4.1 Prepare a basic inventory of all existing water infrastructure in all outlying islands of Yap and selected outlying islands of Chuuk. This will involve the development of a basic survey that can be conducted by designated community members in each outlying island with reporting back of results via radio. YSRD will facilitate this process with other partners. Where such assessments already exist, they will be updated.
- 4.2 Conduct water quality studies on Satawal and two other islands. Baseline monitoring will be conducted by YSEPA. Due to the remoteness and lack of air transport for Satawal and some other outlying islands, this may involve procurement of simple field testing kits that can be used by community members.
- 4.3 Conduct a hydrological assessment of water resources in Satawal and at least four other outlying islands. This will build on any existing assessments and will involve a qualified hydrologist who will assess the sustainability of the water lens and the quality of ground water in each of five outlying islands as well as rainwater catchment potential. This information will be provided to water sector stakeholders and available for incorporation by Yap State into water sector planning.
- 4.4 Identify actions to address water security in at least two outlying islands of Chuuk based on hydrological assessments. Design, select study sites and conduct assessments of water resources for outlying islands of Chuuk including preparation of an action plan with recommendations and proposal for funding.
- 4.5 Hold a lessons learnt workshop on sustainable use of quality water in outlying islands of FSM. This will bring together state and national water stakeholders to exchange information, materials, and discuss lessons learnt from the project in order to replicate best practices across FSM. Interested countries in the Pacific region may be invited to participate if feasible.

The project log frame is presented below:



## Project Log Frame

<b>Project title: Increasing coastal water and food security for climate change in selected Federated States of Micronesia (FSM) state outlying islands</b>			
<b>Description</b>	<b>Verifiable Indicators</b>	<b>Verification Sources</b>	<b>Assumptions</b>
<p><b>Overall Objective:</b></p> <p>Contribute to water security as a climate change adaptation strategy for FSM</p>	<ul style="list-style-type: none"> <li>Document on lessons learnt about sustainable use of quality water in the context of climate change for outlying islands of FSM available by 06/2015*.</li> </ul>	<ul style="list-style-type: none"> <li>Annual reports, work plans, budgets for Yap State Agencies</li> <li>OEEM annual report</li> <li>Climate Change Policy</li> <li>Water Policy</li> <li>JSAP</li> <li>Lessons learnt workshop report</li> <li>Project reports</li> </ul>	<ul style="list-style-type: none"> <li>Plans, policies and strategies have a stakeholder or community buy-in and willingness to implement.</li> </ul>
<p><b>Purpose:</b></p> <p>Contribute to increased access and sustainable use of quality water in the outlying islands of FSM States</p>	<ul style="list-style-type: none"> <li>Guidelines for water infrastructure installations in outlying islands of FSM distributed by 06/2015</li> <li>Community water catchments area increased by 10% across four outlying islands of Yap State by 03/2015</li> <li>5% of Yap State population adopt a long term water conservation measure by 06/2015</li> </ul>	<ul style="list-style-type: none"> <li>Annual reports, work plans, budgets for Yap State Agencies</li> <li>Project progress reports</li> <li>Questionnaires</li> </ul>	<ul style="list-style-type: none"> <li>Communities receptive to information and willing to take proactive action.</li> </ul>
<p><b>Key Result Area 1</b></p> <p>Education and awareness on sustainable water use and conservation in the context of climate change enhanced in FSM.</p>	<ul style="list-style-type: none"> <li>Water security education and awareness plan distributed by 09/2014</li> <li>Printed materials on water conservation and maintenance distributed to at least two outlying islands by 07/2014.</li> <li>At least two awareness programs conducted in Yap state so as to</li> </ul>	<ul style="list-style-type: none"> <li>Annual reports, work plans, budgets for Yap State Agencies</li> <li>Awareness raising reports and awareness materials</li> <li>Project progress reports</li> <li>Education and awareness plan</li> </ul>	<ul style="list-style-type: none"> <li>Residents willing to adopt water conservation measures</li> <li>Suitable staff available for timely recruitment.</li> </ul>

	reach 25% of the population by 12/2014		
<b>Key Result Area 2</b> Improved water infrastructure for catchment, storage and emergency services in place for at least one outlying island	<ul style="list-style-type: none"> <li>New installation or upgrade of water catchment storage and emergency water services in place for 80% of Fais Island population by 06/2015</li> <li>Emergency water supply operational for Fais Island by 04/2015</li> </ul>	<ul style="list-style-type: none"> <li>Annual reports, work plans, budgets for Yap State Agencies</li> <li>Project progress reports</li> <li>Procurement and tender documents</li> </ul>	<ul style="list-style-type: none"> <li>Basic logistics: materials, transport available within project timeframe</li> <li>Delivery and installation not affected by an extreme weather event e.g. typhoon</li> </ul>
<b>Key Result Area 3</b> Household and communal water systems maintained, monitored and managed sustainably in at least one outlying island	<ul style="list-style-type: none"> <li>Monitoring, management and maintenance program for all households in Fais Island agreed by Fais community by 03/2015</li> <li>Maintenance training tool kit trialled in one outlying island of Yap State by 12/2014</li> </ul>	<ul style="list-style-type: none"> <li>Annual reports, work plans, budgets for Yap State Agencies</li> <li>Reports on training activities</li> <li>Training toolkit</li> <li>Monitoring and maintenance plan for Fais Island</li> <li>Signed agreement for monitoring with Fais Community</li> </ul>	Community willing to adopt monitoring and maintenance activities.
<b>Key Result Area 4</b> Improved information on available water resources in at least five outlying islands of Yap and Chuuk States	<ul style="list-style-type: none"> <li>Basic inventory of all existing water infrastructure in all outlying islands of Yap available by 09/2014.</li> <li>Hydrological assessment of water resources in four outlying islands of Yap State available by 03/2015</li> </ul>	<ul style="list-style-type: none"> <li>Inventory results</li> <li>Report on hydrological assessment</li> <li>Water quality data</li> <li>Report on lessons learnt workshop</li> </ul>	<ul style="list-style-type: none"> <li>Hydrologist available to undertake the assessment in view of the long travel time to reach the outlying islands</li> <li>Shipping schedules can be flexible so as to allow the hydrological work to take place</li> </ul>
<b>Activities</b> Detailed in Table below	<b>Means:</b> Technical assistance Information sharing systems Missions to countries Meetings and consultations Training activities Procurement of equipment and transportation Media involvement Reporting and evaluation	<b>Indicative Budget</b> Indicative cost €0.5 million	

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

#### 4. PROJECT BUDGET

Activity	2013				2014				2015		Budget
	1Q Jan	2Q April	3Q July	4Q Oct	1Q Jan	2Q April	3Q July	4Q Oct	1Q Jan	2Q April	(USD)
<b>Project title: Increasing coastal water and food security for climate change in selected Federated States of Micronesia (FSM) state outlying islands</b>											
<b>Overall Objective: Contribute to water security as a climate change adaptation strategy for FSM</b>											
<ul style="list-style-type: none"> <li>Document on lessons learnt about sustainable use of quality water in the context of climate change for outlying islands of FSM available by 06/2015*.</li> </ul>											
<b>Purpose: Contribute to increased access to and sustainable use of quality water in the outlying islands of FSM States</b>											
<ul style="list-style-type: none"> <li>Guidelines for water infrastructure installations in outlying islands of FSM distributed by 06/2015</li> <li>Community water catchments area increased by 10% across four outlying islands of Yap State by 03/2015</li> <li>5% of Yap State population adopt a long term water conservation measure by 06/2015</li> </ul>											
<b>KRA 1 Education and awareness on sustainable water use and conservation in the context of climate change enhanced in FSM.</b>											<b>Total KRA1 50,000</b>
<ul style="list-style-type: none"> <li>Water security education and awareness plan distributed by 09/2014</li> <li>Printed materials on water conservation and maintenance distributed to at least two outlying islands by 07/2014.</li> <li>At least two awareness programs conducted in Yap state so as to reach 25% of the population by 12/2014</li> </ul>											
1.1 Develop an education and awareness action plan for FSM with a focus on Yap; conduct baseline and end-of-project survey to determine uptake of water conservation and climate change adaptation education activities in Yap State.											





Activity	2013				2014				2015		Budget
	1Q Jan	2Q April	3Q July	4Q Oct	1Q Jan	2Q April	3Q July	4Q Oct	1Q Jan	2Q April	(USD)
<b>KRA 4 Improved information on available water resources in at least five outlying islands in Yap and Chuuk States</b> <ul style="list-style-type: none"> <li>Basic inventory of all existing water infrastructure in all outlying islands of Yap available by 09/2014.</li> <li>Hydrological assessment of water resources in four outlying islands of Yap State available by 03/2015</li> </ul>											<b>Total KRA4 260,000</b>
4.1 Prepare a basic inventory of all existing water infrastructure in all outlying islands of Yap											
4.2 Conduct studies on water quality samples from Satawal and two other islands											
4.3 Conduct a hydrological assessment of water resources in Satawal and at least four other outlying islands											
4.4 Identify actions to address water security in at least two outlying islands of Chuuk based on hydrological assessments											
4.5 Hold a lessons learnt workshop on sustainable use of quality water in outlying islands of FSM											
<b>Sub-Total</b>											
Contingency 8.5%											<b>45,000</b>
<b>Overall Cost</b>											<b>660,000</b>

The sum allocated to FSM and in particular Yap State and Chuuk State 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. USD 530,000 have been allocated to Yap State for this project, the remaining USD 130,000 is allocated to Chuuk State, primarily for hydrological assessments (see Activity 4.4) and related activities. The first tranche paid to Government of FSM- YSRD will be USD67,500.

- An amount of USD285,000 will remain with SPC to be paid to suppliers following procurement of goods and services using SPC's procurement guidelines.
- The first payment will be made to FSM 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 FSM. 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 all 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.





## 5. INSTITUTIONAL ARRANGEMENTS

The project will be coordinated at the national level by the OEEM. In Yap it will be managed and implemented by YSRD with assistance from YSEPA and the YSPSC, and in Chuuk it will be led by CSEPA.

The GCCA: PSIS project is being implemented under the ambit of the Letter of Agreement signed on 23<sup>rd</sup> October 2012 by SPC and the Government of FSM. The FSM signatories to the Letter of Agreement were the Director, OEEM; Acting Secretary, Department of Finance and Administration; Acting Secretary, Legal Sufficiency Determined, Department of Justice.

### **Project Oversight Committee**

Project oversight at the national level will be through OEEM and the National Climate Change Country Team. In Yap this function will be provided by a Project Steering Committee (name still to be confirmed) whose membership will comprise representatives from YSRD, YSEPA, YSPSC, YAPCAP, Department of Public Works & Transportation, Office of Finance, OEEM and the SPC GCCA: PSIS Climate Change Adviser. Institutional arrangements for Chuuk are still to be confirmed. The Project Steering Committee will be responsible for providing technical and policy advice on the implementation of the project. The Steering Committee will meet (face-to-face meetings and skype) once every quarter and/or on needs basis. The Steering Committee will be chaired by the representative from YSRD. The SPC/FSM Coordinator, situated in OEEM, and/or the Project Coordinator recruited for this project will provide secretarial support to the Steering Committee.

### **Reporting**

The SPC/FSM CC Coordinator and the YSRD-based Project 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 coordinator will be based in YSRD to implement and manage the project activities. S/he will work closely with the SPC/FSM Climate Change Coordinator.



## 6. RISK MANAGEMENT AND EXIT STRATEGY

Risk and mitigation measures are listed in the table below.

Risk and consequence	Likelihood	Seriousness (Impact)	Mitigation actions	Responsible Person
<b>1. Natural hazards</b>				
Droughts affecting water supply and quality, resulting in focus shifts from project activities to emergency response	Medium	Medium	Collaboration with other projects and programs already in place to address water supply issues in FSM	Yap State Government Agencies
Typhoons and other extreme events may damage existing water supply infrastructure.	Medium	Medium	Sound early warning systems  Qualified support from NOAA, SPC-AGTD	FSM-National Meteorological Services
<b>2. Remoteness</b>				
Implementing project activities on outlying islands of Yap State 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.  Project design has ensured major infrastructural improvements are situated in more accessible outlying islands.  Opportunities exist for collaboration with existing government transportation systems to the outlying island.	YSRD  SPC/YSRD  Yap State Government Agencies



Risk and consequence	Likelihood	Seriousness (Impact)	Mitigation actions	Responsible Person
<b>3.Funding for equipment maintenance</b>				
Continuous operation and maintenance of the water supply infrastructure and the need for financial resources beyond project life	High	Medium	Project addresses provision of training in maintenance and establishment of agreement with island community for continued maintenance beyond project life	Yap State Government Agencies
			YSRD to develop a maintenance plan as part of the project  Project activities to develop guidelines and assess feasibility of establishing a payment system for maintenance	YSRD  YSRD
<b>4.Lack of stakeholder involvement</b>				
Unclear division of roles between in-country stakeholders and multiple climate change projects and relevant activities. Limited involvement of civil society  Staff turnover and loss of institutional memory	Medium	High	Ensuring key existing committees take on specific project-related roles, and new working groups only be established as required.  Project activities involve all civil society in awareness raising activities; media involvement.  Documentation and record keeping for handover.	Yap State Government Agencies  Yap State Government Agencies  YSRD, OEEM



Risk and consequence	Likelihood	Seriousness (Impact)	Mitigation actions	Responsible Person
<b>5. Duplication/Overlap with other ongoing development or climate change adaptation activities</b>				
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
<b>6. Institutional arrangements</b>				
Complex institutional arrangements between national and state governments may delay project implementation	Medium	Medium	Operational mechanisms for state and national governments accounted for in project design  Regular monitoring and reporting	Yap State Government Agencies, OEEM  YSRD

### Exit Strategy

The supply of new water catchment and storage in the outlying island of Fais, together with ensuring provisions are in place for monitoring and maintenance will pave the way for the more effective supply of water. The provision of an improved emergency water supply and the establishment of equitable mechanisms for the sharing of that supply will also contribute to the long term availability of a safe and reliable source of water year round.

The project's benefits are not limited to Fais Island. The education and awareness materials, maintenance and monitoring toolkit, and preparation of guidelines for water supply will all provide benefit for people living in outlying islands in FSM beyond project life.

In particular, 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 residents of FSM's outlying islands in planning for and coping with future changes.

Collaboration with other projects and with organisations such as SPC-Applied Geoscience and Technology Division will enhance the scope and reach of the project beyond project life.



The inventories and hydrological 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 islands of Yap and Chuuk States beyond project life. They will also provide important information for the framing of new projects that come after this one.

A broader part of the exit strategy is the integration of the water sector issues into the ongoing work on the Joint National Action Plan for Climate Change Adaptation and Disaster Risk Management which is being expanded from the national to the state level.



## Annex 1 Quarterly Reporting Template

Activities	Progress in Quarter X	Planned Activities in Quarter X+1
<b>KRA 1 Education and awareness on sustainable water use and conservation in the context of climate change enhanced in FSM.</b>		
1.1 Develop an education and awareness action plan for FSM with a focus on Yap; conduct baseline and end-of-project survey to determine uptake of water conservation and climate change adaptation activities in Yap State.		•
1.2 Develop education and awareness materials and activities including: materials in English and at least 4 local languages using print, radio and other media; and at least 5 community workshops on water conservation and climate change in Yap State.	•	•
<b>KRA 2 Improved water infrastructure for catchment, storage and emergency services in place for at least one outlying island</b>		
2.1 Update/verify existing household water demand/infrastructure needs in Fais Island	•	
2.2 Procure, transport and install household water catchment and storage systems, including guttering, pipes, brackets, tie down and platforms, and improvements to existing household catchment systems in Fais Island	•	
2.3 Assess groundwater specifications, procure and install solar pump system for emergency well in Fais Island	•	
2.4 Improve existing infrastructure for communal catchments and storage In Fais Island and four other outlying islands of Yap	•	
<b>KRA 3 Households and communal water systems maintained, monitored and managed sustainably in at least one outlying island</b>		
3.1 Form a Yap State Project Steering Committee; recruit a coordinator; and support project focal point in Fais	•	

Activities	Progress in Quarter X	Planned Activities in Quarter X+1
Island		
3.2 Establish regular water quality testing; provide community training on monitoring and maintenance; and develop a monitoring and maintenance plan together with an agreement for long term maintenance on Fais Island.	•	
3.3 Develop a community training toolkit about maintenance in outlying islands in FSM and conduct a trial in at least one island.	•	
3.4 Provide technical training on monitoring and maintenance for YSPSC officers and agricultural extension officers.	•	
3.5 Develop guidelines for water infrastructure installations, monitoring and maintenance which will include the possibility of payment arrangements, for outlying islands in FSM.	•	
<b>KRA 4 Improved information on available water resources in at least five outlying islands of Yap and Chuuk States</b>		
4.1 Prepare a basic inventory of all existing water infrastructure in all outlying islands of Yap	•	
4.2 Conduct studies on water quality samples from Satawal and two other islands	•	
4.3 Conduct a hydrological assessment of water resources in Satawal and at least four other outlying islands	•	
4.4 Identify actions for water security in at least two outlying islands of Chuuk based on hydrological studies	•	
4.5 Hold a lessons learnt workshop on sustainable use of quality water in outlying islands of FSM	•	

## References

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