









Version 1\_June 2019

### **CLIMATE CHANGE PROFILE**

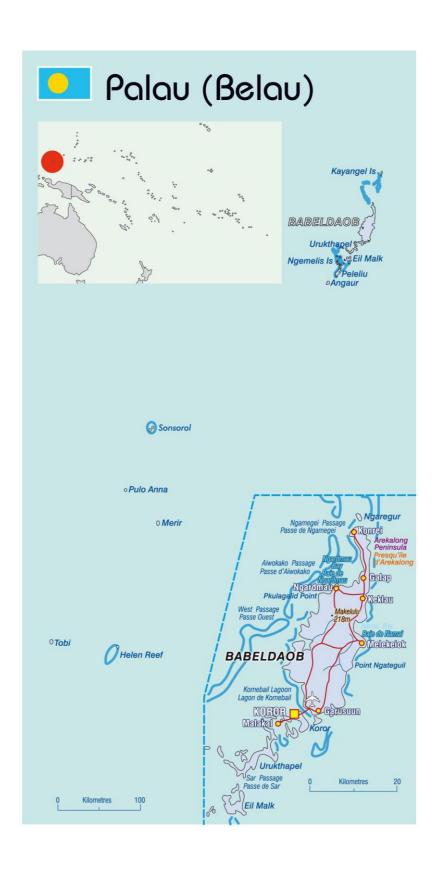


REPUBLIC OF PALAU

VERSION 1

# THE PACIFIC COMMUNITY GLOBAL CLIMATE CHANGE ALLIANCE PLUS - SCALING UP PACIFIC ADAPTATION PROJECT Funded by the European Union

**Disclaimer**: This climate change profile was first prepared in 2013 to inform the Global Climate Change Alliance: Pacific Small Island States (GCCA: PSIS) project and updated in 2019 to inform the Global Climate Change Alliance Plus – Scaling Up Pacific Adaptation (GCCA+ SUPA) project. Reasonable care has been taken to ensure that the information presented herein is accurate however, it must be noted that the information may be subject to changes without prior notice. The Pacific Community does not accept any form of liability, neither legally nor financially, for loss (direct or indirect) caused by the understanding and/or use of this profile or its content.



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## **Acronyms**

ACP African, Caribbean and Pacific ADB Asian Development Bank

CCPF Climate Change Policy Framework

CCVAM-DRM CC Vulnerability and Adaptation Management and Disaster Risk Management

CROP Council of Regional Organisations of the Pacific

CSIRO Commonwealth Scientific and Industrial Research Organisation

ENSO El Niño Southern Oscillation FFA Forum Fisheries Agency

FIC Financial Institutions Commission FSM Federated States of Micronesia

GCCA: PSIS Global Climate Change Alliance: Pacific Small Island States Project

GCCA+ SUPA Global Climate Change Alliance Plus – Scaling Up Pacific Adaptation Project

GDP Gross Domestic Product
GEF Global Environment Facility
GIS Geographic Information System

GoP Government of Palau
IMF International Monetary Fund

JNAP Joint National Action Plan for Climate Change and Disaster Risk Management

MTDS Medium Term Development Strategy
NCCCT National Climate Change Country Team
NDBP National Development Bank of Palau
NGO Non-Governmental Organisation

OERC Office of Environmental Response and Coordination

PALARIS Palau Automated Land and Resources Information Systems
PCC-CRE Palau Community College Cooperative Research and Extension

PEFA Public Expenditure and Financial Accountability Framework Assessment

PFM Public Financial Management system
PIFS Pacific Islands Forum Secretariat
SLM Sustainable Land Management

SPC The Pacific Community

SPREP Secretariat of the Pacific Regional Environment Programme

TNC The Nature Conservancy

UNDP United Nations Development Programme

UNFCCC United Nations Framework Convention on Climate Change

USA United States of America

USP The University of the South Pacific

### **OBJECTIVES OF THE CLIMATE CHANGE PROFILE**

This climate change profile for Palau has been prepared as part of the Pacific Community's (SPC) Global Climate Change Alliance Plus – Scaling Up Pacific Adaptation (GCCA+ SUPA) project.

The goal of the GCCA+ SUPA project is to support the governments of ten Pacific Island countries, namely Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Tonga and Tuvalu, in their efforts to tackle the adverse effects of climate change. The logic behind the design of the project is to learn from the past in order to scale up Pacific adaptation and address capacity gaps.

This climate change profile is specific in nature and seeks to inform the GCCA+ SUPA project as well as the larger SPC climate change support team. It commences with a section on the country's background, including geography, economy, financial management and aid delivery. This is followed by a section focusing on the country's response to climate change, including climate change projections, institutional arrangements, ongoing adaptation activities and climate change priorities. The profile is a work in progress and will be revised and enhanced as the project develops.

#### **COUNTRY BACKGROUND**

## **Country Information**

Geographic coordinates Lat. 3°N–9°N, Long. 131°E–135°E

Total land area 488 km<sup>2</sup>
Length of coastline 1,519km <sup>1</sup>
Exclusive Economic Zone 3,120,000 km<sup>2</sup>

Population (2013 census) 20,920 Population forecast (2019) 22,171 Annual Population Growth rate 1.1 %

Population density

Access to improved water supply (2010 est.)

121 people per km<sup>2</sup>
95% of population<sup>ia</sup>

Access to improved sanitation facilities (2010 est.) 100% ib Human development index 0.798

## Introduction

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<sup>2</sup>). About

<sup>&</sup>lt;sup>1</sup>1 The human development index (HDI) is a comparative measure of life expectancy, literacy, education, and standards of living for countries worldwide. It is a standard means of measuring well-being, especially child welfare. It is used to distinguish whether the country is a developed, a developing or an under-developed country, and also to measure the impact of economic policies on quality of life. The HDI score indicates that Tonga is in the medium human development category.

80% of the population live on Koror Island, also regarded a state. The capital is in the state of Melekeok, centrally located on Babeldaob while Koror remains the center for commerce.

#### Government

Palau was administered by Spain, Germany, Japan and the United States of America (USA) until it opted for a constitutional government under a Compact of Free Association with the USA in 1994. In accordance with the terms of the Compact, the USA, through the Department of the Interior, provides economic and financial assistance, defends Palau's territorial integrity and allows uninhibited access by Palauan citizens to the USA in return for exclusive and unlimited access to Palau's land and waterways for strategic purposes. In all other respects the country is an independent nation and conducts its own foreign relations.

The system of governance is similar to the USA with federal and state level democratic representation. The Executive Branch consists of the President, Vice-President, and the Council of Chiefs. Assisting the top executives are the cabinet ministers and their supporting staff. The Vice President serves as one of the ministers. There are eight ministries, see Table 1.

Table 1: Ministries of Government

Ministry of Finance
Ministry of State
Ministry of Health
Ministry of Education
Ministry of Public Infrastructure, Industries and Commerce
Ministry of Community and Cultural Affairs
Ministry of Natural Resources, Environment and Tourism
Ministry of Justice

The National Congress or Legislative Branch is known as the Olbiil Era Kelulau, which means "House of Whispered Decisions." The Congress consists of two houses which sit for four-year terms. The House of Delegates has 16 members, one from each state. The Senate has 9 members selected in a nationwide election. The most recent election was in November 2016 where President Remengesau Jr. was re-elected. The next election will be in 2020.

# **National Strategy for Sustainable Development**

Palau's Medium Term Development Strategy (MTDS), Action for Palau's Future 2009–2014, 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. The following five priority policy actions have been identified to ensure meaningful focus and effective commitment:

- Fostering sustainable agriculture and fisheries income opportunities.
- Positioning Palau as an island of choice for environmentally conscious visitors and realizing higher returns to the nation from tourism.
- Making critical investments in sanitation, water and power with a prioritization of maintenance.

- Refining foreign investment and foreign worker policies to generate maximum sustainable benefits for Palau.
- Undertaking reforms to ensure a cost conscious and highly productive government.

Within each of these priority areas, action plans have been developed.

## **Economy**

Economic Information		
Gross Domestic Product (GDP (2018)	US\$0.3 billion	
GDP per capita (2018)	US\$8,981	
Annual real GDP growth (2018)	0.4%	
Inflation rate (2018)	2.8%	
Unemployment rate (est. 2005)	4.2%	

Palau has one of the highest standards of living among Pacific island countries. Its per capita GDP of \$8,981 makes it one of the wealthier Pacific Island states. 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 GDP and employing three-quarters of the workforce. Government employs nearly 30% of the workforce. 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, the principal crops being coconuts, root crops and bananas. Fishing is a significant source of revenue, but the island's tuna output dropped by over one-third during the 1990s. Palau's economic performance has been strongly driven by robust tourism. The near-term prospect is positive, albeit with some risks due to Palau's heavy reliance on tourism, grants, and food and fuel imports. While development of additional tourism infrastructure is a major priority of government, attention is also given to preserving the country's renowned pristine environment. Hence, promotion has been largely geared toward high-yielding, low-volume tourism. The country's efforts to preserve a pristine marine environment have recently received positive worldwide publicity.

## Financial Management

According to International Monetary Fund (IMF) findings (2019), Palau's economic activity slowed significantly in FY2016 and FY2017. GDP contracted by 3.7% in FY2017, due to tourist arrivals dropping sharply by 17%. Construction activities also remained subdued because of lower capital grants and a delay in the construction of a new luxury hotel. Growth was projected to recover moderately to 0.4% in FY 2018 and increase to 2% in FY 2019 with a recovery in construction activities and tourism.

In terms of public financial management, efforts are underway to implement a medium-term budget framework, as well as ongoing commercialization of water and sewer services with support from ADB. There is also considerable scope to further strengthen budget execution and cash management. The banking system is sound and the Financial Institutions Commission (FIC) has made progress in strengthening banking supervision. To safeguard stability, a priority is to bring non-bank financial institutions, including the National Development Bank, under the FIC's oversight.

Palau's Public Expenditure and Financial Accountability (PEFA) assessment and initial Public Finance Management (PFM) consultations were held in 2013. The assessment identified that efforts to improve public financial and economic management will yield better results and impacts when conducted within a long-term comprehensive and programmatic approach.

### Aid Management

Palau currently relies on development partners to supplement its national budget. Palau's financial grant arrangement and 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 defense for 50 years.

Under the Compact, the US Government agreed to pay grants to Palau totalling around USD450 million spread over the period 1994 to 2009. USD70 million has been set aside in a trust fund, the balance of which now stands at more than USD140 million. Within the Compact, there are also provisions for major infrastructure projects, including the recent construction of a road around Babeldoab, the largest island. Additional provisions cover continuation of more than 40 US federal programs. In addition, a number of subsidiary agreements commit the US to continued provision, at no cost to Palau, of many vital services, such as air safety, weather forecasting, health services and natural disaster relief.

Development aid inclusive of the Compact funds plays a key role in the social and economic development of Palau. International and regional development partners provide approximately 50% of the annual government budget expenditures, equivalent to more than one-third of GDP. Multilateral and regional development agencies with which the government of Palau engages include a broad range of United Nations agencies; CROP agencies, including SPC and the Forum Fisheries Agency (FFA); and other regional commissions such as the Western and Central Pacific Tuna Commission. Key bilateral development partners include Australia, the European Union, Japan, Taiwan/ROC and the USA. Other development partners include the Asian Development Bank, the IMF and the World Bank.

#### RESPONSE TO CLIMATE CHANGE

#### **Current Climate**

Temperatures in Palau have very little seasonal variation. In Koror the mean daily air temperature is about 82°F (28°C) throughout the year and there is only a 1.5°F (0.8°C) difference between the hottest and coolest month. The average relative humidity is 82%. Being a small island surrounded by ocean, air temperatures in Koror are closely related to the sea-surface temperatures. 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. Average rainfall remains above 8 inches (200 mm) 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). Winds are generally moderate, and the north-easterly trades prevail from December through to March. During April, the frequency of trade winds decreases, and there is an increase in frequency of easterly winds. In May, the winds are predominantly from south-east to north-east.

The inter-annual variability in rainfall at Koror is high and is mainly influenced by the El Niño-Southern Oscillation (ENS O). Generally, El Niño years are drier than average and La Niña years are wetter. A

shortened wet season is usual for Koror during El Niño and a prolonged wet season is normal during La Niña years. The 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.

Palau is south of the normal typhoon belt of the Western North Pacific, and consequently typhoons rarely hit Palau. Typhoon Bopha, in December 2012, caused significant damage but no casualties. 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.

# **Expected Future Climate**

Based on the Pacific Climate Change Science Program, projections for all emissions scenarios show that temperatures will continue to rise in Palau, as will sea level and ocean acidification. The intensity and frequency of days of extreme rainfall are projected to increase (high confidence) and tropical cyclone numbers are projected to decline in the tropical North Pacific Ocean basin (0–15°N, 130°E – 180°E) (moderate confidence).

While there is no consistency in ENSO projections, inter-annual variability in temperature for the region is expected to continue as a result of ENSO activity.

Table 2: Climate change projections for Palau for 2030 and 2055 under the high emissions scenario (A2)

Climate variable	Expected Change	Projected change 2030 (A2)	Projected change 2055 (A2)	Confidence level
Annual surface air temperature	Average air temperature will increase	+0.4 – 1.0°C	+1.0 – 1.8°C	High
Maximum temperature 1-in-20-year event	Increased number of very hot days	N/A	+0.9 – 1.9°C	Low
Minimum temperature 1-in-20-year event	Fewer cool nights	N/A	+1.0 – 1.8°C	Low
Annual total rainfall	Annual and seasonal mean rainfall will increase	+1 ± 11%	+2 ± 10%	Moderate
Dry season rainfall November - April	The incidence of drought is projected to decrease	+1 ± 15%	+2 ± 17%	Moderate
Wet season rainfall May - October		+1 ± 11%	+3 ± 9%	Moderate
Annual sea-surface temperature	Sea surface temperature will increase	+0.2 – 1.0°C	+0.8 – 1.6°C	High
Annual max. aragonite saturation	Ocean acidification will continue to	+3.2 – 3.6 Ωar	+2.8 – 3.2 Ωar	Moderate

Climate variable	Expected Change		Projected change 2055 (A2)	Confidence level
state	increase			
Annual mean sea level (cm)	Sea level will continue to rise	+9 (4–15) cm	+20 (11-29) cm	Moderate

## **Institutional Arrangements for Climate Change**

The Office of Environmental Response and Coordination (OERC) is the National Focal Point for all climate change issues in Palau. The OERC functions as an autonomous agency under the Office of the President. In response to the requirement that OERC, as focal point for the UN Conventions, interact with a local environmental council of public and private stakeholders, the President created the National Environmental Protection Council (NEPC) in August 2003. After ten years of limited action, OERC is leading an effort to rejuvenate the NEPC through a supplemental Executive Order to be issued in the near future.

The OERC established a working group or National Climate Change Country Team (NCCCT), comprised of 16 state focal points, national government offices, non-government organizations (NGOs), the private sector, and traditional leaders, to engage stakeholders on climate change and environmental matters. The Palau Energy Office (under the responsibility of the Ministry of Public Infrastructure, Industries and Commerce), and the National Emergency Management Office (NEMO) under the Office of the Vice President, are two areas that did not appear to be included in the team in the published documentation. The team has not officially met for some time.

Palau developed the Palau Climate Change Policy and Action Plan for Climate & Disaster Resilient Low Emission Development in 2015. The vision of the Policy is "Happy, healthy, sustainable and resilient Palauan communities in a changing world." By establishing the Policy, Palau is taking necessary steps to make its own national plans a reality and meet its obligations under the UNFCCC and other regional and international agreements.

The OERC has been engaged in the development of Palau's Second National Communication to the UNFCCC and Climate Change Action Plan and with the Grants Office and Ministry of Finance, have initiated the process to carry out a Climate Public Expenditure and Institutional Review (CPEIR) to assess Palau's readiness to be National Implementing Entity (NIE) to the Kyoto Protocol Adaptation Fund.

The Palau Automated Land and Resource Information Systems (PALARIS) is the national geographic information system (GIS) for Palau. It can support cross-cutting initiatives such as climate change by integrating multiple sector data for remote sensing and risk management planning.

# **Ongoing Climate Change Adaptation Activities in Palau**

Title	Description
Global Climate	EU-funded 4.5-year project working in ten Pacific Island countries (nine
Change Alliance	small island states plus Fiji). The GCCA+ SUPA focuses on scaling up
Plus – Scaling Up	climate change adaptation measures in specific sectors supported by
Pacific Adaptation	knowledge management and capacity building.
(GCCA+ SUPA)	

Title	Description
110	Implementing partners: SPC (lead agency), SPREP and USP.
2019 – ongoing	, 3 ,,,
Global Climate Change Alliance Plus Intra ACP – Pacific Adaptation to Climate Change and Resilience (GCCA+ Intra ACP PACRES)  2018 – ongoing	EU-funded 4.5-year project working in 15 Pacific Island countries. The GCCA+ Intra ACP PACRES focuses on implementing activities that are directly relevant to the implementation of national climate change adaptation and mitigation priorities, NDCs and other elements of the Paris Agreement relevant to the region.  Implementing partners: SPREP (lead agency), SPC, PIFS and USP
2010 ongoing	
USAID Climate Ready 2017 – ongoing	Climate Ready is working with governments and regional stakeholders in ten Pacific Island countries to prioritize areas of support that align with their climate adaptation plans and goals.  Implementing organisation: AECOM
Institutional	The ISACC project is working with six Pacific Island countries to strengthen
Strengthening in Pacific Island Countries to Adapt to Climate Change (ISACC)  2015 – ongoing	the national institutional capacity to effectively plan for, coordinate and respond to the adverse impacts of climate change. The project builds on multi-sector, whole-of-island approaches that have been implemented successfully by regional climate change projects and that continue to be sustained by a range of partners through pooling of resources and expertise.
2013 – Origoling	Implementing partners: SPC, SPREP and PIFS
Programme for Implementing the Global Framework for Climate Services (GFCS) at Regional and National Scales  2015 – ongoing	The GFCS aims to enhance resilience in social, economic and environmental systems to climate variability and climate change through the development of effective and sustainable regional and national climate services under the GFCS in selected regions and countries.
EU Adapting to Climate Change and Sustainable Energy (ACSE)	The ACSE programme works in 15 Pacific ACP countries to strengthen the countries' capacity to adapt to the adverse effects of climate change and to enhance their energy security at national, provincial and local/community level.
2014 – ongoing	Implementing partners: GIZ, SPC and USP
ACP-EU Building Safety & Resilience in the Pacific (BSRP)	The project's purpose is to strengthen the capacity of Pacific Island countries to address existing and emerging challenges with regard to the risks posed by natural hazards and related disasters, while maximising synergies between disaster risk reduction strategies and climate change adaptation.
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Title	Description
	Implementing organisation: SPC
Synergistic Impacts of Global Warming and Ocean Acidification on Coral Reefs  2013 – ongoing	This project is developing equations that describe changes in coral growth rates in response to increased temperature and ocean acidification. These data are necessary for developing and refining models evaluating the future impact of climate change on Pacific coral reef communities. Results will help define appropriate management responses and prioritize interventions at the most vulnerable sites.
Climate and Oceans Support Program in the Pacific (COSPPac)  2012 – ongoing	COSPPac works with Pacific Island stakeholders to analyse and interpret climate, oceans and tidal data to produce valuable services for island communities. This information helps island communities to prepare for and mitigate the impacts of severe climate, tidal and oceanographic events.  Implementing partners: Australian Bureau of Meteorology and SPREP
The Pacific Islands – Global Ocean Observing System (PI-GOOS)  2009 – ongoing	PI-GOOS aims to assist sustainable development in 16 Pacific Island countries and territories by facilitating the establishment and implementation of coastal and open ocean observing programmes, and in helping to improve uptake and use of the data, information and products being generated. Implementation of PI-GOOS is primarily through capacity building at the local and regional level.  Implementing organisation: SPREP

# **National Climate Change Priorities**

In its National Communications to the UNFCCC, Palau has identified its main vulnerabilities due to climate change as being related to: increased drought and storm activity; extreme high tides; sea level rise; coastal erosion; habitat fragmentation; sea surface temperature rise; and coral bleaching.

The 5-year Action Plan in the Palau Climate Change Policy, includes specific and costed sector activities that are aimed at contributing to the achievement of the adaptation priorities. Adaptation priorities have been defined in the Policy for agriculture and fisheries, health, biodiversity conservation and natural resources, society and culture, tourism, critical infrastructure, utilities, finance, commerce and economic development, and education. Palau has also developed its climate change portal (<a href="https://www.climatechange.palaugov.pw">www.climatechange.palaugov.pw</a>) and information is being populated.

#### **Key Challenges to Adaptation**

A study by the ADB showed that the Government of Palau (GoP) is generally committed to climate change adaptation principles and activities under its United Nations Framework Convention on Climate Change (UNFCCC) Second National Communication, however, some key challenges still remain and will compromise future long-term efforts unless effectively addressed.

Some reviews, e.g. by ISDR and ADB, have noted a gap between the Government's centralized climate change agenda on the one hand and the understanding of environmental networks, the private sector tourism industry and communities on the other hand. Some sectoral plans are in development but strong mechanisms to coordinate, monitor and evaluate the progress towards climate change resilience need to be established. Growing complexity of emerging political climate change issues such as relocation along with a lack of leadership across the sectors are also cited as a challenge.

Given that many climate change activities implemented in Palau are project based, with 3-5 year timeframes, the results and outcomes may not always be sustainable. The impact of Typhoon Bopha in 2012 highlighted the lack of building codes and integrative planning at the local, state and national levels that include vulnerability and adaptive assessment. Palau is already making efforts to tailor new projects to address specific gaps in their national agenda, and this approach needs to be maintained and expanded.

Raising public awareness about climate change risks is another important activity that needs to be implemented through a planned process, thereby moving away from ad hoc approaches that risk mixed messaging at the village level. Limited availability of user-friendly reliable climate data and information is also a major challenge.

Of particular note are technical capacity constraints. There is a general lack of highly skilled personnel in permanent positions to take on the task of managing climate change risks over the near and long term. Short term personnel and project personnel only go some way to addressing this gap. Climate change education at primary, secondary and tertiary levels, short term training, on-the-job training and job attachments are critical to address the capacity gap. So, too, is the need to develop innovative ways to retain skilled personnel in country through appropriate levels of remuneration and other means.

Another key challenge for Palau is to ensure that gender-sensitivity and disability inclusiveness are addressed in its climate change programmes, projects and activities. Climate change affects communities and individuals in different ways and it is important to ensure that climate change activities are fully inclusive of these special groups. The active participation of communities and NGOs in resilience building such as the Protected Areas Network and Local Early Adaptation Planning has helped, but social aspects of climate change need further work. Integration of climate change into national, sector and community programs, projects and activities is needed on a continual basis over the long term; and there is a need to create an enabling environment for engaging with both local communities and national level government. This includes the need for predictable resources.

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