



Climate Change and Adaptation Road Map

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PALAU: Country Partnership Strategy (2009–2013)

CLIMATE CHANGE AND ADAPTATION ROAD MAP

A. Climate Change Situation and Key Issues

1. **Climate Impacts:** The *Climate Change Adaptation Project for the Pacific*¹ warns that more severe conditions can be expected in the future. Palau temperatures are projected to increase 0.49°C to 1.13°C (0.88°F to 2.03°F) in the coming 40 years.² For precipitation projections, during summer, more rainfall is projected, while an increase in daily rainfall intensity—causing more frequent heavier rainfall events—is also likely.³ For sea-level rise, monthly sea level data exhibits a trend of -6.27 mm/year from 1926 to 1939, and +0.84 mm/year for the 35-year span of 1969 to 2003 for Malakal.⁴ The Intergovernmental Panel on Climate Change (IPCC) (IPCC AR4, 2007) estimates that global average long-term sea-level rise over the last hundred years was about 2 mm/yr. Although Palau lies south and outside of the tropical cyclone belt, El Niño Southern Oscillation (ENSO) events precipitated extreme climate events (e.g., 1997/1998) caused serious climatic impacts such as dramatic coral reef bleaching events; extreme sea-level variation and tidal variability; loss of critical habitat and species (mass die-back in jellyfish lake); coastal erosion and saltwater intrusion in taro patches and water; and drought and resulting shortage of potable water and substantial agricultural losses (50%).

2. **Water at Risk:** The primary source of Palau's fresh water is from precipitation-dependent surface water in the Ngerikiil watershed, located on the southeast shore of Airai State on the island of Babeldaob. It supplies four million gallons of water per day to Airai State and the City of Koror, therefore supplying 80% of the country's population. However, intense drought and storms are causing watershed land degradation and sedimentation problems. Climate and human-induced habitat loss, and increases in freshwater demand—in particular from tourism—will place additional stress on these limited water resources. As well, disconcerting unusual high tides (not reached during the last 50 years) and saltwater intrusion, are affecting some watersheds and taro patches.

3. **Other Sectors At Risk:** The Office of Environmental Response and Coordination's (OERC) Vulnerability and Adaptation Assessment (V&AA) concluded the following: Of the possible sectors affected by climate change, such as agriculture, health, water resources, coastal resources, terrestrial and marine ecosystems, human settlements, infrastructure, industry, and energy, four sectors were chosen by the Palauan V&AA team, based on the importance of the sector and the team members' expertise. The four primary sectors at risk are: water resources (Ngerikiil Watershed), forestry (mangroves), agriculture (taro), and human health (vector-borne diseases). This climate change risk management and adaptation road map will focus on the first three, along with coastal infrastructure (tourism).

¹ ADB. 2005. *Climate Change Adaptation in the Pacific*. Manila (November).

² K. Ruosteenoja, T.R. Carter, K. Jylhä and H. Tuomenvirta, 2003: Future climate in world regions: an intercomparison of model-based projections for the new IPCC emissions scenarios. *The Finnish Environment* 644, Finnish Environment Institute, Helsinki, pp. 83.

³ (Lal, 2004).

⁴ AusAID June 2006. *Sea Level & Climate: Their Present State Palau*. Australian Agency for International Development. Internet address. Available: <http://www.sprep.org/att/IRC/eCOPIES/Countries/Palau/4.pdf>.

B. Government's Climate Change Policy and Planning Framework

4. The OERC⁵ completed its *Second National Communication and Action Plan* by November 2008. The OERC established a Working Group, 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.

5. 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 Communique (SNC).⁶ However, multi-sectoral and line ministry consultations have clearly demonstrated a key gap in the GoP's understanding and reflection of the anticipated impacts of climate change extremes and variability on overall economic development, livelihood security, food security and infrastructure resilience. Moreover, a review of line ministry documents and multiple agency consultations demonstrate that there is no actual adaptation mainstreaming in GoP policies and actions, nor within private sector and NGO circles.

6. This discrepancy between a lack of climate mainstreaming by Government, and an increasing awareness of climate vulnerability and risk in civil society may be partly resolved by reducing uncertainty and increasing resilience through the practical introduction of: improved short-term weather forecasting of extreme weather events; the development of longer-term downscaled climate change models (both projections and predictive) and impact and risk scenarios; a blending of traditional (reactive and anticipatory) adaptation knowledge and practices with contemporary (science-based) knowledge and adaptation toolkits; localized geographic information system (GIS)-based risk mapping of vulnerable sites; and targeted V&AA pilots. The timely introduction of a climate adaptation Road Map into the Country Partnership Strategy (CPS) would support the GoP's stated climate change risk management priorities, and help operationalize its completed SNC on climate change.

C. Government's Institutional Arrangements and Capacity in Climate Change Adaptation

7. There is a noted gap between the Government's centralized climate change agenda (OERC), and limited engagement and consultations with Palau's decentralized and very active environmental networks and private sector tourism industry. This centralized model is an ongoing challenge for external donors seeking to mainstream climate adaptation. There are a number of in-country programs and activities relating to environment, some of which may provide donor entry points for complementary risk management and adaptation actions proposed under this Road Map. A couple of these are domestic and international environmental NGO-led initiatives that may be construed as quasi-climate adaptation activities where 'adaptation' components have been incorporated into broader marine resource conservation projects.

8. Palauan States have special responsibilities for environmental protection, land-use planning, health and welfare, but lack significant administrative capacities independent of the national government (other than Koror). Furthermore, traditional governance systems (i.e., Abai

⁵ The OERC is the National Focal Point for all climate change issues in Palau. The OERC will function as a formally established Bureau, under the auspices of the newly formed Ministry of Natural Resources, Environment and Tourism.

⁶ However, public consultation undertaken during CEA preparation revealed that climate variability and impacts have not been given separate attention.

whisper houses) are embedded in the country's modern governance structures.⁷ As such, any central government-led, ADB and donor supported adaptation pilots will only prove partially successful unless they are coupled with capacity-building activities focusing on the enactment of long-term adaptive policies and meaningful pilots that are livelihood-based, and identify with traditional environmental knowledge and institutions, blended with contemporary science and resources.

9. It is recommended that *CRMA Road Map* activities/pilots, supported by ADB and its partners, be coordinated through the OERC Working Group, comprised of 16 state focal points, national government offices, NGOs, the private sector, and traditional leaders, to effectively engage stakeholders on climate change and environmental matters. As well, the following key stakeholders need to be systematically consulted on adaptation matters: Palau Automated Land and Resource Information System (PALARIS-GIS), Ministry of Natural Resources, Environment and Tourism (water, tourism, agriculture), Ministry of Finance/Environmental Quality Protection Board (EQPB)/National Statistics Office (NSO) (water quality and marine conservation, statistics), Public Works (infrastructure), conservation NGOs (mangroves and reef conservation), and the Tourism Associations.

10. The PALARIS is the national geographic information system (GIS) for Palau. It is the centralized repository for GIS data and technology. It is able to support cross-cutting initiatives such as climate change by inter-phasing multiple sector data for remote sensing and risk management planning. As a central repository for data knowledge, and with the requisite resources, PALARIS is in a pivotal position to enable and support multiple adaptation projects, especially where risk mapping and sectoral inter-phasing is required for pilots/projects. Other than OERC, PALARIS potentially represents the strongest and weakest link in the chain for the successful development and implementation of adaptation projects in Palau. Several adaptation pilots will likely have to depend on this facility.

D. ADB Climate Change Adaptation Experience

11. Generally, ADB's institutional focus supports the following: incorporating vulnerability risks into CPSs; adjusting sector strategies to Climate Change Impact Realities; screening of pipeline projects; and social dimensions. ADB can assist PDMCs in a coordinated and timely fashion to effectively respond to country climate risk management and adaptation needs, and assist PDMCs to strategically leverage Global Environment Facility (GEF) resources.

12. Regionally, ADB has collaboratively developed and supported several regional technical assistance (TA) on climate adaptation in the Pacific, in some instances encompassing Palau, which enable ADB to successfully transfer this knowledge and lessons learned to Palau.

⁷ Village Chiefs and elders continue to apply the traditional practice of community decision-making via Abai 'whisper houses.' Although the practice is decreasing with the continued emphasis on centralized government, village elders meet when an issue of significant concern demands a collective response. As Paluan society still somewhat adheres to matrilineal/matriarchal kinship relations, women are informally consulted prior to an Abai meeting. Village Chiefs and elders (male-only) will then gather in a hierarchical fashion in designated village Abai's where they will consult with their personal advisors, subtly exchange information by whispering largely pre-conceived positions on the subject at hand, and conclude, through very little open dialogue, what actions to take. This decision is then formally endorsed by the Village Chief, and transmitted openly by his Community Announcer to the awaiting community public outside the Abai.

Regional initiatives⁸ include: The Coral Triangle Initiative (CTI); the Micronesia Challenge; RETA 6420: *Promoting Climate Change Adaptation in Asia and the Pacific*; *Climate Change Adaptation Programme in the Pacific (CLIMAP)*; and *the Pacific Adaptation to Climate Change (PACC)*. CTI focuses on Coastal and Marine Resources Management in the Pacific Coral Triangle, and contains climate adaptation components;⁹ RETA 6420 addresses the need to (i) mainstream adaptation issues into investment planning, (ii) develop a national capacity for adaptation, and (iii) coordinate and strengthen international community responses for adaptation; *CLIMAP* was an ADB regional TA grant of US\$800,000 to mainstreaming climate adaptation through risk reduction into development planning and management in selected PDMCs¹⁰ and ADB operations; Pacific Adaptation to Climate Change (PACC) is a \$877,500 GEF-funded project to support Pacific Island States:¹¹ national adaptive capacity development; help reduce community vulnerability to climate change; and provide technical assistance and regional cooperation to plan and respond to climate-related risks.

13. Nationally, ADB has two climate-relevant TAs in Palau.¹² They are: (i) proposed TA (\$700,000): *Preparing the Babeldaob Water Supply Project*, supporting the water supply sector development plan for Babeldaob and Koror State, and the preparation of feasibility studies; and (ii) TA 4929 (\$1,400,000): *Facility for Economic and Infrastructure Management*, to strengthen development planning and sustainable government budgeting and privatization.

E. Role of Other Development Partners in Climate Change Adaptation

14. ADB continues to harmonize its climate adaptation efforts with Pacific donors and stakeholders involved in climate adaptation. The following initiatives offer potential partnership entry points for adaptation activities in Palau: (i) the Government of Taipei, China is gearing-up for a possible investment in a fishery export project including habitat rehabilitation; (ii) it is understood that the US Forestry Service Study on sea-level rise and mangrove impacts in Airai State, UNDP and GEF with cofinancing from Palau Conservation Society, are providing funding assistance to the 4-year \$1.4 million Sustainable Land Use Management Project; and (iii) GEF is also financing a 4-year PACC project to support national adaptive capacity development.

F. Intended Climate Adaptation Outcomes and Key Outputs Supported by the Asian Development Bank

15. The *Palau CRMA Road Map* seeks to strategically climate-proof the CPS and related actions through the introduction and mainstreaming of climate risk management and adaptation

⁸ Following approval of the *Pacific Strategy*, most PDMCs and donor agencies operating in the Pacific region—including ADB—endorsed the Paris Declaration on Aid Effectiveness. This endorsement rested on a commitment of donors to (i) harmonize development assistance at the country level; (ii) align assistance with national priorities, strategies, institutions, and procedures; and (iii) make maximum use of regional systems. These commitments were tailored to the region's needs through the Pacific Aid Effectiveness Principles agreed to by the Forum Economic Ministers Meeting in July 2007.

⁹ Main objectives are to: (i) introduce effective management systems for priority seascapes; (ii) apply ecosystem approach to fisheries management; (iii) expand and improve management and representation of effectively managed marine protected areas; (iv) support climate change adaptation measures to sustain economic development and global services from vulnerable coastal and marine ecosystems; and (v) improve the status of threatened species in coastal and marine ecosystems.

¹⁰ Cook Islands, Federated States of Micronesia, Fiji Islands, Kiribati, Marshall Islands, Samoa, Tonga and Tuvalu.

¹¹ Cook Islands, Federated States of Micronesia, Fiji Islands, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

¹² There is a third non-climate related TA: PAL TA 7079 (\$400,000): *Development of a Sustainable Health Financing Scheme*, supporting the operationalization of Government legislation on "National Healthcare Coverage and Savings Act."

policies, measures and pilots in ADB's investment portfolio and Palau sectoral development priorities, over the CPS period.

16. Climate risk management contingencies that protect ADB project investments need to be cross-cutting in project design, planning, and implementation. These risk management (adaptation) measures must genuinely identify with tangible issues relevant to country stakeholders, such as livelihood and food security and tourism-related environmental management, to ensure broader GoP and civil society buy-in and ownership.

G. Links to CPS Outcomes and Climate Adaptation

17. This CRMA Road Map seeks alignment with Palau's CPS for 2009-2013,¹³ and sectoral priorities contained therein. The Road Map will be aligned with Palau's Facility for Economic and Infrastructure Management Project,¹⁴ and subsequent 5-year Medium-Term Development Strategy (MTDS). The Road Map also enhances other existing development, environmental, and conservation programs. Proposed adaptation measures will be largely tied to ADB's investment portfolio. Because development of the CPS is a fluid process, the Road Map will also promote stand-alone pilots that clearly promote environmental management and livelihood security, interconnected with national development priorities in the public and private sector.

18. The purpose of this CRMA Road Map is to incorporate climate risk management¹⁵ and adaptation¹⁶ policies and actions into Palau Government and civil society activities through the support of Palau's Climate Change Action Plan as per its SNC.¹⁷ This CRMA Road Map addresses those priority sectors at risk.

H. Indicative Areas for Interventions

19. There is a need to incorporate risk management and adaptation policies and practices into many of ADB's future investment instruments, TA activities, project portfolio, and environmental safeguard and monitoring practices to ensure greater downstream socio-economic and environmental sustainability.

20. This *CRMA Road Map* strategically proposes, targeted grant-supported adaptation pilots that will directly and indirectly build resilience around the water sector (ADB PAL 40122-01: *Preparing the Babeldaob Water Supply* Project). In addition to water, and because of the cross-cutting nature of climate change impacts on multiple sectors, this *CRMA Road Map* will also concentrate on the priority environmental management and development areas of tourism dependent marine conservation areas/ecosystems and watersheds; tourism infrastructure at risk (especially coastal); and food security (agriculture and fishery).

21. Being responsive to the climate risk needs of Palau, and recognizing the need to begin to climate-proof Palau policies and operations in preparation for ADB investment commitments,

¹³ See Country Strategy and Program Update (CSPU) 2007-09.

¹⁴ ADB. 2007. *Technical Assistance to Palau for Facility for Economic and Infrastructure Management*. Manila (TA 4929-PAL, valued at \$1.4 million, \$1 million from ADB, Japan Special Fund and 0.4 M from GoP).

¹⁵ Risk Management: The systematic application of management policies, procedures, and practices to the tasks of analyzing, evaluating, controlling, and communicating about risk issues.

¹⁶ Adaptation: Adjustment in natural or human systems to a new or changing environment (IPCC, TAR, 2001). The World Bank simply defines adaptation as: "efforts to protect against climate change impacts" (Cities, Seas, and Storms 2000: 1).

¹⁷ Currently in draft stage and expected to be completed in November 2008, and ratified in January 2009.

it is recommended that \$990,000 be sourced from the ADB Climate Change Fund (CCF)¹⁸ to support CRMA Road Map activities. Disbursement of this concessionary funding should precede completion of the CPS and MTDS. This would be in addition to the existing TA activities valued at \$2.1 million.

22. To achieve the cross-sectoral outcomes of risk reduction and climate resilience, the successful mainstreaming of CRMA will require a suite of cross-cutting risk management and adaptation toolkits and pilots focusing on the priority sectors of (i) integrated water supply; (ii) forestry; (iii) agriculture; (iv) infrastructure (coastal/tourism); and (v) coral reefs, the fishery, and tourism. These toolkits include scoping and screening portfolio at risk, cost-benefit analysis of business as usual and adaptive measures, vulnerability and risk management atlas, audit of infrastructure assets at risk, downscaled global climate models and GIS, hazard/risk atlas.

I. Monitoring Mechanism

23. A detailed monitoring plan will be prepared under the project preparatory TA, and validated in the detailed design of this CRMA Road Map. The project preparatory TA will set goals for the achievement of OERC policies and practices relating to operationalizing its SNC and this CRMA Road Map, and mainstreaming climate change in its operations and with its key stakeholders. A public-private-NGO consortium led by the Ministry of Natural Resources, Environment and Tourism, and comprised of Emergency Operations Support Centre, and with support from NSO, EQPB, PALARIS, and marine conservation environmental NGOs, will establish a Monitoring and Evaluation Framework.

¹⁸ Resources from the CCF can only be accessed as part of a new ADB project, or as an addition to an ongoing project. The following may qualify for CCF support: climate-proof vulnerable investments (e.g., energy, transport, industry, urban and rural development); enhance climate resilience of key sectors (e.g., agriculture, natural resource management, water resource management), economic development planning, and/or disaster preparedness and response; respond to special threats facing the Asia and Pacific region, especially those in (i) arid, rain-fed agricultural areas; (ii) densely-populated coast lowlands and deltas, and (iii) low-laying islands; provide significant opportunity for leveraging and upscaling; and Reduced Emissions from Deforestation and Degradation (REDD), and land use changes (Ref. *Climate Change Fund – Draft Guidelines for Utilization*).

Climate Change and Adaptation

Relevant CPS Outcomes		Sector-level Outputs		ADB Assistance	Risk Assumptions
CPS Outcomes Relevant to the Sector	Key Opportunities and Constraints	Subsector Outcome/ Key Sector Outputs	Sector Milestone/ Tracking Indicators/ Interim Indicators		
<p>Manage the threat of Climate Change</p> <ul style="list-style-type: none"> Greater resilience to climate change impacts in marine environments, water, sanitation, tourism and agriculture sectors. <p>Greater resilience to climate change impacts in marine environments, water, sanitation, tourism and agriculture sectors.</p>	<p>Utilities are cross subsidized by government and not operated on commercial principles.</p> <p>Utility services will not meet the expected demand from tourism increase.</p>	<p>Climate risk management and adaptation practices incorporated into infrastructure and agriculture investments</p> <ol style="list-style-type: none"> GIS-based Risk & Vulnerability Atlas. Implementation of climate-oriented EIA/EIS in tourism & water sectors. Improved sustainability of Taro production. Increased incorporation of adaptation costs in tourism and water sector project investment decisions. Introduction of adaptation focused infrastructure regulations in tourism investment, and the water sector. 	<p>10% reduction in vulnerability to climate change in the tourism, agriculture and water sectors.</p> <ol style="list-style-type: none"> Atlas produced and understood by OERC and EQPB EIA/EIS processes developed, adopted in regulations and used. Production areas affected by salt intrusion identified. 3.2 Programs of alternative agricultural practices adopted 50% of tourism and water sector investments, over \$500,000, use climate sensitive CBA in costing analysis Adoption into regulations, design standards for adaptation focused infrastructure for plans values at over \$500,000 	<p>Proposed Climate Change Adaptation Cluster</p>	<p>Assumptions Good Inter-Ministry Coordination</p> <p>Assumptions</p> <ul style="list-style-type: none"> New administration equally committed to environmental protection Congress able to pass changes in investment and planning regulations <p>Risks</p> <ul style="list-style-type: none"> Business community lobbying against environmental protections Communities reject greater government interference in village decisions

Source: Asian Development Bank.