An aerial photograph of a vast, rolling forest landscape. The terrain is covered in dense green trees, with some areas showing lighter green or brownish patches, possibly indicating different types of vegetation or land use. The sky is visible at the top, showing some clouds. A semi-transparent green rectangular overlay covers the top portion of the image, containing the title text.

SUSTAINABLE FOREST MANAGEMENT POLICY

**DIVISION OF FORESTRY
MINISTRY OF NATURAL RESOURCES, ENVIRONMENT & TOURISM
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INTRODUCTION

The Republic of Palau values the contribution of forest ecosystems to the social, economic and environmental wellbeing of its citizens. Forests contribute to the national wellbeing by controlling soil erosion, improving soil fertility and regulating water flow. It contributes to the national economy through the production of wood for artisan crafts and construction. Forest contribution to the economy also includes its recreational value to terrestrial tourism enterprises. Finally, forests enable the Palauan culture to flourish its value as a repository of culturally significant plant resources. The continued use of these forest resources as medicines, traditional building materials and crafts facilitates the maintenance and dissemination of Palauan traditional ecological knowledge. To this end, Palau has committed to sustainably managing its forest ecosystems and has adopted this policy as the basis for making forest resource management decisions. This will allow for the achievement of the desired balance between social, environment and development interests.

Palau's forested areas are owned by private landowners, communities and State Governments. Forestry management responsibility lies with the State Governments

DEFINITION OF FORESTS AND SUSTAINABLE FOREST MANAGEMENT

The Convention on Biological Diversity (CBD) defines a forest as “land area of more than 0.5 ha, with a tree canopy cover of more than 10%, which is not primarily under agricultural or other specific non-forest land use. In Palau this definition is modified to include agro-forests which are lands that include tree and agriculture plant species and plantations. This expansive approach to viewing forest and forest resources is holistic and suited to the small island scale of Palau. Further, it facilitates the greater understanding and subsequent development and implementation of sustainable forest management policies.

Sustainable Forest Management (SFM) can be viewed as the sustainable use and conservation of forests with the aim of maintaining and enhancing multiple forest values through human interventions. People are at the center of SFM because it aims to contribute to society’s diverse needs in perpetuity (FAO).

DEVELOPMENT OF PALAU'S SUSTAINABLE FOREST MANAGEMENT POLICY

Palau’s SFM Policy was developed through national consultations with multiple stakeholder groups and sectors. This process included focused interviews with forest biodiversity subject matter experts, forestry technicians (foresters and terrestrial protected area site managers), forest resource owners (community members and governors and legislators) private sector interests (terrestrial tourism operators, Belau Tourism Association and Palau Chamber of Commerce representatives) and government regulatory bodies (Palau Environment Quality Protection Board and the Palau Foreign Investment Board). These structured discussions yielded the following outputs:

- Information on pressures on forest resources,
- Strategies to address those pressures and
- Actions to improve or enhance forest resource management to benefit various stakeholder groups that derive a benefit from Palau’s forest resources.

The above mentioned findings and insights were derived through the use of a back-casting planning process to determine both present day forestry context as well as to identify plausible future scenarios that would result from potential policy interventions. A conceptual framework or graphical representation of Palau’s forest context is presented in section 6.2 as figure 2 Palau Forest Conceptual Model. That content was used to inform this policy document. In addition to the consultations, an exhaustive desktop review of Palau’s environment policies, strategies and plans as well as a literature search of forest policies in the Pacific region was undertaken as part of the policy development process.

USE OF PALAU'S SUSTAINABLE FOREST MANAGEMENT POLICY (SFM)

This policy articulates how Palau's forest resources should be managed. It establishes the basis for planning and action for forest resource management and forest related biodiversity conservation. Additionally, it provides impetus and direction for enacting legislation and regulation to strengthen sustainable forest management at the national and state level. Practically, it will guide state governments to align and coordinate their land and forest management objectives to national initiatives and objectives and provide direction for state and national legislatures on the creation of laws and regulations needed to strengthen forest management efforts. It is also invaluable as a resource document to inform the development and implementation of forest conservation focused projects as well as provide guidance to private sector interests and individuals desiring to develop Palau's lands.



LINKAGES WITH OTHER RELEVANT POLICIES, STRATEGIES, AND PLANS

Palau's SFM Policy is aligned to the country's 2020 Master Development Plan and the country's medium term development strategy and has strong linkages with a number of environment sector policies, frameworks and strategies. It also supports the achievement of the Sustainable Development Goals to which Palau has committed.

PALAU MASTER DEVELOPMENT PLAN 2020

The Palau Master Development Plan is the roadmap by which Palau achieves sustainable development. It articulates development priorities for Palau and it stipulates that development of the Agriculture and Forestry Sector is a priority. However, implementation detail for forestry sector development is lacking. Therefore, this sustainable forest management policy acts to further delineate the pathway and process by which Palau achieves this priority action.

PALAU'S MEDIUM TERM DEVELOPMENT STRATEGY (MTDS) 2009 TO 2014

Although this strategy's timeframe has lapsed, many of the recommendations are still relevant. It still ranks as a highly valuable and implementable strategy and until it is updated, it continues to serve as a guidance document for efforts to achieve Palau's Master Development Plan. The overall goal of Palau's MTDS is "sustained and widespread improvement in general standards of living while preserving cultural and environmental values for the people of Palau." The MTDS calls for preserving environmental values while enabling development to occur. This SFM Policy will facilitate this objective.

PALAU'S CLIMATE CHANGE POLICY FRAMEWORK

The biodiversity conservation objective in Palau's Climate Change policy framework states, "By 2020, the enabling framework is established to build ecosystem resilience and sustainably manage carbon sinks using holistic and synergistic management approaches." It further states that a priority action under this objective is to undertake carbon sink ability and resilience of marine and terrestrial ecosystems. Forests are a carbon sink and this SFM policy through its call for reforestation measures and strengthening of forest ecosystem science meets this specific objective and facilitates the delivery of a priority action in Palau's Climate Change Policy Framework.

PALAU'S RESPONSIBLE TOURISM POLICY FRAMEWORK (RTPF)

This policy establishes the direction in which tourism must operate in Palau to achieve both environmental and economic outcomes that are desirable to the people of Palau. Under this policy, marine and terrestrial ecosystems and their corresponding ecosystem services are valuable tourism assets that must remain healthy to ensure long term profitability of the industry. The SFM policy aligns with this intention and its policy directive to fill existing knowledge gaps in forest ecosystems contributes towards an RTPF objective that seeks to determine environmental (terrestrial and marine) carrying capacity for tourism.

PALAU SUSTAINABLE LAND MANAGEMENT (SLM) POLICY

The SLM Policy outlines the vision for sustainable land management and provides the foundation for integrated land use and management in Palau. It aims to guide the nation on sound management of its land to ensure that key assets and values are protected as Palau positions itself competitively in the global market. Forests are a key asset of Palau and this SFM policy's outcomes meet a number of SLM policy objectives.

PALAU'S WATER POLICY

This policy envisions that Palau “has safe, affordable, sustainable water for all.” Healthy forest ecosystems regulate water flow and this SFM policy enables Palau to realize its vision for water accessibility for its populace.

PALAU'S FOOD SECURITY POLICY

Palau's food security objectives are articulated in the policy document titled “Achieving Resilient Agriculture and Aquaculture: A national policy for strengthening food security in Palau as a priority climate change adaptation measure.” The policy maintains that achieving food security in Palau is only possible through strengthening measures that build institutional, community, ecosystem and economic resilience around food production. This SFM policy aims to strengthen forest ecosystem resilience which is a cornerstone of Palau's food security program of work.



PALAU PROTECTED AREAS NETWORK (PAN SYSTEM WIDE STRATEGIC PLAN 2016-2020

This iteration of the Palau PAN's management is focused on building the institutional capacity of the PAN to meet its mandate. This SFM policy provides a specific focus for some of those capacity actions and plays an important role in informing the development of specific terrestrial site management plans of PAN member sites.

NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN (NBSAP) 2015-2020

The aim of the NBSAP is to encourage, guide and coordinate an integrated national process of engaging stakeholders to sustainably use biodiversity while protecting and enhancing economic opportunity. This SFM policy supports NBSAP Goal 4, objective 4.3 which calls for measures to address the gaps in policies, laws and regulations to integrate biodiversity and ecosystem services. The existence of this policy is a result of actions to achieve this objective.

BUREAU OF AGRICULTURE (BOA) STRATEGIC PLAN 2014-2019

The mission of the BOA is to promote, develop, protect and conserve Palau's land based natural resources and to assist families to have skills, resources, and opportunity to ensure sustained food production, nutrition, food security and wise stewardship of ecosystems. This SFM policy enables the BOA to better coordinate the achievement of reforestation and invasive species management actions with key national and state partners in support of healthy forest ecosystems.

SUSTAINABLE DEVELOPMENT GOALS (SDG)

The SDGs are a universal call to "end poverty, protect the planet and ensure that all people enjoy peace and prosperity" (UNDP). Palau has committed to achieving all 17 SDGs. This SFM policy speaks to achieving Goal 15 which seeks to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss. Further, the existence of this policy is outcome indicator 15.2.1 of the SDGs and demonstrates concrete progress in our efforts to achieve these global goals.



BROAD POLICY DESCRIPTION

In 2010 the Bureau of Agriculture with support from the United States Department of Agriculture drafted the “Republic of Palau Statewide Assessment of Forest Resources: A comprehensive analysis of forest related conditions, trends, threats and opportunities.” This document presented an analysis of forest conditions and trends and identified priority forest landscapes from which a nation-wide strategy would be developed to address issues arising from identified forest trends. Since then, subsequent stakeholder consultations indicated that the proposed nation-wide strategy should be expanded to become a sustainable forest management policy and a sustainable forest management plan in order to successfully address the issues affecting forests. Forestry issues identified in this report were vetted in the national consultations associated with this policy development. The issues were found to be still valid and in need of resolution. As such, the discrete policies that comprise this document arise from the issues that were identified in that 2010 assessment. Finally, the core of this policy document is focused on policy objectives, outcomes and directives and does not include extensive descriptions of the status and trends of Palau’s forests because the 2010 forest condition and issue assessment are still relevant.

VISION

A Palau enriched by healthy forests that sustain our culture and livelihoods, expand our economy and strengthen the resilience of our island ecosystems and communities.

POLICY GOAL

The goal of Palau's Sustainable Forest Management Policy is to support forest resource management and forest related biodiversity conservation so that forest ecosystem services contribute towards the country's sustainable development. It aims to inform the development and implementation of strategies that reduce pressures on forest resources and enhance forest ecosystem provisioning capacities.



GUIDING PRINCIPLES

The following guiding principles refer to how forest resource owners, government agencies, and all other stakeholders should undertake sustainable forest management in the Republic of Palau. They are as follows:

- Palau's forest ecosystems play a vital role in maintaining island ecological processes and should be recognized and valued
- Owners of forest resources have the right to use, manage and develop these resources but they must ensure that their activities do not cause damage to other environments or damage to downstream ecosystems
- Forest resources are important to the environmental, social and economic wellbeing of Palau and should be protected against the harmful effects of pollution, fires, invasive species and unsustainable development
- Efforts to maintain and increase forest cover by state governments should be supported by technical and financial assistance by the national government through the Palau PAN or through initiatives supported by other funding mechanisms
- Effective Sustainable Forest Management requires timely, reliable and accurate information on forests and forest ecosystems. The Forestry Unit of the Bureau of Agriculture should assist states to conduct baseline assessments on their forest resources as well as assist them in conducting regular monitoring of these resources to determine forest trends to aid in management
- Generating sustainable economic benefits from the use of forest landscapes, forest species and forest related products, whether through tourism, timber production or other means must be encouraged and assisted.

SUSTAINABLE FOREST MANAGEMENT POLICY OBJECTIVES, OUTCOMES, DIRECTIVES AND INDICATORS

The objectives, outcomes and directives of this SFM policy are aggregated around three focal areas. They are as follows:

1. Conserve Working Forest Landscapes,
2. Protect Forests from Harm, and
3. Enhance Public Benefits from trees and forests

Each focal area has a number of policy objectives that describe the purpose of a specific policy. Associated with the policy objective is a policy outcome that describes the end state that is desired. It describes a change in behavior or in condition of a specific aspect in sustainable forest management. And finally associated with the policy outcome are a number of indicators that can be used to track progress in efforts to achieve the policy objective or assess its implementation impact. Missing from this policy document are actions needed to achieve the outcomes. As a policy instrument this policy document is intended to provide the direction that should be taken to achieve sustainable forest management. The implementation details to achieve sustainable forest management milestones are properly situated in forest management plans and other resource management action plans. As such, the structure of this policy document is designed to facilitate the uptake of one or more policy directive by state governments, the Forestry Unit of the Ministry of Natural Resources, Environment and Tourism (MNRET) and other public or private interests desiring to conserve, manage or utilize Palau's forest resources.



Focal Area 1

Conserve Working Landscapes

The policy directives under this focal area aim to strengthen forest stewardship and active forest management participation by state governments who own public forests. Biodiversity supports forest environmental services, productivity and resilience. Forest processes such as carbon sequestration, seed dispersal and nutrient cycling depend on biodiversity. Therefore, biodiversity conservation is a core component of sustainable forest management. Policy objectives for this policy focal area are designed to ensure that Palau's forests are healthy, that conservation measures are focused on improving the status of both forest flora and fauna and there is sufficient representation of all the major forest types to ensure resiliency of Palau's forests.

Objective 1: Increased participation in sustainable forest management by communities

Outcome	Policy Directive	Indicator
<p>State government know and appreciate the value of their forest ecosystems and have sustainable management measures in place to ensure their continued health</p>	<p>Forest ecosystems provide social, economic, and ecological benefits to Palau and therefore high conservation value forests must be identified and prioritized for sustainable management measures.</p>	<ul style="list-style-type: none"> • Areal extent of forests as PAN site (post 2015 figures), • State regulation or legislation designating sustainable management measures for forests



Objective 2: Improved conservation status of forest related biodiversity

<p>1 Outcome Under- represented forest ecosystems and other High Conservation Value (HCV) forests are identified and protected in the PAN or have management measures in place to protect their conservation value.</p>	<p>Policy Directive Palau’s unique forests are part of our natural heritage and every effort must be made to ensure that this collective legacy, is able to thrive today and into the long term.</p>	<p>Indicator</p> <ul style="list-style-type: none"> • Progress towards sustainable forest management (SDG indicator 15.2.1) • Areal extent of under-represented forests or other HCV as PAN site (post 2015 figures), <ul style="list-style-type: none"> • State regulation or legislation designating sustainable management measures for forests • Forest health indicators show improving trend of HCV forests (reflected in Palau’s State of the Environment (SOE) report)
<p>2 Outcome Forest Protected Area Sites that are members of the Palau Protected Areas Network (PAN) demonstrate improved biodiversity conservation and ecosystem health scores</p>	<p>Policy Directive Sustainable Forest Management requires the understanding of the condition and the trends of forest resources. Palau must invest in the capture, analysis and appropriate dissemination of findings of forest information to forest owners, managers and users to strengthen sustainable forest management in the PAN.</p>	<p>Indicator</p> <ul style="list-style-type: none"> • PAN forest assessments are conducted • Forest survey methodology developed and implemented by PAN sites • Forest health indices are developed and used by PAN
<p>3 Outcome Resource managers use information derived from monitoring programs and other research activities to guide their conservation and natural resource management implementation efforts.</p>	<p>Policy Directive Forest ecosystems including the biodiversity that depend on them provide a number of services upon which our communities depend. As such, Palau must invest in developing and implementing mechanisms (forest inventories, comprehensive mapping of invasive species) that facilitate their conservation and management.</p>	<p>Indicator</p> <ul style="list-style-type: none"> • The national legislature provides funding support to the National Bird Program which monitors forest health using birds as an indicator species. <ul style="list-style-type: none"> • Instances of management actions in annual work plans informed by monitoring data

<p>2 Outcome Agencies and organizations mandated to manage forests utilize best practices, standard operating procedures, agreed upon forest monitoring protocols in the implementation of sustainable forest management.</p>	<p>Policy Directive Effective sustainable forest management requires strong competent institutions to support the development and implementation of natural resource management and biodiversity conservation measures. Palau must invest in forestry institution building in state governments and the Forestry Unit of MNRET.</p>	<p>Indicator</p> <ul style="list-style-type: none"> • Development of forestry monitoring protocols (e.g. The Montréal Process Criteria and Indicators for Sustainable Forest Management (MP C&I) or its modified version) <ul style="list-style-type: none"> • Forestry monitoring protocols integrated into standard operations at PAN and Forestry Unit of MNRET <ul style="list-style-type: none"> • Palau Sustainable Forest management plan in existence and implemented • Forest resource management competency requirements integrated into human resource development processes at PAN and MNRET
<p>3 Outcome States, Forestry Unit, NGOs and other Sectors (Public and Private) consistently collaborate on activities that ensure forest ecosystem health with resulting social/economic benefits</p>	<p>Policy Directive Healthy Forest Ecosystems provide Services that benefit society. Addressing threats (such as Invasive species) to the health of forests requires a coordinated and collaborative response. Palau must develop mechanisms such as a bio-security task force to facilitate implementation of collaborative forest solutions.</p>	<p>Indicator</p> <ul style="list-style-type: none"> • Existence and # of mechanisms such as a bio-security task force and others to facilitate collaborative engagements in support of forests <ul style="list-style-type: none"> • # of forest projects implemented by partnerships or coalitions • Areal extent of invasive species show decreasing trend • Areal extent of forest and savanna fires show decreasing trend
<p>4 Outcome Use of public forest resources are regulated and people are aware and comply with these regulations.</p>	<p>Policy Directive State forests are a public trust resource. The availability of these resources to benefit society depends on its sustainable management. Unsustainable use is a threat to the health of these resources. As resource owners state governments must develop regulations to ensure their sustainable use to maximize their benefit across generations.</p>	<p>Indicator</p> <ul style="list-style-type: none"> • Existence of public timber harvest regulations <ul style="list-style-type: none"> • Existence of outreach programs designed to build constituency for sustainable harvest measures. • Downward trend in number of violations of harvest timber regulations

Focal Area 2

Protect Forests from Harm

The policy directives under this focal area aim to strengthen efforts to reduce threats to the health of forests. Policy directives associated with this objective focus attention on the systemic nature of the factors and threats affecting forests. Addressing these factors and reducing threats that harm forests requires that sustainable forest management regimes are undertaken in concert with biodiversity conservation, sustainable land and water management and protected areas conservation efforts. However, there are a number of existing initiatives, the Palau Active Land Management Program (PALM) and plans such as the NBSAP and the SLM Action Plan whose main focus are reducing the threats biodiversity and ecosystems. As such, those initiatives and plans employ strategies and actions that protect forests from harm. Consequently this policy is focused on ensuring that the tools and processes needed to enhance sustainable forest management are acquired and the requisite competencies for same are achieved to ensure sustainable forest management.

Objective 1: Strengthened sustainable forest management across local and national governance levels

1 Outcome	Policy Directive	Indicator
<p>Technicians and managers engaged in forest resource management have the competency (can demonstrate the skills and use the tools needed) to implement their agency or site management plans</p>	<p>The sustainability of Palau’s forest resources is directly correlated to our ability to manage these resources. Palau must invest in building and sustaining a local workforce skilled in all areas of sustainable forest management from technicians, to managers to scientists.</p>	<ul style="list-style-type: none"> • Number of forest resource management training modules developed and implemented. • Number of forest resource management personnel trained in an aspect of forest resource management.



Focal Area 3

Enhance public benefits from trees and forests

The policy directives under this focal area aim to enhance benefits to communities from forest resources, ensure access to clean water and build resiliency to Climate Change.

Palau's forests contribute to community livelihoods and the larger Palauan economy. However, the realization of the full potential of Palau's forests to benefit the economy has been restricted by Palau's small island scale. Palau has a small domestic market for forest products and lack of support to develop forest related market enterprises. A specific objective under this focal area is to catalyze the development of forestry related enterprises.

Access to clean, safe affordable water is a universal right. Consistently delivering water in this condition to our communities requires that we manage our costs. Sourcing and then treating water that has been filtered by forests is cheaper than sourcing and treating water from degraded watersheds. The policy directive in this focal area is aimed at strengthening existing water source protection and management measures.

Forests and trees play a role in reducing the impacts of climate change as well as a role in mitigating greenhouse gas emission. Healthy forests are both be an adaptation and a mitigation strategy. Intact mangrove forests along our coasts provide protection from storm surge resulting from extreme weather events associated with Climate Change. Hence, their value as a climate change adaptation strategy. Mangrove forests are also carbon sinks and store both carbon in both the trees itself as well as the mangrove substrate. Thus, reforestation of denuded mangrove forests is also a climate mitigation strategy. Reforestation of bare slopes in Babeldaob increases the overall capacity of Palau's forests to store carbon resulting in both land degradation reduction and climate change mitigation outcomes.



Objective 1: Increase the contribution of forest to the economy

<p>1 Outcome Small scale forest plantations are consistently providing building materials and arts and crafts wood for Palau's growing home construction and tourism market.</p>	<p>Policy Directive Sustainably using local wood resources to reduce market dependence on imported building materials strengthens our economy. Fostering the development of agro-forestry operations (agriculture varieties and tree species) and small scale forest plantations builds resiliency into these livelihood options.</p>	<p>Indicator</p> <ul style="list-style-type: none"> • # and areal extent of small scale forest plantations • # of enterprises selling local wood products • % increase of small scale plantations and local wood businesses as part of GDP
<p>2 Outcome Visitors to Palau participate in tourism activities in forests in Babeldaob and in forested PAN sites.</p>	<p>Policy Directive Diversifying Palau's tourism offering to include forest based recreational activities grows Palau's tourism portfolio and increases tourism revenue streams. The Bureau of Tourism must actively facilitate partnerships between the tourism sector and state and PAN and forestry sector in support of forest tourism product development</p>	<p>Indicator</p> <ul style="list-style-type: none"> • # of forest recreational tourism products available for visitors to enjoy • # of PAN sites with viable forest related tourism products (tours, reforestation activities etc.)



Objective 2: Improve the quality of fresh water supply via forests

<p>Outcome Drinking water source watershed are formally protected through special management or other land use designations and are under active management</p>	<p>Policy Directive Healthy forests are a part of Palau's water supply infrastructure. State and national governments must take action to maintain or rehabilitate drinking water source watersheds to ensure water access for all</p>	<p>Indicator</p> <ul style="list-style-type: none"> • Areal extent of rehabilitated bare soil/slopes in drinking water source catchments • Decreasing trend in amount of chlorine used to treat community water supply
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Focal Area 3

Enhance public benefits from trees and forests

Objective 3: Increase climate change adaptation benefits of forests

1 Outcome

Communities experience less instances of flooding events during periods of persistent rain

Policy Directive

Degraded lands exacerbate the negative impacts of climate change. Reforesting bare slopes, eroded stream banks and coastal zones strengthens the water regulating services that healthy forests provide.

Indicator

- % increase in forest cover
- % reduction in area of degraded lands

2 Outcome

Palau is actively acting to reduce or mitigate its development footprint

Policy Directive

Implement a “No Net Loss” Policy for development that impacts forests. Forest ecosystem services that would otherwise have been lost are replicated elsewhere. Such that, If development results in the removal of a tract of forest the developer must replant the same amount or greater of forest in another area to maintain carbon mitigation capacity

Indicator

- amount of forest carbon stock stored in forests





**NGARA
ESEOS E
OLENGIMCH
EL
MERA
DALM**

From the mature tree it dribbles
to the sapling

IMPLEMENTATION ARRANGEMENTS FOR SUSTAINABLE FOREST MANAGEMENT

Implementation of this SFM Policy addresses issues concerning Palau's forests. However, solutions to forest threats and implementation of management strengthening initiatives require a coordinated response from State Governments, Communities, the Ministry of Natural Resources, Environment and Tourism, Civil Society Organizations and the Private Sector. This coordinated response demands the creation of implementation mechanisms that facilitate cooperation on behalf of forests. The Forestry Unit of the Bureau of Agriculture is ideally suited to facilitate the partnerships and coalitions needed to deliver the outcomes identified in this policy. Furthermore, actions required to achieve the outcomes articulated in this SFM policy should form the core of Palau's Sustainable Forest Action Plan. It is that plan where implementation detail associated with this policy document will be articulated.



MONITORING AND EVALUATION (M&E) STRATEGY

Assessing the progress and efficacy of the implementation of this SFM Policy requires an effective monitoring and evaluation system with appropriate and efficient feedback mechanism. This entails carrying out monitoring and evaluation functions at all levels (national, sectoral and state). The forestry Unit should integrate the indicators identified in this policy document into their agency M&E process. In this way Palau is able to track sustainable forest management progress at the policy level and can demonstrate and over the course of implementation can demonstrate impacts of this policy to the environment and communities in Palau.



SUSTAINABLE FOREST MANAGEMENT POLICY REVIEW

The Policy will be reviewed based on a five-year cycle. However, this Policy or parts of it may be reviewed at any time if there are significant changes in the operating environment in the course of its implementation.



THE NATURE AND EXTENT OF PALAU'S FOREST RESOURCES

Palau's forests are the most species diverse in Micronesia comprising a large number of endemic and native flora and fauna. These forests are considered to be tropical moist broadleaf forests and share many common species with the Philippines and Indo-Malaysia. Forest species composition in Palau is related to the soil type among other factors. This results in 7 distinct main forest types and each of these types represent a complete habitat with unique soils, vegetation composition, landscape location, and associated biological communities. The 7 soil types in Palau include, freshwater swamp, volcanic, mangrove, limestone, atoll and coastal, agro and plantation forests. There are more than 700 native plant species and 65 endemic trees. Volcanic soils are found on Babeldaob, Ngerkebesang, Malakal and Koror. Coral limestone soils are found on Peleliu, Angaur, the Rock Islands, Kayangel and the Southwest Islands (Kitalong, 2010).

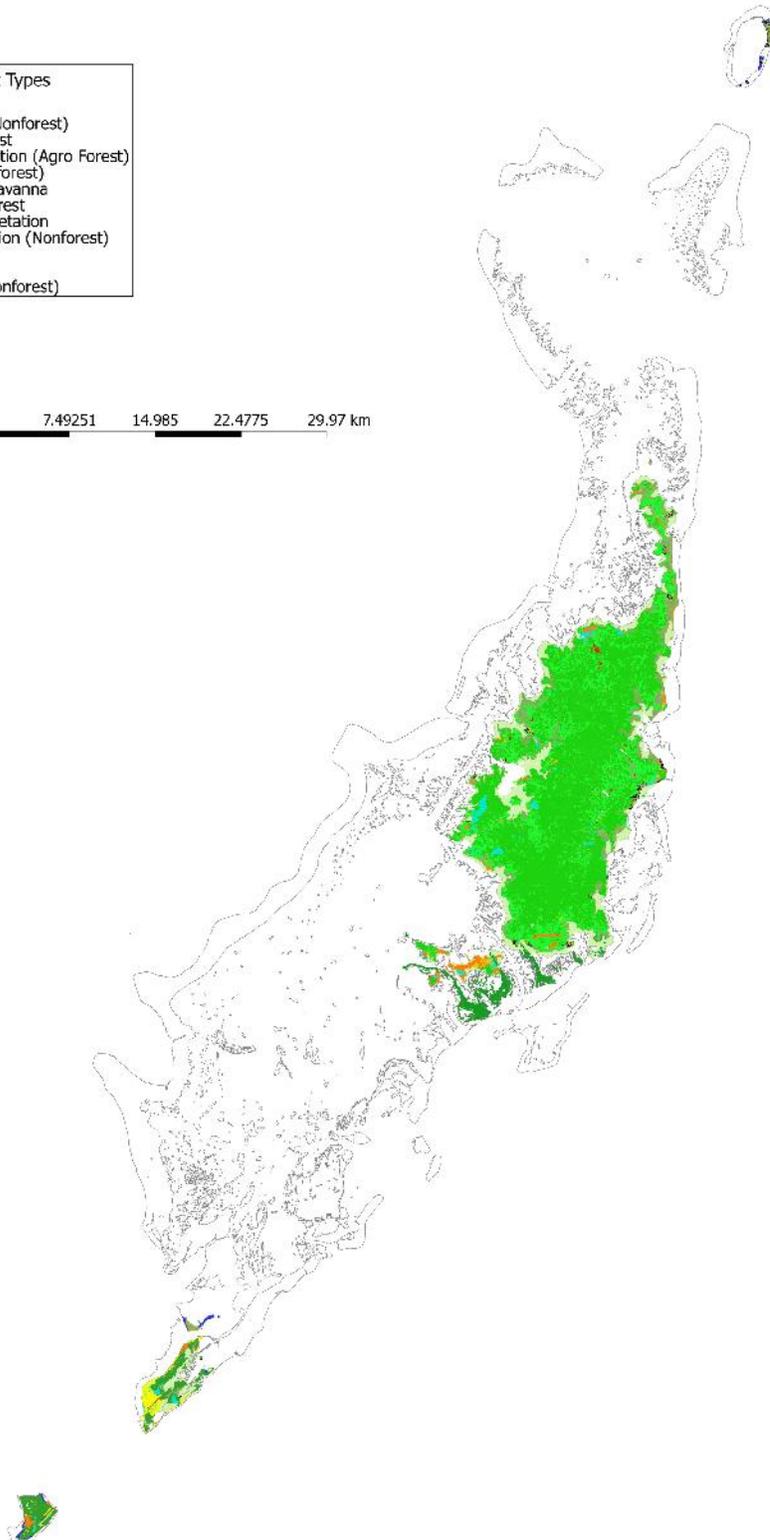


PALAU FOREST TYPES

- Forest Types
- Atoll Forest
 - Barren Land (Nonforest)
 - Casuarina Forest
 - Coconut Plantation (Agro Forest)
 - Cropland (Nonforest)
 - Grassland or Savanna
 - Rock Island Forest
 - Secondary Vegetation
 - Strand Vegetation (Nonforest)
 - Swamp Forest
 - Upland Forest
 - Urban land (Nonforest)



7.49251 0 7.49251 14.985 22.4775 29.97 km



All forests in Palau are classified generally as "lowland" tropical moist forest.

Lowland because they are below 300 meters in elevation and moist forests because Palau receives about 380 cm of rain distributed throughout the year and has high humidity. The 7 forest types found in Palau are: volcanic forests, freshwater swamp forests, mangrove forests, atoll and coastal forests, casuarina forests, limestone forests and agro forests.

FRESHWATER SWAMP FOREST

Freshwater swamp forests tend to occur slightly inland of mangrove forest in areas of fresh or slightly brackish water and in wet lowland areas or along the riparian zone. This sensitive forest habitat represents the least amount of area of all forest types and requires protection. The dominant canopy species in swamp forest are relative to their proximity to salt water and other topographic considerations, such as riparian verses lowlands near the coast or inland. The other layers of this forest vary less. Typically, the forest floor growth is predominantly the seedlings of the dominant trees. Species commonly found in freshwater swamp forests are *Barringtonia racemosa*, *Calophyllum pelewense*, *Camptosperma brevipetiolata*, *Cynometra ramiflora*, *Horsfieldia irya*, *Pandanus kanehirae*, and *Stemonurus ammui*. In disturbed areas or open areas *Hibiscus tiliaceus* and *Macaranga carolinensis* are found extensively. In the moist ravines and riparian areas, dense and diverse forest vegetation occurs including *Barringtonia racemosa*, *Colona scabra* and the poison tree, *Semecarpus venenosa*. A common, but not universal, trend of the zones of large swamp forests from upland to mangrove has been described by Canfield et al. (1992) as *Calophyllum*, *Stemonurus*, *Pandanus* association as transitional between inland mangroves and the *Horsfieldia* forest.



VOLCANIC FOREST

Volcanic forests are located on basalt soils, these lowland forests are dense, multi-layered and structurally complex encompassing distinct subtypes of forest in undisturbed ecosystems. The volcanic lowland forests are considered the most species rich in Micronesia (Stemmermann, 1981) and have the highest rate of endemism. It has also been previously noted that the species composition varies with topographic richness (Canfield et al., 1992). Forests on ridges have higher species diversity with *Maranthes corymbosa* often dominant, whereas forests on the slopes and in valleys are less diverse and dominant with *Camptosperma brevipetiolata* and *Pinanga insignis*. Generally, the forests of Palau are heterogeneous, with no distinctly dominant species. There are, however, landscapes where dominant climax species prevail. One of the most common tree species found in Palau, as in the rest of the Caroline Islands, is *Camptosperma brevipetiolata*. Other common species found in the volcanic forests include *Alphitonia carolinensis*, *Calophyllum inophyllum*, *Calophyllum inophyllum* L. var. *wakamatsui*, *Elaeocarpus joga*, *Gmelina palawensis*, *Maranthes corymbosa*, *Pterocarpus indicus*, *Rhus taitensis*, *Semecarpus venenosa*, and *Serianthes kanehirae* Fost. var. *kanehirae*. Other species found in this mixed species forest include *Atuna racemosa* Rafin spp. *racemosa*, *Cerbera* spp., *Fagraea ksid*, *Horsfieldia palauensis*, *Manilkara udoido*, *Myristica insularis*, and *Serianthes kanehirae*. Species commonly found in the understory of the volcanic forests include the palm *Pinanga insignis*, *Alpinia carolinensis*, *Cyathea sphaeropteris* spp., *Ixora casei*, *Osmoxylon oliveri*, and *Pandanus aimiriikensis*.



MANGROVE FOREST

Mangrove forests comprise a dense forest which grows in brackish to salty water along a narrow strip of the tidal zone near the shore. Mangrove forests are widespread around Babeldaob and found in the low lying, coastal, muddy seashores, quiet bays and estuaries. Mangrove forests are also found in the Rock Islands, commonly along the edge of marine lakes. Mangroves play a vital role in buffering the effects of storms and waves along coastal areas. They also provide nursery habitat for marine life and filter runoff exiting terrestrial ecosystems. The filtration that mangroves provide helps to sustain coral reef and fish habitat by reducing siltation. The species-rich mangrove forests of Palau include over 24 different species. The principle species found in mangroves include the following trees: the less common *Avicennia marina* subsp. *marina*, *Bruguiera gymnorrhiza*, *Ceriops tagal*, *Dolichandrone spathacea*, *Excoecaria agallocha*, *Lumnitzera littorea*, *Rhizophora apiculata*, *Rhizophora mucronata*, *Scyphiphora hydrophyllacea*, *Shirakiopsis indicus*, *Sonneratia alba*, and *Xylocarpus granatum*. The smaller plants or lianas include *Dalbergia candenatensis*, *Derris trifoliata*; the palm *Nypa fruticans*; and the ferns *Acrostichum aureum* and *Nephrolepis acutifolia*. Mangrove trees adapt to a muddy saltwater environment by producing specialized roots such as prop roots for structural support, knee shaped pneumatophores or conical roots for gaseous exchange and elaborate buttress roots for both structural support and gas exchange.



LIMESTONE/ROCK ISLAND FORESTS

Limestone forest vegetation types are found on limestone islands and outcrops mainly on Peleliu, Angaur, the Rock Islands and Airai. On the Rock Island limestone substrate of the coral rock, the organic matter from the vegetation forms a thin layer of soil in places in which the vegetation grows. The karstic substrate is steep, porous and rugged. The species-rich forest includes *Aidia racemosa*, *Badusa palauensis*, *Barringtonia racemosa*, *Bikkia palauensis*, *Clerodendrum inerme*, *Cordia subcordata*, *Cycas micronesica*, *Cyrtandra todaiensis*, *Eugenia reinwardtiana*, *Flacourtia rukam* Zoll. & Mor. var. *micronesica*, *Garcinia matsudai*, *Garcinia rumiyo* Kaneh. var. *calicola*, *Geniostoma sessile*, *Guettarda speciosa*, *Hydriastele palauensis*, *Intsia bijuga*, *Ixora casei*, *Meryta senffiana*, *Morinda latibractea*, *Pandanus dubius*, *Pemphis acidula*, *Pleomele multiflora*, *Polyscias grandifolia*, *Pouteria calcarea*, *Pouteria obovata*, *Premna serratifolia*, *Psychotria* spp., *Rinorea bengalensis*, *Scaevola taccada*, *Semecarpus venenosa*, *Soulamea amara* and *Tarenna sambucina* (Forst.) var. *oweniana*.

Casuarian Forests

Casuarina forests are dominated by *Casuarina equisetifolia* (ngas) which is a coastal tree common in sand and coral rubble that is often near the high water mark but can be found in both limestone and volcanic soils and as part of the coastal strand vegetation. The southern states of Angaur, Peleliu, and the Ngemelis Complex are dominated by large *Casuarina* trees. Some of the rock islands are now dominated by this species. This tree can also be found in Babeldaob in areas where coral fill was used to either reclaim reef or build roads. The wood of *Casuarina* is used for posts, handicrafts and fuel. This native tree is a highly adaptable species and can grow in poor soils and marginal habitats. The needles can inhibit growth of other native trees. The casuarina forest is a forest subtype of the limestone forest.



ATOLL AND COASTAL FORESTS

Atoll forests are usually found in the interior of larger and wetter atolls along sandy or rocky coasts and generally behind strand forest but can be mixed with strand species. The transition from strand to atoll forest is often gradual and indefinite. Species commonly found include an outer fringe of the shrubby *Scaevola taccada* (korrai or kirrai), *Heliotropium foertherianum* (rirs) and *Sophora tomentosa* (dudurs) Along the rocky limestone coastlines the tree *Pemphis acidula* is common. *Casuarina equisetifolia* (ngas) is common at areas of human settlement and expand into adjacent areas. Other atoll and coastal plant species include *Calophyllum inophyllum* (btaches), *Cordia subcordata* (badirt), *Hernandia Sonora* (doko), *Guettarda speciosa* (belau), *Pandanus* spp. *Pisonia grandis*, *Terminalia catappa* (miich), *Morinda citrifolia* (ngel), *Ochrosia oppositifolia* (uaoch), *Hibiscus tiliaceus* (chermall), *Ficus* spp. and *Premna serratifolia* (chosm). Coastal forests along Babeldaob include a similar flora.

AGROFOREST

Agroforests are forests consisting of areas under cultivation for fruit and food crops and trees and wood products. Agroforests are often a mosaic of manmade landscapes that are integrated into the natural landscape. Traditional agroforests of Palau include taro farms which have complex irrigation systems with organic fertilization derived from fruit trees and leafy shrubs planted along the embankment of the taro patches.

PLANTATION FORESTS

Mahogany plantations

Mahogany plantations consist of two species of tall trees: *Swietenia macrophylla* and *Swietenia mahagoni*. Since the Japanese administration, mahogany has been actively planted as a source of timber with many small plantations and larger plantations of over 100 acres found in Palau.

Coconut plantations

Coconut plantations are agroforests dominated by *Cocos nucifera* (lius) that were cultivated in large plantations during the German, Japanese and American administration. Copra, a product of coconut was a major industry during the German period. Today many of these plantations still can be found throughout Palau.



PRESSURES ON PALAU'S FORESTS

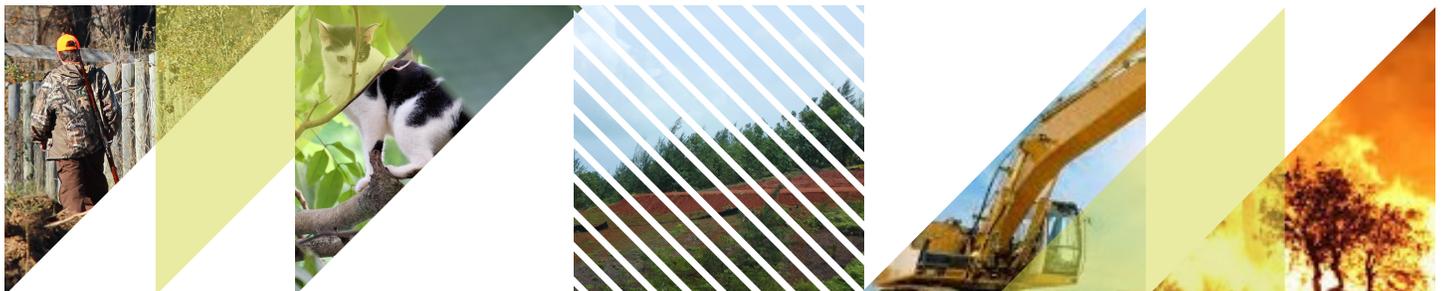
A series of national consultations was conducted to determine the status and trends affecting forests in Palau. Stakeholders identified 5 direct threats to forest health. These are listed as:

- poaching,
- the presence of invasive species,
- incompatibly placed development within the surrounding environment,
- fire, and
- deforestation

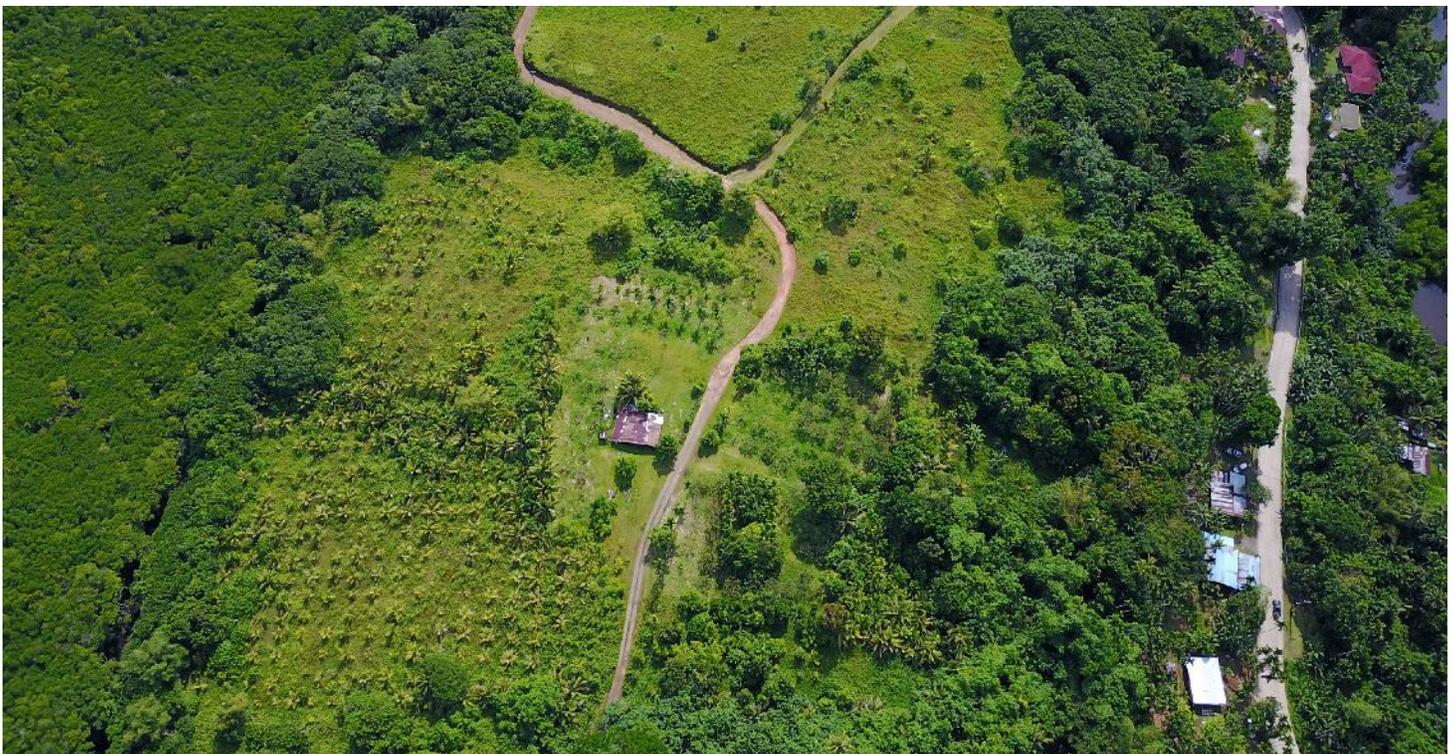
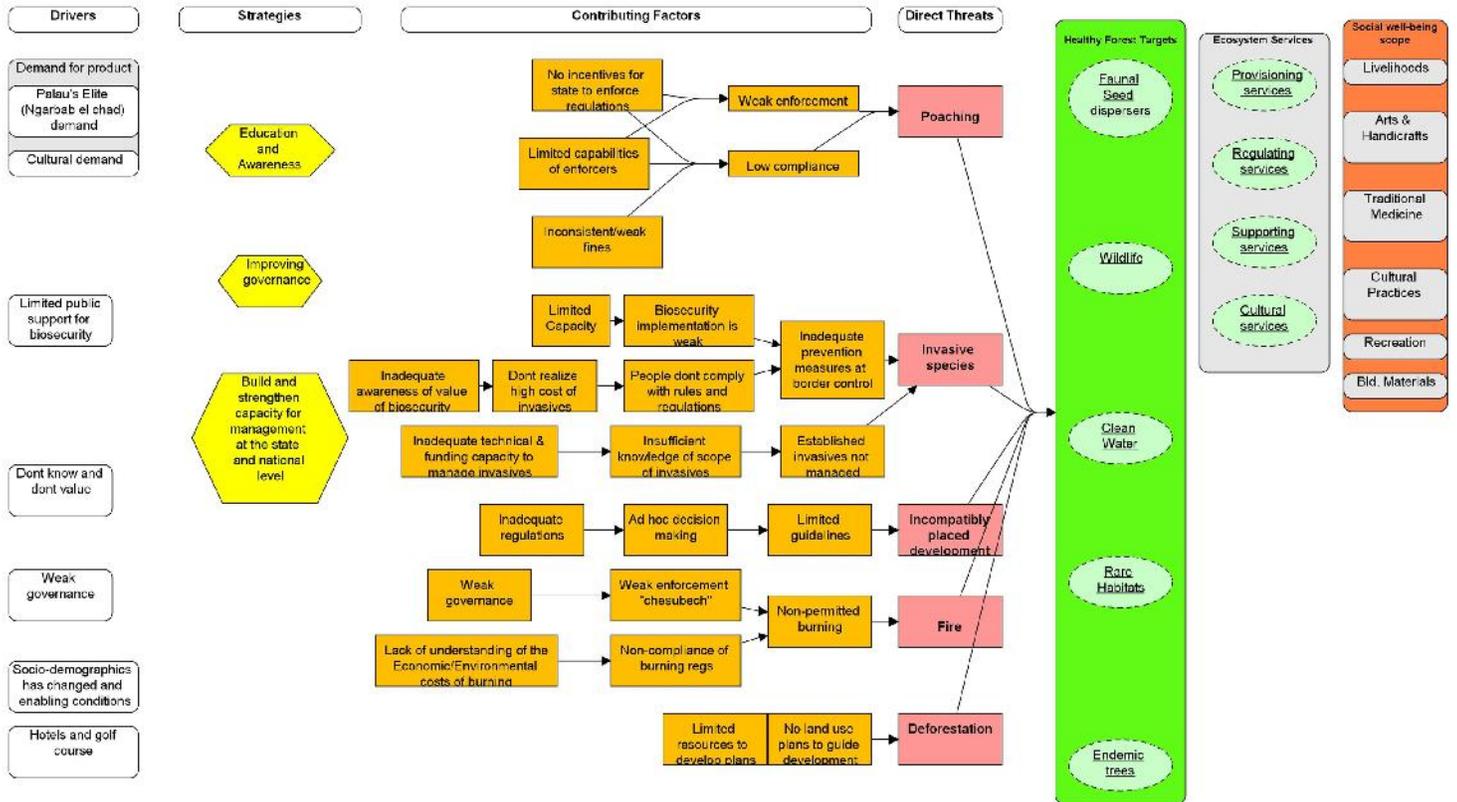
A number of factors were further identified as contributing to the existence of these threats. Stakeholders identified weaknesses in enforcement capacity of biosecurity regulations, biodiversity conservation and resource use guidelines as contributing factors to the threats of poaching, presence of invasive species, fire and incompatibly placed development. They identified lack of land use plans as a major factor in deforestation activities in Palau.

The contributing factors that resulted in these threats were identified as limited land and resource use guidelines, weak enforcement of existing forest and forest biodiversity regulations, low compliance of fire/burning regulations, biosecurity measures not fully implemented, inadequate technical capacity to manage forests and implement biosecurity measures. These factors are driven by weak forest governance, demand for forest products, limited public understanding and consequently limited support for biosecurity measures and tourism development pressure.

These threats, factors and drivers need to be addressed to ensure that Palau's forest ecosystems continue to benefit the people and islands of Palau. This Sustainable Forest Management Policy is the vehicle by which a coalition of national, state, private sector, conservation sector groups and communities will deliver on these outcomes.



PALAU FOREST SITUATION ANALYSIS CONCEPTUAL MODEL



ACRONYMS

BOA - Bureau of agriculture

CBD - Convention on Biological Diversity

FAO - Food and Agriculture Organization of the United Nations

GDP - Gross Domestic Product

HCV - High Conservation Value

M&E - Monitoring and Evaluation

MNRET - Ministry of Natural Resources, Environment and Tourism

MP C&I - Montreal Process Criteria and Indicators

MTDS - Palau's Medium Term Development Strategy

NBSAP - National Biodiversity Strategy and Action Plan

NGO - Non -Government Organization

PALM - Palau Active Land Management Program

PAN - Protected Areas Network

RTPF - Palau's Responsible Tourism Policy Framework

SDG - Sustainable Development Goals

SFM - Sustainable Forest Management

SOE - State of the Environment

UNDP - United Nations Development Programme



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