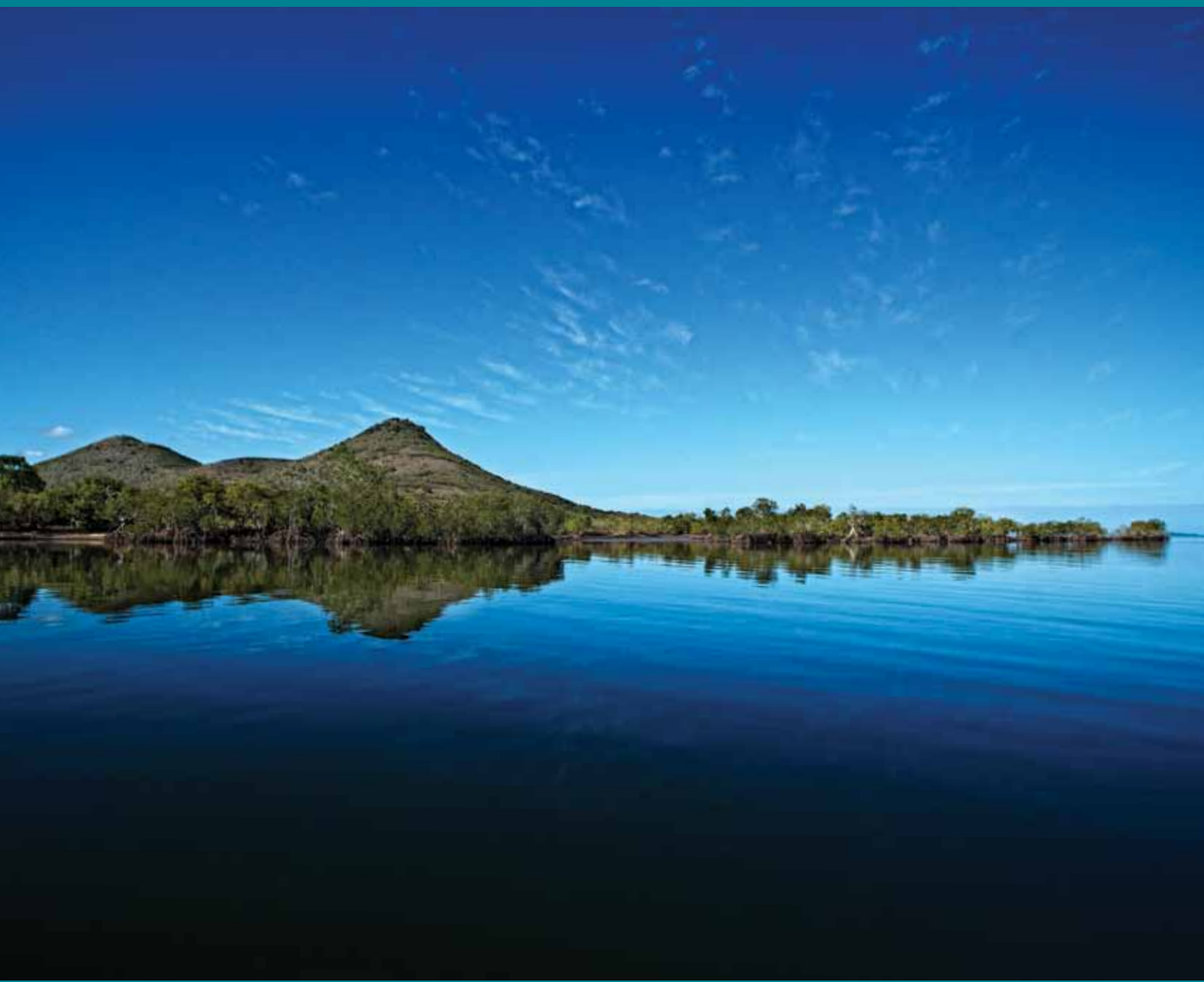
# Legal Frameworks for Ecosystem-Based Adaptation to Climate Change in the Pacific Islands



Ben Boer and Pepe Clarke

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**Ben Boer and Pepe Clarke**



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# Acronyms

| | |
|---|---|
| CI | Conservation International |
| EBM | Ecosystem-Based Management |
| EIA | Environmental Impact Assessment |
| FSM | Federated States of Micronesia |
| GDP | Gross Domestic Product |
| IER | Initial Environmental Report |
| INC | Initial National Communications |
| IPCC | Intergovernmental Panel on Climate Change |
| IUCN | International Union for Conservation of Nature |
| LMMA | Locally Managed Marine Areas |
| MPA | Marine Protected Area |
| NAPA | National Adaptation Programmes of Action |
| NEA | New England Aquarium |
| PACC | Pacific Adaptation to Climate Change project |
| PIPA | Phoenix Islands Protected Area |
| REDD | Reducing Emissions from Deforestation and Forest Degradation |
| SPREP | Secretariat of the Pacific Regional Environment Programme |
| UNEP | United Nations Environment Programme |
| UNFCCC | United Nations Framework Convention on Climate Change |

# 1. Background

*There is growing recognition of the role that well-managed ecosystems can play in supporting adaptation – through increasing resilience and decreasing vulnerability of people and their livelihoods to the impacts of climate change. Well-managed ecosystems have a greater potential to adapt to climate change, resist and recover more easily from extreme weather events, and provide a wide range of benefits on which people depend. In contrast, poorly managed, fragmented and degraded ecosystems can increase the vulnerability of people and nature to the impacts of climate change.*

*Policy Briefing: Ecosystem-based Adaptation* (2009)
International Union for Conservation of Nature

## 1.1 Introduction

This report is primarily directed to analysing the legal aspects of ecosystem-based adaptation to climate change. It sketches the impacts of climate change in the Pacific Island countries, recognizing that climate change directly impacts ecosystems, which provide for the needs of people as well as for the maintenance of the natural environment. It takes as a given that ecosystem-based adaptation can provide cost-effective strategies for reducing vulnerability to climate change impacts and enhancing ecosystem resilience, thereby maintaining ecosystem services and sustainable livelihoods. The report is written in light of the research reports completed by SPREP and Conservation International for this project (SPREP and Conservation International 2011).

An essential aspect of the legal analysis is an examination of the way in which environmental governance operates in Pacific Island countries. The analysis is directed both to current formal legal systems as well as to customary mechanisms at the community level, exploring both potential barriers as well as the possibilities in the national legislation for achieving the aims of ecosystem-based adaptation strategies.

The report includes six brief legal case studies of more or less representative Pacific Island countries. The case studies provide a snapshot of the relevant legal frameworks in the selected jurisdictions in order to assess the suitability of those frameworks for providing a legally robust basis for ecosystem-based adaptation. The report shows that appropriate legal mechanisms developed at the national level can play a key role in promoting adaptation, especially through restoring and maintaining ecosystem resilience, to address the effects of climate change.

Also important are the regional environmental law instruments that currently operate in the Pacific region. While they are not examined in detail in this report, they have the potential to promote ecosystem-based adaptation strategies at the national level.

## 1.2 Climate change impacts in the Pacific Islands

Island communities are highly vulnerable to the predicted effects of climate change, including sea level rise, coastal erosion, cyclones, floods, droughts, salinization of water and soils, and coral bleaching. The social and economic impacts of climate change are likely to be severe in the Pacific Islands, with particularly serious impacts on rural communities with a high level of dependence on coral reef fisheries, small-scale agriculture and nature-based tourism (Intergovernmental Panel on Climate Change (2007).

The ecosystems of small islands, as well as the low-lying coastal areas of larger islands, are particularly sensitive to climate change impacts, especially where exacerbated by human activities (Intergovernmental Panel on Climate Change (2007).Terrestrial and coastal ecosystems on inhabited islands throughout the Pacific have been subject to accelerating degradation in recent decades, increasing their vulnerability and reducing their resilience to climate change impacts (Secretariat of the Convention on Biological Diversity 2010 55-58.)

Sea-level rise, on the scale projected by the Intergovernmental Panel on Climate Change (IPCC), will eventually result in the complete inundation of a number of low-lying Pacific Islands. Throughout the region, sea-level rise is expected to exacerbate storm surge, erosion and other coastal hazards, threatening vital infrastructure, settlements and facilities that support the livelihoods of island communities.

Water resources on small islands in particular are likely to be seriously compromised. Many small islands in the Pacific region have limited water supplies, and water resources in these islands are especially vulnerable to changes in the distribution of rainfall. Sea-level rise will compound this threat, due to saline intrusion into freshwater lenses, an essential source of groundwater for small atolls.

Climate change is also likely to heavily impact coral reefs, fisheries and other marine resources. Commercial and subsistence fisheries are the mainstay of national and local economies in many parts of the Pacific. Changes in ocean temperatures and currents are likely to alter the abundance and distribution of fish stocks, with significant impacts on commercial and artisanal fisheries.

The health of coral reefs and other coastal marine ecosystems, which sustain island fisheries, are very likely to be affected by rising sea surface temperatures and rising sea levels, damage from tropical cyclones and decreases in coral growth rates due to the effects of higher carbon dioxide concentrations on ocean chemistry.

It is very likely that subsistence and commercial agriculture on small islands will be adversely affected by climate change. Sea-level rise, inundation, seawater intrusion into freshwater lenses, soil salinization, decline in water supply and increase in extreme weather events will also adversely impact island agriculture in the Pacific region.

## 1.3 Ecosystem-based adaptation to climate change

The effects of climate change directly threaten the services that ecosystems provide, including food, clean water, coastal protection and soil stability. Communities, which depend directly on the exploitation of local natural resources, are threatened most severely, and are most likely to lack the resources for costly adaptation measures.

For the purpose of this report, we adopt the following definition of adaptation:

> *…protecting and maintaining ecosystem integrity; buffering local climate; reducing risks and impacts from extreme events such as storms, drought and sea level rise; and providing and maintaining essential ecosystem services that help people cope with changes in water supplies, fisheries, disease and agricultural productivity caused by climate change (Dudley et al 2010 at 7).*

A simpler but also effective definition is used by the Convention on Biological Diversity (Conservation International 2011 at 4): "Adaptation that integrates the use of biodiversity and ecosystem services into an overall strategy to help people adapt to the adverse impacts of climate change".

In the Pacific islands, rural communities are highly dependent on locally harvested fish, crops, livestock and timber. Fresh water is usually obtained from local sources, with the availability of water closely linked to local catchment health. Mangroves and coral reefs play a vital shoreline protection role, regulating coastal erosion and reducing the impacts of cyclones and storm surges (Wong, Marone, Lana and Fortes 2005).

Ecosystem-based adaptation provides a cost-effective strategy for reducing vulnerability to climate change impacts and increasing resilience, while maintaining ecosystem services and sustainable livelihoods in the face of climate change.

Only intact and healthy ecosystems can provide the full range of benefits that people need over long periods of time. The functioning and resilience of ecosystems depends on dynamic relationships within species, among species and between species and their abiotic environment, as well as the physical and chemical interactions within the environment.

### MAINTENANCE AND RESTORATION OF NATURAL INFRASTRUCTURE

By maintaining and restoring 'natural infrastructure' such as mangroves, coral reefs and watershed vegetation, ecosystem-based adaptation may reduce vulnerability to extreme weather events, storm surge, rising sea levels and changing precipitation patterns (IUCN 2008). Three examples include:

- In Orissa, India, following a large cyclone, researchers found that villages with wider coastal mangrove buffers experienced significantly fewer deaths than villages with narrower, or no, mangroves (Das and Vincent 2009).
- In Samoa, mangroves are being planted as part of a larger restoration project to enhance food security and protect local communities from storm surges, which are expected to increase as a result of climate change (Hale, Meliane, Davidson, Sandwith et al 2009 21-28).
- In Kimbe Bay, Papua New Guinea, coral reef resilience principles were applied to design a network of marine protected areas to help ecosystems withstand the impacts of a warming ocean and continue to provide food and other resources to local communities (Green, Lokani, Sheppard and Almany 2008).

## 1.4 Community-based adaptation to climate change

Ecosystem-based adaptation and community-based natural resource management are mutually supportive. Strong traditions of local governance, communal resource tenure, and traditional and local ecological knowledge present fertile conditions for community-based adaptation in the Pacific Islands. A participatory approach, centred on local communities, has been identified as the best way to assess climate change vulnerability and plan adaptation measures in the Pacific (Secretariat of the Pacific Regional Environment Program 2006).

Steps for vulnerability assessment and adaptation planning can include:

- conducting research to identify potential climate change impacts;
- documenting historical capacity of the community to respond to changes in climatic conditions;
- documenting current exposure and capacity of the community to cope with climate change;
- engaging local stakeholders at each stage of the process;
- implementing adaptation measures at the community level; and
- undertaking ongoing monitoring, assessment and action (SPREP 2006).

Community-based learning networks, coordinated at a national and regional level, present opportunities to support community-based adaptation by sharing knowledge, experience, and resources and identifying and addressing issues of common concern.

### ECOSYSTEM-BASED ADAPTATION AT THE COMMUNITY LEVEL

The following examples of ecosystem-based adaptation measures can be implemented at the community level.

- *Managing fishing pressure to maintain or improve coral reef resilience:* Reducing fishing pressure on herbivorous fish species reduces the likelihood of algal growth following coral bleaching events, thus maintaining biodiversity and fisheries productivity (Obura and Grimsditch, 2009).
- *Protecting and restoring mangroves*: By prohibiting mangrove clearing and replanting degraded mangrove areas, local communities can reduce their vulnerability to coastal erosion, cyclones and storm surges, while maintaining or improving populations of mangrove-dependent fish stocks (McLeod and Salm, 2006).
- *Protecting and restoring water catchment areas:* By protecting water catchment areas and replanting native vegetation, local communities can reduce the risk of water shortages, floods and landslides, and reduce sedimentation impacts on coastal and marine ecosystems (IISD, IUCN and SEI 2003).

# 2. Environmental Governance in the Pacific Islands

## 2.1 Pacific Island Legal Systems

In the Pacific islands, people have developed diverse legal traditions, often referred to as 'custom' or 'customary law' (Scaglion 1999; Powles 2003). Throughout the region, customary law is usually applied at the local level with decision-making and enforcement taking place within the clan or village (New Zealand Law Commission 2006, 312). Traditional governance systems were modified and eroded during the colonial era (Care and Zorn 2001), and contemporary legal systems of Pacific Island states and territories vary in the extent to which they recognise customary law and traditional resource tenure.

Many Pacific Island national constitutions include provisions recognising custom, but the extent of this recognition, and the place of custom in the legal hierarchy, varies from country to country (New Zealand Law Commission 2006 at 312). The Constitution of Tonga 1878, at one end of the spectrum, provides no formal recognition of custom. The *Constitution of the Republic of Palau* 1979, by contrast, strongly protects traditional law, stating that statutes and traditional law are equally authoritative and that statutes must not be inconsistent with the 'underlying principles' of traditional law. Article V, s.2).

National legislation in most Pacific Island countries recognises and protects indigenous land tenure, and the large majority of land in the region is held under customary communal title (Lane 2008; Govan et al 2009). Recognition of customary marine tenure has been more uneven, reflecting a historical conflict between Pacific marine tenure systems and the 'open access' traditions of colonising European states (Govan et al 2009).

## 2.2 Law, Custom and Natural Resource Management

In recent years, recognition of the central role of traditional governance systems in the management of natural resources and ecosystems has resulted in a strong shift towards community-based natural resource management in the region. This rapid expansion of community-based resource management initiatives presents important questions regarding interaction, and potential conflict, between national laws and local governance systems in the Pacific (Clarke and Jupiter 2010 at 98-106).

Legal recognition of traditional resource tenure and decision-making processes can enhance the effectiveness of community-based natural resource management. Conversely, failure to recognise traditional resource tenure and decision-making processes may lead to resource conflict and, when combined with limited government capacity, can result in poor resource management outcomes (Clarke and Jupiter 2010 at 98-106).

Long-term effectiveness of community-based natural resource management initiatives in the Pacific Islands requires significant legal and institutional reform. Ultimately, effective resource

management is likely to rely on the emergence of hybrid models of governance, which respect local traditions, practices and resource rights, and shared responsibility for planning, implementation and enforcement of management measures between communities and government institutions, taking into account their respective strengths and limitations (Reti 1993).

National laws and institutions must recognise the legitimate and enduring role of local communities in natural resource management (Lindsay 1998). To do otherwise ignores the realities of resource management in the Pacific islands, and overlooks the opportunity to build on the region's heritage of community-based resource management.

## 2.3 Legal Aspects of National Action Plans for Adaptation

National Adaptation Programmes of Action for (NAPA) have been prepared under the auspices of the 1992 *Framework Convention on Climate Change*, and financed through the Global Environment Facility. In the Pacific Island region, NAPAs have been prepared for Kiribati, Tuvalu and Solomon Islands. Each of these NAPAs contains some material relevant to ecosystem-based adaptation, against which the adequacy of the relevant environmental and natural resource legislation might be assessed. The Kiribati NAPA is used here as an example.

### KIRIBATI NATIONAL ADAPTATION PROGRAMME OF ACTION

The objectives of the Kiribati NAPA are:

1. To improve public awareness of the coastal processes and climate change impacts;
2. To develop and pilot community-based coastal management regimes at the village level;
3. To encourage communities to participate in coastal-ecosystem enhancement projects and to develop their own small scale projects with similar purposes;
4. To streamline regulatory controls and conditions so as to ensure the resilience of the coastal areas and to ensure that the sustainable use of coastal resources is enhanced (Kiribati 2008, 49).

Activities envisaged under the Kiribati NAPA for adaptation concerning coastal zone management comprises four elements: awareness raising, protecting and enhancing resilience of coastal assets, information and data and institutional strengthening, explained as follows:

*Awareness raising aims to make and empower the communities to recognize and minimize risks that can arise from climate-related hazards and the dynamic nature of the coastal area. Appropriate coastal resilience enhancement projects such as mangrove replanting will be initiated with the communities. The communities will also participate in a vulnerability mapping of their respective areas, so that they are better informed about aspects of their livelihood that are vulnerable to climate change. In addition, local experience will be a major influence on the island vulnerability profiles. Finally, the communities will be mobilized and empowered to be able to manage their own respective areas of the coastal zone.*

The NAPA also recommends that the committees on coastal zone management need to be supported and strengthened. This includes a review of relevant regulations with the aim of streamlining procedural and institutional aspects.

Under outputs, the NAPA includes the following points relevant to this report:

- streamline permitting systems for coastal development;
- ensure that committees on aspects of coastal zone management function more effectively; and
- ensure that relevant laws are reviewed, providing information for further coastal use and policy development.

The NAPA also includes material on coral monitoring, restoration and stock enhancement. Its objectives include establishing and implementing a sustainable monitoring programme, a pilot restoration scheme for coral species in areas of low growth, establishing marine protected areas and establishing a project to promote maintenance of a vigorous coral reef. The activities identified include awareness raising, marine protected areas creation, artificial reef creation, transplanting of corals and the formalization of a Coral Monitoring Institution.

Each of the activities identified could be made the subject of revised legislative provisions in Kiribati.

## 2.4 Regional environmental law instruments and ecosystem-based adaptation

The regional Pacific Island environmental agreements that have some potential for promoting ecosystem-based adaptation include the *Convention on Conservation of Nature in the South Pacific 1976* (Apia Convention) and the *Convention on the Protection of the Natural Resources and Environment of the South Pacific Region* (SPREP Convention). The operation of the Apia Convention has been suspended. It is certainly clear that if it is to be a viable treaty, it needs complete revision to bring it into line with modern thinking on biodiversity conservation and to include climate change issues within its provisions. A merging of its provisions with the SPREP Convention may be fruitful, perhaps by way of a further protocol to the SPREP Convention. Such a protocol could include a specific focus on the effects of climate change, and promote the introduction of ecosystem-based adaptation methods both at a policy and legislative level. Article 5(3) of the Convention in fact contemplates further protocols, both for pollution issues and for the more general promotion of environmental management:

> *In addition to the Protocol for the Prevention of Pollution of the South Pacific Region by Dumping and the Protocol Concerning Cooperation in Combating Pollution Emergencies in the South Pacific Region, the Parties shall cooperate in the formulation and adoption of other Protocols prescribing agreed measures, procedures and standards to prevent, reduce and control pollution from all sources or in promoting environmental management in conformity with the objectives of this Convention.*

Such a protocol could encourage a much more consistent approach, at a national level across the Pacific, to the effects of climate change, in general, and to ecosystem-based adaptation, in particular.

# 3. Legal Mechanisms for Maintaining and Restoring Ecosystem Resilience

Poor implementation of environmental law and policy is a perennial challenge for the Pacific Island region. Barriers to the effective implementation of existing laws include: limited financial, technical and human resources in all sectors; limited understanding of climate change impacts and responses; limited government capacity to administer legal frameworks; limited capacity for monitoring, compliance and enforcement; and governance issues, including corruption and political instability.

The existing body of national environmental law in the Pacific presents a number of opportunities for managing climate change impacts, but overall it is inadequate to the task. Despite the active involvement of Pacific Island governments in international climate change negotiations, there has been very limited consideration of climate change adaptation matters through national legislation in the region. For example, despite the high public profile of climate change in Fiji, its *Environmental Management Act 2005*, which commenced on 1 January 2008, contains no specific reference to climate change impacts.

Legal systems have an important role to play in supporting and promoting ecosystem-based adaptation to climate change.

Key legal mechanisms include:

- regulation of existing land and resource uses,
- environmental impact assessment and approval of proposed development activities,
- strategic planning for sustainable land and resource use, and
- governance frameworks for long-term adaptive management.

## 3.1 Terrestrial Ecosystems

### 3.1.1 Protected Areas

Establishment of protected areas offers diverse benefits for nature conservation and national development, including: supporting sustainable management of natural resources; protecting biodiversity; protecting natural and cultural heritage; enhancing resilience to climate change impacts; maintaining healthy river catchments, with associated benefits for water supply and flood risk management; providing opportunities for sustainable local enterprise; and, recognising and supporting community-based conservation initiatives (Clarke and Erasito 2008; IUCN 2008; Saudamini and Vincent 2009; Green, Lokani, Sheppard, Almany, Keu, Aitsi, Karvon, Hamilton, Lipsett-Moore 2008; Hale et al 2009).

Over the past few years, protected areas have become a central aspect of addressing the effects of climate change, as stated by Lausche: "Scientific research is confirming that protected areas worldwide have a vital role in helping people and natural systems cope with climate change (Lausche 2011 at 37). The challenge is to promote the development of appropriate legal frameworks and mechanisms to provide a substantive foundation for ecosystem-based adaptation.

In 1998 the IUCN adopted a new definition of 'protected area,' which is:

> *a clearly defined geographical space recognized, dedicated and managed, through legal and other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values.*

This definition, through the use of the phrase 'a clearly defined geographical space' covers both terrestrial and marine areas. The phrase "legal and other effective means" refers to both formal legislative mechanisms and mechanisms such as customary systems. As noted above, in some jurisdictions, customary mechanisms are, in fact, recognised by the dominant legal system.

In many Pacific Island countries, the absence of a coherent legal framework for protected areas presents challenges for effective site-based conservation. With some exceptions (see box below), most existing laws do not directly provide for the active involvement of resource owners in the identification, establishment and management of protected areas. Current legal mechanisms, which set up protected areas, tend to be inflexible, with little opportunity for resource owners to develop management rules or to modify those rules over time (Clarke and Gillespie 2007).

To maintain biological diversity and ecosystem services in the face of climate change, there is a pressing need to develop protected areas legislation that provides for management of protected areas by local communities, in collaboration with government agencies and civil society organisations.

The processes of connectivity conservation (Worboys, Lockwood and De Lacey 2010) as a part of building ecological resilience need to be examined for their potential in Pacific Island countries. The countries with larger land mass and high endemicity would clearly appear to benefit from connectivity conservation. Research currently being carried out through the IUCN Environmental Law Centre on the legal aspects of connectivity conservation around the world, merits particular attention.

### PROTECTED AREA MANAGEMENT IN THE SOLOMON ISLANDS AND VANUATU

The Solomon Islands Protected Areas Act 2010 provides a strong foundation for community-based management of protected areas in the face of climate change. The Act establishes an Advisory Committee and sets out a broad range of functions, which include preparation, implementation, monitoring and review of a national biodiversity strategy and action plan. It specifies that this can be done in collaboration with relevant stakeholders, including non-governmental organisations (see Protected Areas Act 2010, 4 to 9).

Significantly, the Advisory Committee can appoint management committees (consisting of owners of the protected areas, public officers, provincial government officers and any other persons) to manage one or more protected areas. The functions of a management committee (s. 12(3)) are:

(a) to develop, formulate, implement, monitor and review conservation, protection or management plan in respect of its protected area;

(b) to manage the protected area under its control and supervision;

(c) to perform any other function the Advisory Committee may assign in writing to the management committee or given to the management committee under this Act or any other written law.

The Advisory Committee may provide technical support to a management committee ((s. 12(4)). There is, thus, already a solid basis for community involvement within this legislation with regard to protected areas in Solomon Islands.

Note that even before the introduction of the Protected Areas Act, the use of a flexible community-based management process for Nusa Hope Marine Protected Area already allowed resource owners to extend the reserve boundaries, as information became available about grouper spawning (Aswani S et al 2007). Such initiatives can only be strengthened by the establishment, and creative use, of local management committees as referred to above.

In a similar vein, the implementation of the frameworks established by Vanuatu's Environmental Management and Conservation Act 2002, which provides for the management of Indigenous and Community Conserved Areas in Vanuatu, can usefully be studied by other Pacific Island jurisdictions.

The weaknesses of the system, the enforcement issues identified by Aswani et al (2007) might well be addressed by more legally robust management committees, such as those found in the Solomon Islands Protected Areas Act 2010 (see *www.sprep.org/att/IRC/eCOPIES/Pacific_Region/422.pdf; http://cmsdata.iucn.org/downloads/vanuatu_legal_survey.doc, http://www.iucn.org/about/union/commissions/ceesp/topics/governance/icca/ceesp_icca_legislation.cfm*).

The establishment of a national protected areas committee, or their equivalent, for each country, charged with developing national legislation (where such legislation does not presently exist), presents an important opportunity to develop a statutory framework for protected area planning and management that is suited to that country's distinctive national circumstances; see further, Techera (2005).

## 3.1.2 Forest Management

Forests ecosystems play an essential role in the water cycle, provide habitat for an extraordinary diversity of species and act as important carbon sinks. From cloud forests to coastal mangroves, forests provide critical ecosystem services for local communities. In many Pacific Island countries, forests have been degraded by unsustainable logging practices and cleared for agriculture and human settlements.

For a number of Pacific Island countries, the management of forests is a central aspect of ecosystem-based adaptation approaches. In particular, the aim should be to retain and enhance forest cover and other vegetation to the greatest extent possible. However, the relevant legislation in well-forested countries such as Papua New Guinea, Solomon Islands and Vanuatu is generally inadequate to the task of incorporating ecosystem-based approaches.

To maintain forest ecosystems and their carbon storage capacity, it is recommended that each country aim to achieve no further net loss of forest cover, by introducing legislation that:

- requires the completion of national forest inventories,
- requires the preparation of sustainable harvest plans,
- sets high penalties for breaches of forestry law,
- creates a legal obligation to ensure reforestation of logged areas, and
- provides for the use of environmental rehabilitation bonds.

## FOREST CONSERVATION IN SOVI BASIN, FIJI ISLANDS

Sovi Basin is the largest proposed protected area in Fiji. It is a large basin, or amphitheatre, of low rolling hills ringed by steep volcanic peaks rising to 1,185 metres. It is unique in the Pacific Islands; meaning, it is a large uninhabited basin with a pristine watershed of lowland rainforest.

Sovi Basin is owned by thirteen traditional landowning clans, with eight small areas of Crown land, and two freehold parcels. In 2005, landowners agreed to cancel the logging concession, which covered the basin, in exchange for the establishment of a compensatory conservation trust fund.

More recently, Conservation International entered into a 99-year lease with Sovi Basin landowners, establishing the 20,000-hectare Sovi Basin Protected Area. The Sovi Basin Trust Fund ensures financing to meet all obligations and activities under the lease, such as accounting for foregone timber royalties, providing community development opportunities and implementing the co-management plan for the protected area.

This is the largest contiguous lease ever granted in Fiji and, therefore, represents an important step toward developing an innovative mechanism for conserving habitat while providing economic and social benefits. The adaptation benefits of the protected area include catchment protection, reduced flood damage, enhanced water supply, and improved conservation outcomes for unique lowland rainforest species in the area.

In the absence of a legislative framework for the cooperative management of protected areas, the partner organisations involved in the Sovi Basin initiative faced a number of challenges in identifying and implementing an optimal legal framework for the protected area. The development of modern protected area legislation will facilitate the future establishment of protected areas and provide the combination of certainty and flexibility needed for effective co-management in the Pacific context.

## 3.2 Freshwater Ecosystems

Freshwater ecosystems in many Pacific Island countries are under threat due to the effects of climate change. Rising sea levels, together with storm surges, are likely to result in salinization of freshwater lenses. Moreover, altered rainfall patterns and increased evaporation rates are likely to affect both surface water and groundwater. Over time, population growth and sea level rise are likely to lead to increased clearing of water catchments, as settlement and agricultural activities extend further inland.

To maintain water quality and availability, it will be necessary to introduce effective mechanisms for the protection and management of water catchments, including restrictions on clearing and burning in drinking water supply catchments and riparian zones. Relevant legislation concerning the protection of freshwater ecosystems, where it exists, will require review and amendment; where no such provisions are current, various jurisdictions will require preparation of new legislation.

National water quality legislation and standards (where they exist) should be examined with a view to ensuring that they adequately address the impacts of poor water quality on the productivity, health and resilience of freshwater, estuarine and coastal marine ecosystems. Where such legislation is non-existent, it will need to be developed in relevant jurisdictions.

In order to reduce pressure on water resources, particularly in low-lying countries, national legislation on water use should be closely examined with a view to ensuring that it can provide for appropriate restrictions on water extraction from freshwater lenses and natural watercourses.

### ECOSYSTEM-BASED MANAGEMENT ON BABELDOAB ISLAND, PALAU

Babeldaob is the largest island in the Republic of Palau. Its area, 331 $km^2$, makes up over 70% of the land area of the country. Unlike most of the islands of Palau, Babeldaob is mountainous, with rivers and streams flowing from forested catchments to the sea. The recent completion of an 85km road around Babeldaob is expected to result in a rapid increase in residential and infrastructure development across the island. Already, as people return to Babeldaob from the crowded capital, Koror, land clearing and construction is contributing to the loss of forest cover and the degradation of freshwater and coastal marine ecosystems, resulting from soil erosion, water pollution and sedimentation.

The Palau Conservation Society is leading a collaborative effort to promote improved ecosystem management in Babeldaob through research, communication and advocacy. The Babeldaob Ecosystem-Based Management (EBM) initiative has fostered close collaboration between scientists, government and community leaders and other stakeholders.

The EBM partners have undertaken significant biophysical research, including sediment modelling and monitoring, coral surveys, sediment core analyses, fish habitat mapping, water quality testing and forest bioindicator surveys (birds, macroinvertebrates). Research regarding decision-making processes, stakeholders, demographic change and land-use change has also been completed.

This research has formed the basis of policy recommendations by the EBM partners on issues such as land use planning, environmental impact assessment, sediment control and the establishment of terrestrial and marine protected areas.

## 3.3 Coastal and Marine Ecosystems

Coastal ecosystems are vital to a very wide range of local communities in the Pacific Islands. Healthy coastal ecosystems, especially mangroves, play a crucial role in ameliorating the impacts of climate change. For example, a UNEP report states "managing for resilience will [...] allow coastal and marine habitats that provide ecosystem services such as shoreline stabilisation and storm buffering to protect human lives and assets as climate change effects increase" (UNEP 2011)

### 3.3.1 Coastal Management

Management of coastlines involves the control of coastal erosion by various means, including the building of seawalls and the planting and maintenance of mangroves. In order to reduce the impact of sea-level rise and extreme weather events, and maintain fisheries productivity, it is essential that Pacific Island countries take urgent action to prevent clearing and unsustainable harvesting of mangroves.

Examples of coastal management regulations, which would confer benefits on fisheries include:

- protection of mangroves from harvesting, clearing and changes in tidal flushing (e.g. from seawall construction)
- controls on sediment and nutrient runoff to coastal waters from coastal development
- controls on cities and villages to prevent loss of mangrove, seagrass and coastal reefs
- enforceable measures to ensure that river and creek crossings do not restrict water flow or movement of fish between nursery and adult habitats along the length of the waterway; and
- recognition, within coastal spatial plans, of the economic benefits of healthy ecosystems for alternative industries, such as low impact aquaculture and tourism (Clarke and Jupiter 2010).

### 3.3.2 Fisheries Management

Fish are the main source of protein and cash income for many local communities in the Pacific. Coastal and offshore fisheries form an important element of local, regional and national economies throughout the region. In some areas, coastal fishing is a popular recreational pastime and an important part of local cultures.

There is a strong link between fisheries and marine and coastal ecosystems. It has been clearly demonstrated that healthy ecosystems support healthy fisheries and that fish play a critical role in ecosystem function and balance. Hence there is a growing recognition that existing fisheries management tools need to be expanded to incorporate an ecosystem approach to fisheries management.

To enhance the resilience of coastal fisheries and coral reefs, it is recommended that each country review its national legislation to provide for the management of coastal fisheries by local communities, in collaboration with government agencies. Examples of fishery regulations, which would improve ecosystem health and sustainability of fisheries, include:

- prohibitions on destructive fishing methods and gear types which have high rates of by-catch, such as longlines, bottom trawls, drifting gill nets and dynamite fishing;
- protection of spawning populations through seasonal or spatial closures;

- conditions, on licences regarding specific areas, that recognise no-take zones or MPAs as protected for fish stock recovery; and
- regulation of fisheries on which target species prey (e.g. regulation of anchovy harvest which is a food source for tuna and endangered species, such as certain sharks and cetaceans).

### COASTAL FISHERIES ENFORCEMENT IN THE REPUBLIC OF FIJI ISLANDS

In Fiji, where prosecution for fisheries offences in coastal waters is extremely rare, consultation with local communities has informed the identification of priorities for legal and institutional reform in the coastal fisheries sector. These include:

- improved training and resources for community fish wardens
- fisheries enforcement training for police and magistrates
- powers for the Department of Fisheries to revoke fishing licences for regulatory breaches
- a clear and efficient process for gazetting restricted areas, and
- formalized management powers for community resource management committees

In addition, current penalties under the Act are inadequate to deter future breaches. The maximum penalty for most offences under is F$500, and anecdotal evidence suggests that courts award penalties well below this maximum amount.

In the existing legal context, communities can improve marine management outcomes by:

- protecting tabu areas using fisheries licence conditions
- not renewing licences for vessels that wilfully breach community rules or national laws
- increasing fish warden patrols, and
- reporting breaches to police, fisheries officers and the national LMMA network

The national LMMA network has established a 'blacklist' of vessels that have breached community rules or national laws. This list will be made available to all LMMA sites, and resource owners will be encouraged to refuse licence applications from blacklisted vessels (Minter 2008).

## 3.3.3 Marine Protected Areas

The role of marine protected areas in maintaining and restoring the resilience of marine ecosystems, including coral reefs, has been increasingly recognised in recent years. The protection of coastal waters is also very important for the maintenance and enhancement of local livelihoods.

Over the last decade, hundreds of communities in Fiji, Vanuatu, the Solomon Islands, Papua New Guinea, Palau, the Federated States of Micronesia, Indonesia and the Philippines have committed to the sustainable management of near-shore marine resources through the establishment, management and monitoring of Locally Managed Marine Areas (LMMAs).

An LMMA is 'an area of near-shore waters actively being managed by local communities or resource-owning groups, or being collaboratively managed by resident communities with local government and/or partner organizations' (LMMA Network).

The *Global Biodiversity Outlook 2010* notes:

> *In the past decade, more than 12,000 square kilometres in the South Pacific have been brought under a community-based system of marine resource management known as Locally-Managed Marine Areas. The initiative involves 500 communities in 15 Pacific Island States. It has helped achieve widespread livelihood and conservation objectives based on traditional knowledge, customary tenure and governance, combined with local awareness of the need for action and likely benefits. These benefits include recovery of natural resources, food security, improved governance, access to information and services, health benefits, improved security of tenure, cultural recovery, and community organization (Secretariat of the Convention on Biological Diversity 2010 at 49),*

In managing their LMMAs, many communities are reviving methods that have been used traditionally as part of their culture for many generations – in particular, periodic fishing closures (known by various names, including *tabu* and *ra'ui*) (Veitayaki 1997).

Further reported benefits include increased fish populations, reproduction and biomass; improved habitat quality; enhanced local capacity to manage resources, increased environmental stewardship and community cohesion; and increased income from marine resources (see Govan et al 2009; Alcala and Russ, 2006; Leisher et al 2009).

In 2009, a review of the status and potential of LMMAs in the South Pacific described this remarkable proliferation as a "unique global achievement," and found that, "the extent of this shift towards community-based resource management in Melanesia and Polynesia is unprecedented on a global scale" (Govan et al. 2009).

However, the review also found that, "marine protected areas alone will be fragile, costly and unlikely to achieve long-term community or national benefits," and recommended an integrated approach to island ecosystems. That is: "The adaptive management processes central to LMMAs should be built on to include ecosystem-wide (particularly terrestrial) and sustainable development issues and incorporate climate change adaptation and community and ecosystem resilience" (Govan et al 2009).

Ecosystem-based management responds to this challenge by building on lessons learnt about community-based adaptive management of fisheries resources, and applying them in an integrated, science-based approach to management of terrestrial, freshwater and marine ecosystems (Clarke and Jupiter 2010).

To maximise the resilience of marine ecosystems to climate change, it is recommended that marine protected areas be designed with the following features:

- large areas in simple configurations to facilitate enforcement;
- representation and replication of multiple habitats and physical parameters, spread across wide geographic distances to minimise risk;
- protection of ecological features that promote resistance to, or recovery from, disturbance (e.g. spawning aggregations);
- maintenance of habitat connectivity and ecological processes that support healthy populations of key functional groups, particularly herbivorous fishes (Obura 2005 at 362-370).

In recognising the importance of large-scale MPA networks, national governments may wish to consider establishing a national coordinating body to promote and support establishment and management of marine protected areas in priority areas.

### DESIGNING A RESILIENT MPA NETWORK IN KIMBE BAY, PAPUA NEW GUINEA

Both ecological and social resilience principles were used by the Nature Conservancy to identify priority regions for placement of marine protected areas in Kimbe Bay, Papua New Guinea (Green , et al 2009 at 488-498)

The final design included 14 areas of interest chosen for their representativeness, replication, capture of critical areas (e.g. spawning aggregations and turtle nesting beaches), and minimal cost to the Kimbe Bay communities, in terms of impacts on existing livelihoods and potential boundary conflicts.

The actual design of the MPAs, within each area of interest, was determined in consultation with the Kimbe communities to strengthen local ownership and participation in management implementation.

# 4. Environmental Assessment and Strategic Planning

## 4.1 Environmental Impact Assessment

Environmental impact assessment (EIA) is an important tool for managing the impacts of development on ecosystem resilience. To minimise the negative impacts of climate change on nature and people, it is important to integrate consideration of ecosystem resilience into EIA processes. For example, EIA processes should seek to identify and prevent the following development impacts:

- fragmentation of species habitat;
- removal of coastal mangroves;
- degradation of drinking water catchments;
- possible pollution of fresh water lenses.

To manage the impacts of development on ecosystem resilience, it is recommended that each country adopt EIA regulations requiring consideration of the extent to which a proposed development is likely to increase vulnerability to the predicted impacts of climate change.

Development of regional guidelines, for consideration of the impact of proposed developments on ecosystem resilience, will help to promote robust assessment and approval processes.

To ensure that adaptation measures do not result in unintended impacts on ecosystem resilience, it is recommended that 'hard' infrastructure proposals (e.g. sea walls) be subject to rigorous environmental assessment, including consideration of 'soft' alternatives (e.g. mangrove restoration).

Kosrae, one of the states of the Federated States of Micronesia, has a history of addressing coastal issues including coastal erosion, flooding, storm damage and climate change since at least 2000:

> *The consequences of climate change, such as sea level rise and changes in weather patterns will not cause new problems and risks on Kosrae. It will simply gradually increase or exacerbate the frequency and magnitude of the risks and problems caused by existing coastal hazards. Reducing the present risks to the people and infrastructure of Kosrae posed by existing natural climate variability will be the most effective way in reducing the coastal hazard risks posed by future climate changes (Development Review Commission 2000 at 9)*

In the 2011 amendments to the Kosrae *State Code*, consideration of climate change impacts during the environmental assessment of proposed development activities is required, particularly infrastructure such as roads and buildings (Kosrae *State Code Title 19, Environment*; see FSM case study for text of the new provision; see also SPREP News 2011. These provisions should be regarded as a starting point for the review of other Pacific Island jurisdictions, in terms of amending the relevant legislation concerning the building and maintenance of 'hard' infrastructure.

### 4.1.1 Identifying impacts of climate change on proposed developments

To promote consideration of the impacts of climate change on proposed developments, it is recommended that each country adopt regulations requiring consideration of climate change impacts during the EIA process.

Development of regional guidelines for the consideration of climate change impacts on proposed developments will help to promote robust assessment and approval processes.

## 4.2 Strategic Planning

Strategic land use planning is an important tool for managing the impacts of climate change on natural ecosystems and local communities. Key priorities for land use planning in a climate change context include coastal protection, infrastructure, water supply and agricultural land.

To date, the implementation of strategic land use planning processes in the Pacific Islands has been limited. To effectively manage the impacts of climate change, it will be necessary to develop land use planning approaches that are more particularly suited to the Pacific context.

In particular, there is a need to develop strategic planning approaches that:

- place local communities at the centre of decisions about appropriate future land use;
- recognise ecosystem-based adaptation as a cost-effective response to climate change;
- operate effectively in a context of limited human and financial resources.

Recognising the importance of strategic planning in adapting to the impacts of climate change, it is recommended that Pacific Island countries build on existing models of community-based land use planning by empowering local communities to develop binding land use and adaptation plans.

#### COMMUNITY INVOLVEMENT IN STRATEGIC PLANNING AND ENVIRONMENTAL ASSESSMENT

Participatory governance processes provide a platform for collaborative decision-making and enhance transparency and accountability. Direct involvement of local communities in strategic planning ensures that local knowledge, needs and priorities are incorporated into management decisions in ways that increase community ownership of the management process (Drew 2005).

Involving a wide range of stakeholders in strategic planning and environmental assessment:

- helps to ensure that the concerns and priorities of those stakeholders are taken into account in management decisions;
- improves the quality of decision-making, by increasing the range of information and perspectives considered;
- increases awareness, understanding, acceptance and ownership of decisions, with associated benefits for monitoring, compliance and implementation.

Landowning clans exercise significant control over the use and development of their land, but environmental outcomes are undermined by a number of factors, including:

- strong economic incentives for short-term resource development
- limited awareness of the negative impacts of unsustainable land use
- poor implementation of natural resource management and environmental protection laws
- limited integration between national legislation and community land management practices.

Strategic planning processes that respect and reinforce the roles of traditional leaders, while providing opportunities for broad community engagement, strengthen long-term prospects for community-based resource governance.

Perceptions of inequity, exclusion from decision-making processes or failure to respect traditional resource rights may result in challenges to management institutions. It is important to factor these considerations into strategic planning processes, and to ensure that costs and benefits are distributed fairly and equitably. (Lal, 2005)

### 4.2.1 Planning for internal displacement

Extreme weather events, sea-level rise and localized water and food shortages are likely to drive relocation and dispersal of local populations, threatening rights to property and maintenance of cultural traditions. The potential for conflict over land and resources, driven by climate change, is a real threat to long-term development prospects in the region.

Sea-level rise, on the scale predicted by the Intergovernmental Panel on Climate Change, will lead to significant displacement of local populations in many parts of the Pacific, including low-lying island states such as Kiribati and Tuvalu, as well as small islands and coastal areas within larger Pacific Island countries, such as Solomon Islands and Papua New Guinea (Millar 2008; Kwa 2009; more broadly concerning climate-induced displacement and human rights: Kolmannskog 2008 and Norwegian Refugee Council). Other climate change impacts, such as localised water shortages, may also drive significant population movements. The majority of these climate-induced population movements are likely to be internal, rather than international, raising significant questions about the capacity of Pacific Island governments to protect the rights of internally displaced people.

Particular priority must be given to ensuring that climate change adaptation strategies adequately address the needs of vulnerable populations. Long-term strategies, to ensure adequate access to food, water and housing in rural communities, are essential and will help to reduce social and cultural disruption by reducing pressure to relocate. Sustainable management and restoration of coastal ecosystems may enhance the resilience of coral reefs and coastal fisheries, an essential source of nutrition and income for rural communities throughout the region.

In the Pacific, displaced people, deprived of their land and traditional livelihoods, will face special challenges in meeting their basic needs. Internal population movements are likely to increase the risk of land and resource conflict and political instability, and displaced people will face special risks of discrimination and violence. It is essential that Pacific Island countries, in collaboration with international partners, develop long-term strategies to reduce internal displacement and, in cases where internal displacement is unavoidable, to implement measures to protect and assist internally displaced persons.

In the face of these grave challenges, the diverse cultural traditions of the region are an essential source of strength. Customary communal management of land and resources presents opportunities for innovative local adaptation responses. Kinship ties and social obligations provide a safety net for those in need, and traditional decision-making structures have the potential to provide for peaceful reallocation of land and resource rights.

To manage future conflict over land and resources, it is recommended that each country:

- develop a national plan for minimising displacement;
- review national legislation to ensure that the human rights of internally displaced persons are adequately protected by law;
- develop plans, programs and procedures to ensure that resettlement of internally displaced people does not further degrade natural ecosystems of the areas to which they internally migrate.

# 5. Implementation, Compliance and Enforcement

Implementation, compliance and enforcement should be understood as separate elements of the administration of environmental legislation. In many countries, especially developing countries, these processes are problematic due to a lack of financial resources, lack of capacity and, in many cases, a lack of political will. A number of Pacific Island countries grapple with these issues.

## 5.1 Compliance with international and regional environmental agreements

Compliance with multilateral environmental agreements is an issue for many countries. In the Pacific, SPREP has taken the lead on a range of conventions. However, with few exceptions, national legislation in Pacific countries does not specifically mention the environmental agreements to which they are party. With regard to the *UN Framework Convention on Climate Change*, there is of course little that Pacific Island countries can do in terms of mitigation of greenhouse gas emissions, but by force of circumstance must focus on adaptation to climate change. There is nevertheless a need for countries in the region to undergo continuing capacity-building programmes to promote adherence to and implementation of the multi-lateral environmental agreements to which they are parties. This includes, in particular, the 1986 *Convention for the Protection of the Natural Resources and Environment of the Pacific Region and Related Protocols*.

## 5.2 Compliance with national legislation

Compliance with national legislation has been a continuing issue in most Pacific Island countries. The problems are multidimensional. First, a number of countries do not have sufficiently robust environmental protection law. Second, the implementation of that law is variable. The role of SPREP in giving technical assistance to its member countries to promote compliance is vital. It is recommended that continuing capacity-building programs be instituted in order to ensure that public officials, prosecutors, police and, to the extent necessary, the judiciary are fully informed of the scope of, and their duties under, the relevant legislation.

## 5.3 The role of traditional resource owners

Local communities can play an important role in environmental monitoring and enforcement. In the past, traditional penalties in the Pacific included beatings, execution, banishment, or seizure and destruction of property (Munro 1996; Tiraa 2006) all of which are now prohibited. In most countries in the region, community enforcement is constrained by the national legal system. Unless empowered by specific legislation, local communities have no formal authority to enforce environmental laws, and certain community-imposed sanctions may breach national criminal laws (Veitayak 2000).

Thus resource owners who take the law into their own hands face a real risk of criminal prosecution. For example, in 2008, the paramount chief of Macuata Province, in Fiji, was arrested and charged with larceny after seizing a fishing boat found catching fish in a *tabu* area. The charges against him were subsequently dropped, but the case highlighted the need to ensure that community sanctions do not breach criminal laws; otherwise, they may have a limiting effect on community-based enforcement (Minter, A. 2008).

To effectively manage natural resources, community-based resource managers need secure and certain rights, as well as the flexibility and power ('legal space') to make decisions that reflect their unique circumstances and priorities (Lindsay 2008). In particular, in appropriate circumstances, encouraging the making of bylaws at village level would enhance the overall administration, implementation and enforcement of national law. This occurs in Samoa for example, where villages are allowed to make by-laws for their protected area fishery, with the tabu being elevated in effect to a subordinate law (see Samoa Case Study, below).

# 6. Monitoring and Adaptive Management

Ecosystem-based management recognises uncertainty and involves planning to adapt management measures over time, based on continuous learning and monitoring (Kaufman et al 2004; Ruckleshaus et al 2008. Ecosystem processes and functions are complex and variable. The level of uncertainty is increased by interaction with human activities. Therefore, ecosystem management must involve a learning process, which helps to adapt methodologies and practices to the ways in which these systems are being managed and monitored. This will be even more important in the face of climate change, as stated in a recent UNEP report: '[a]daptive management will be essential in an increasingly dynamic world besieged by climate change impacts' (UNEP 2011).

In the Pacific, limited availability of data and the complexity of key ecosystems require an iterative and adaptive approach to ecosystem management. However, limited financial, human and technical resources in the region makes sophisticated large-scale adaptive management largely unrealistic.

Community-based management that combines traditional and local knowledge, scientifically sound monitoring methods and responsive decision-making processes provides a strong foundation for improving the management of ecosystems and responding to new challenges, including the impacts of climate change.

Adaptive management seeks to improve the effectiveness of management measures over time by monitoring management outcomes, and modifying management measures as new scientific and socio-economic information becomes available. Adaptive management requires carefully designed monitoring programs, flexible management rules and responsive management institutions (Margoluis and Salafsky 1998).

To allow for adaptation of management measures, it is important to establish an agreed process for amending management rules and actions. The process for amending management rules should balance simplicity and flexibility with transparency and due process. The process should provide an opportunity for affected stakeholders to comment on the proposed amendment and set minimum standards for notifying stakeholders of approved changes.

It may be necessary to take special measures to ensure consistency and integration across different management systems. For example, if community-based management decisions have been reflected in government licensing decisions, the community will need to liaise with the relevant government agency to ensure that any changes to community management rules are adequately reflected in government issued licences (Aswani et al 2007).

National and regional climate adaptation learning networks, modelled on the Locally Managed Marine Areas network (see 3.4.3 above), present opportunities for: improving knowledge about climate change impacts in the region; identifying and implementing appropriate adaptation responses; building community capacity for long-term adaptive management; building a body of knowledge about effective adaptation responses; and, influencing and informing the development of law and policy.

# 7. Financing Mechanisms

## 7.1 Legislated financing mechanisms

This section concerns examination of appropriate financing mechanisms to promote incorporation of ecosystem-based adaptation mechanisms into the relevant legislation. These mechanisms may include the following, recognising that in some Pacific Island countries, due to geographic, cultural and financial limitations, they would not be applicable:

- Payments, for ecosystem services, could be made to resource owners and managers to encourage them to engage in activities that build ecosystem resilience.
- Ecosystem resilience could be promoted by charging entrance fees to protected areas and, in particular, by ensuring that funds are directed to enhancing the protected area.
- Protected area trust funds could be specifically directed to activities promoting ecosystem resilience. For example, the Solomon Islands Protected Areas Act 2010 (ss.13-14) provides for a protected areas trust fund to be established. Regulations under that legislation could be drafted to ensure that funds are directed towards activities that build ecosystem resilience.
- The agreements administered by the Forum Fisheries Agency could be examined with a view to incorporating specific provisions that require distant water fishing nations to pay into a special fund that helps build ecosystem resilience in the marine and coastal environments of Pacific Island countries.

Depending on the Pacific Island jurisdiction, the following should be explored as financial mechanisms to support legislatively backed climate change responses in the Pacific:

- climate change offset markets (UNFCC undated, a)
- Reducing Emissions from Deforestation and Forest Degradation (REDD) financing (UNFCC undated, b)
- promoting further use of UNFCCC climate change adaptation funds UNFCC (undated, c)
- an international insurance fund.

A percentage of the funds generated by these means could be earmarked, in particular, for regulatory reform throughout the Pacific Island region.

## 7.2 Financing mechanisms at local level

For poor rural communities, economic costs and benefits will play a key role in decisions about the use and management of natural resources. In the case of marine protected areas, improved fisheries productivity can provide a powerful incentive for the adoption of management measures. The benefits of forest conservation are often perceived as intangible, diffuse and long-term, and tend to be outweighed by the short-term financial benefits of logging or clearing for agriculture (Wells 1992). However, with an increasing number of local communities engaging actively in management of coastal marine ecosystems, there are very real opportunities to strengthen the links between forests, catchment health, water supply and water quality in ways that benefit ecosystems and local communities.

To secure community support for ecosystem management measures, it is necessary to clearly identify and communicate the costs and benefits of conservation and establish mechanisms to ensure that benefits flow to local communities (e.g. lease payments, tourism user fees, trust funds, payments for ecosystem services, and climate change carbon offsets) (Lal 2005).

### TESTING INNOVATIVE FINANCING MECHANISMS IN KIRIBATI

This case study is drawn from the UNEP publication: Taking Steps toward Marine and Coastal Ecosystem-Based Management (UNEP 2011; see also Phoenix Islands Protected Area 2007).

"The Phoenix Islands Protected Area (PIPA), part of the nation of Kiribati, comprises 408,250 km2 of mid-ocean wilderness in the central Pacific. Full legal designation of the PIPA, which occurred in 2008, represented only the first phase of an ongoing effort to ensure the long-term management of the Phoenix Islands. Three percent of the protected area (more than 12,500 km2) is already zoned as no-take, and a further ten percent has use restrictions. The next goal is to increase the no-take area to nearly 30%.

With a significant share of national GDP coming from fishing permit revenue from foreign fleets, closing an area of that size to fishing could adversely impact Kiribati's economy. To make such a vast fishing closure a reality and ensure its financial sustainability, Conservation International (CI) and the New England Aquarium (NEA) are working with the Kiribati government to create an endowment.

The PIPA endowment will finance core management of the protected area (estimated at US$300,000 per year) and will also compensate the Kiribati government for lost revenue from fishing licenses. The initial target size of the endowment is US$13.5M, which will support the expanded fishery closure; the intention is to raise those funds by the end of 2014. The endowment is considered a 'conservation incentive agreement': a pact in which resource owners commit to protecting habitats or species in exchange for a steady stream of benefits.

The endowment will empower this small island developing nation to take strides in conservation the scale of which have rarely been accomplished elsewhere."

The legal underpinnings of this scheme are found in the *Phoenix Islands Protected Area Regulations 2008*, made under the Kiribati *Environment Act 1999*. While the regulations are primarily directed to the prescription and control of activities and maintenance of the protected area, as well as its establishment as a World Heritage listing, the objectives and the inclusions under the management plan provisions are drawn broadly enough to cover ecosystem-based adaptation strategies for addressing the effects of climate change. The regulations could become a potential model for other Pacific jurisdictions that wish to establish marine, and terrestrial, protected areas of this kind.

# 8. Country Snapshots

These county snapshots are intended to provide a brief overview of the relevant legislative and policy frameworks of six selected Pacific Island countries in order to assess the suitability of those frameworks for providing a legally robust basis for ecosystem-based adaptation. By their nature they are not exhaustive, and, in due course, it would be desirable to analyse each of the environmental law systems of Pacific Island countries, with a view to assessing the need for reform in the context of ecosystem-based adaptation.

## Solomon Islands

The governance of Solomon Islands comprises a central government and nine provinces. The Solomon Islands Constitution provides that the provinces shall be regulated by the provisions of the Provincial Government Act 1997. The provinces have legislative provisions concerning the environment and natural resources in varying degrees of detail. For the purposes for this report, they are not further dealt with. However, pursuant to the recommendations herein, the provincial legislation should be reviewed at the same time as national environment and natural resources legislation, with a view to amending the provincial instruments to the extent necessary to conform with eventual amendment to the Solomon Islands legislation with respect to climate change issues

The issue of climate change has been of concern for some years in Solomon Islands (see for example, Horokou, 2002). The Report of In-Country Consultation of the Pacific Adaptation to Climate Change for Solomon Islands indicated that: "Following the preparation of its INC, the country has initiated efforts to create an institutional set-up that seeks to mainstream climate change issues into the national legal frameworks" (SPREP 2009). However, climate change issues are not reflected in any Solomon Islands legislative provisions at this point.

### SUMMARY OF RELEVANT SOLOMON ISLANDS LEGISLATION

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|---|---|
| **Constitution** | ***Constitution of Solomon Islands 1978:***<br>Preamble provides, inter alia, that: " the natural resources of our country are vested in the people and the government of Solomon Islands," and that the government, "shall ensure that participation of our people in the governance of their affairs and provide within the framework of our national unity for the decentralisation of power." |
| **Land and natural resource tenure** | ***Customary Land Records Act, 1994:***<br>Provides for "recording of customary land holdings to empower land holding groups to deal with customary landholdings, the establishment of an office of National Recorder of Customary Land and record offices in the provinces..." (from Long Title of the Act) |

***Customs Recognition Act 2000:***

Provides for ascertainment of the existence of any customary law and the nature of such customary law in relation to a matter, and its application in, or relevance to, any particular circumstances; specifies facts that are relevant when customary right, usage or practice is in question and concerns proof and recognition of custom.

Custom may generally be taken into account only in relation to: (a) the ownership by custom of rights in, over, or in connection with, customary land. This includes: (i) anything in, or on, customary land; or (ii) the produce of customary land, including rights of hunting or gathering; (b) the ownership by custom of rights in, over or in connection with, the sea or a reef, or in or on the bed of the sea, or of a river or lake, including rights of fishing; (c) the ownership by custom of water, or of rights in, or over water; (d) the devolution of customary land or of rights in, over, or in connection with, customary land; or (e) trespass by animals.

**Environment and natural resource laws**

***Environment Act 1998:***

Comprehensive legislation: The Long Title of the Act states: "An Act to make provision for the protection and conservation of the environment; the establishment of the Environment and Conservation Division and the Environment Advisory Committee and matters connected therewith or incidental thereto". Functions of the Division include: protection, restoration and enhancement of the quality of the environment of Solomon Islands, having regard to the need to promote sustainable development; prevention and control of pollution; development of national standards to promote sustainable development, and to monitor those standards through environmental auditing; development of legislation for systems of environmental planning at national, provincial and local levels, and the development of national, provincial and local environmental plans; collaboration with relevant public authorities in assisting in the conservation and management of world heritage properties; promotion of participation of the community in environmental decision-making; ensuring freedom of, and access to, information on environmental matters, setting compulsory standards for environmental improvement; public education and awareness programmes about the environment; development control, environmental impact assessment, review and monitoring.

The Act defines "environment' very broadly. It includes: "all natural and social systems and their constituent parts, and the interactions of their constituent parts, including people, communities and economic, aesthetic, culture and social factors".

***Fisheries Limits Act 1977:***

Contains broad powers to control fisheries, including imposition of closed seasons.

***Forest Resources and Timber Utilisation Act 1978:***

Contains broad powers of control over forestry operations and provides for the declaration of forest reserves.

***River Waters Act 1964:***

An Act to provide for the control of river waters, and for the equitable and beneficial use thereof, and for matters incidental thereto, and connected therewith provisions for the regulation of various activities and rights in respect of rivers.

"River" includes any watercourse whether natural or artificial and any dam, lake, pond, swamp, marsh or other body of water forming part of that watercourse.

| | |
|---|---|
| **Nature conservation laws** | ***Protected Areas Act 2010:***<br>A modern piece of legislation providing for the declaration and management of protected areas and the protection of biological diversity. It establishes the Protected Areas Advisory Committee and the Protected Areas Trust Fund, regulates conservation and management of biological resources so as to ensure biological diversity within, or outside, protected areas and promotes the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings. The Director of the Environment and Conservation Division must establish and maintain a register of protected areas.<br>The Advisory Committee may appoint management committees consisting of owners of the protected areas, public officers, provincial government officers and any other persons to manage one or more protected areas. The Protected Areas Trust Fund must be used for the establishment, management, and other matters relating to, protected areas or for other purposes as are prescribed by Regulations. It mentions designation of areas meriting world heritage listing.<br>The objects of the Act are:<br>(a) to establish a system of protected areas or areas where special measures need to be taken to conserve biological diversity;<br>(b) to develop, where necessary, guidelines for the selection, establishment and management of protected areas or areas where special measures need to be taken to conserve biological diversity;<br>(c) to regulate or manage biological resources important for the conservation of biological diversity, whether within or outside protected areas, with a view to ensuring their conservation and sustainable use;<br>(d) to promote the protection of ecosystems, natural habitats and the maintenance of viable populations of species in natural surroundings;<br>(e) to promote environmentally sound and sustainable development in areas adjacent to protected areas, with a view to furthering protection of the protected areas;<br>(f) to rehabilitate and restore degraded ecosystems and promote the recovery of threatened species, such as, through the development and implementation of plans or other management strategies.<br>***National Parks Act 1954:***<br>Appears to be defunct, although not explicitly repealed by the Protected Areas Act 2010.<br>***Wildlife Protection and Management Act 1998:***<br>Provides for the protection, conservation and management of wildlife in Solomon Islands by regulating the export and import of certain animals and plants, inter alia, to comply with the obligations imposed upon Solomon Islands under the Convention on International Trade in Endangered Species of Wild Fauna and Flora. |
| **Environmental assessment laws** | ***EIA is covered by the Environment Act 1998:***<br>Two stages of assessment provided a preliminary report stage and a full environmental impact assessment stage. The matters to be taken into account for each stage of the EIA could be amended to specifically include the effects of climate change, as well as potentially propose a development activity to promote ecosystem-based adaptation strategies. |

| | |
|---|---|
| **Strategic planning laws** | ***Town and Country Planning Act 1980:***<br>An outdated, but broad, piece of legislation. The object of the Act is to ensure that land in Solomon Islands is developed and used in accordance with properly considered policies that are formulated on adequate information. There shall be a Town and Country Planning Board in each Province and in Honiara. The Minister may, by notice published in the Gazette, declare any area to be a Local Planning Area. The Board of the declared area shall adopt a Local Planning Scheme for the area. The purposes of a Local Planning Scheme shall be: (a) to assist in securing orderly development in the interests of the health, amenity, convenience and general welfare of the community; (b) to indicate the general principles upon which development in the area will be promoted and controlled; (c) to assist in the selection, or definition, of sites for particular purposes, whether by the carrying out of development thereon or otherwise; (d) to protect features or areas of social, historical, scenic or architectural importance. |
| **Commentary** | The existing legislation does not explicitly address the impacts of climate change. However, the laws relating to environment protection, natural resource management, environmental impact assessment, recognition of customs, and protected areas, if appropriately amended, have the potential to play an important role in maintaining, and enhancing, ecosystem resilience to address the impacts of climate change. |

# Cook Islands

The Cook Islands comprises 15 small islands with a land area of 240 square kilometres. The country continues to have a close cultural and political association with New Zealand. The *National Sustainable Development Plan 2006-2010* (Cook Islands 2010) identifies the country as being highly vulnerable to the effects of climate change.

## SUMMARY OF RELEVANT COOK ISLANDS LEGISLATION

| | |
|---|---|
| **Constitution** | ***Cook Islands Constitution***<br>Article 64 recognises fundamental rights and freedoms, including the right of the individual to life, liberty, and security of the person.<br>Article 66A gives Parliament power to make laws recognising, or giving effect to, custom and usage, with custom and usage having effect as part of the law of the Cook Islands, to the extent that it is not inconsistent with the Constitution or of other Cook Islands laws. |
| **Environment and natural resource laws** | ***Environment Act 2003***<br>This Act establishes the Tu'anga Taporoporo and provides for the conservation, and management, of the environment of the island of Rarotonga in a sustainable manner (Tu'anga Taporoporo comprises the Environment Council and the Environment Service). "Environment" is broadly defined as, 'the ecosystems and the quality of those ecosystems as well as of the physical, biological, cultural, spiritual, social and historic processes and resources in those ecosystems, including but not limited to land, water, air, animals, plants and other features of the human habitat.'<br>Management plans under the Act can cover: protection, conservation, and management of wild life, including protected species and the habitat of such wildlife and species; inland waters; uninhabited islands; forests; soil erosion; prevention and control of pollution and waste; protection, conservation and management of wetlands; and conservation and management of historical, archaeological and cultural sites. |
| **Nature conservation laws** | ***Conservation Act 1986-87:***<br>This Act sets up the Conservation Service, provides for the conservation and protection of the environment, including national resources, and provides for the establishment of national parks and reserves. This act overlaps with the functions of the Environment Act 2003 but does not appear to be repealed. |
| **Environmental assessment laws** | ***Environment Act 2003:***<br>This Act includes modern EIA provisions; it provides that no activity which causes, or is likely to cause, significant environmental impacts can be carried out except in accordance with a project permit, including an environmental impact assessment. Each EIA must include the impact of the project upon the environment and, in particular, any adverse effects. It must also include a justification for the use, or commitment, of depletable or non-renewable resources, if any, a reconciliation of short-term uses and long-term productivity of the affected resources, proposed action to mitigate adverse environmental effects, a monitoring plan, and alternatives to the proposed project. |
| **Strategic planning laws** | ***Land Use Act 1969:***<br>This Act provides for a range of zoning orders to regulate a range of primary uses including: tourist accommodation, residential purposes, industrial purposes, commercial purposes, agricultural purposes, public works (including roads), and uses incidental, or subsidiary to, the primary use. |
| **Commentary** | The Environment Act is drawn broadly enough to accommodate actions concerning the effects of climate change and to support regulations concerning ecosystem-based adaptation approaches. |

# Federated States of Micronesia

The Federated States of Micronesia operates on a federal system, which includes the federal government and the states of Yap, Chuuk, Pohnpei and Kosrae. For the purposes of this case study, the federal legislation and the legislation of one state, Kosrae, are examined.

## SUMMARY OF RELEVANT LEGISLATION

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| **Constitution** | ***Constitution 1975:***<br>Establishes FSM as a federation with four states. Article V recognises traditional rights in terms of the role and function traditional leaders, and recognises that the traditions of the people may be protected by statute. |
| **Environment and natural resource laws** | ***The FSM Environment Protection Act 1999:***<br>This Act gives the federal government broad powers with respect to environmental matters. Article 502(1), on Public Policy, recognizes "the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth and redistribution, cultural change, resource exploitation, and new expanding technological advances". It further recognises "the critical importance of restoring and maintaining environmental quality for the overall welfare and development of man." It declares that it is the continuing policy "to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfil the social, economic, and other requirements of present and future generations of the Federated States of Micronesia."<br>The FSM Environmental Protection Board exercises powers under the Environment Protection Act, including wide powers to enact and enforce regulations. It is authorized to enter into written cooperative agreements with the states, or state agencies, and supervises environmental impact assessments and exercises civil enforcement functions. The legislation is sufficiently broad to accommodate climate change considerations and the making of regulations concerning ecosystem-base adaptation strategies. Given the amendments to the Kosrae Code, with respect to climate change (see below), it might be expected that the federal government would also move in this direction.<br>***Marine Resources Act 2002:***<br>Concerned with activities in FSM's Exclusive Economic Zone. Its purpose is "to ensure the sustainable development, conservation and use of the marine resources in the exclusive economic zone by promoting development of, and investment in, fishing and related activities in the context of effective stewardship" (s. 101) Section 502 provides that the National Oceanic Resource Management Authority, established under the Act, has, inter alia, the responsibility for protection of biodiversity in the marine environment. |
| **Nature conservation laws** | Title 23 of the FSM law includes Chapter 3: Endangered Species Act. Article 303 sets out FSM's policy in this respect:<br>"The indigenous plants and animals of the Trust Territory are of esthetic, ecological, historical, recreational, scientific, and economic value and it is the policy of the government of the Trust Territory to foster the well-being of these plants and animals by whatever means necessary to prevent the extinction of any species or subspecies from our islands or the water surrounding them." |

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| **Environmental assessment laws** | ***FSM Environmental Impact Assessment Regulations:***<br>These Regulations are intended to integrate the EIA process into early planning of projects to ensure timely consideration of environmental factors and to avoid delays; and to "Identify at an early stage the significant environmental issues requiring further study and de-emphasize insignificant issues, thereby defining the scope of the EIA. |
| **State legislation** | ***Kosrae Code 2011***<br>Kosrae appears to be the first Pacific jurisdiction to enact specific provisions concerning the effects of climate change, focusing on climate risk reduction and climate change adaptation measures (cl.19.102). It is intended that similar legislation will be passed for the other three FSM States.<br>The Kosrae provision is a limited one, concerned with providing "consultation on climate change impacts and adaptation measures to the location, design and construction of public projects and other development projects." The legislation provides the bare bones of what might be required to ensure that the law be adequately implemented. The provisions as they presently stand do not directly address ecosystem-based adaptation, but could be used a as basis for it through regulations and building codes.<br>The Kosrae Code specifies that the government has a general power to promulgate and enforce regulations under the Code and, in particular, to restrict and prohibit certain activities and uses (Art. 19.802(3)). Further, it specifies that with regard to such powers, for example, in relation to buildings and infrastructure, minimum setbacks from the coast could be included in regulations, as well as the compulsory planting of mangroves, and other vegetation, to reduce the effect of storm surges and high tides. This would reinforce the current provisions regarding restrictions on the exploitation of mangrove forests (Art. 19.806(1). Those provisions are specified as applying to all mangrove, upland, wetland and watershed forests as found in the Kosrae State Land Use Plan, other areas of biological significance identified in the Kosrae Biodiversity Strategic Action Plan, as well as all areas designated as protected areas in the Kosrae system (Art. 19.803). |
| **Commentary** | The federal FSM legislation, including the marine resources legislation, is sufficiently broad to accommodate climate change considerations and the making of regulations concerning ecosystem-base adaptation strategies. The relevant legislation will need to be reviewed in order to ensure that adaptation strategies are facilitated. Given the amendments to the Kosrae Code, with respect to climate change, it might be expected that the Federal and other state governments (Pohnpei, Yap and Chuuk) would also move in this direction. |

# Kiribati

Kiribati faces severe impacts from the effects of climate change. Its environment-related legislation can be described as reasonably modern, and provides a good basis for addressing climate change effects.

## SUMMARY OF RELEVANT LEGISLATION

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| **Constitution** | ***Kiribati Constitution 1995***<br>The Constitution recognises that "natural resources of Kiribati are vested in the people and their Government."<br>It indirectly recognises customary law: "we shall continue to cherish and uphold the customs and traditions of Kiribati."<br>It protects fundamental rights and freedoms of the individual, including life, liberty, security of the person, protection for the privacy of home and other property and from deprivation of property without compensation. |
| **Land and natural resource tenure** | ***Land Planning Ordinance [Cap 48]:***<br>This older style legislation sets up a central planning board, the functions of which include the preparation of general land use plans for every designated area. Detailed land use plans can be made in conformity with general plans. Applications for development are dealt with by local planning boards. Under s 32, local boards are able to make their own regulations, in consultation with the central board, with respect to the design, structure and materials to be employed in the construction of any works, building or other structure within the designated area for which that board is established. |
| **Environment and natural resource laws** | ***Environment Act 1999:***<br>The objects of this Act are wide-ranging and include a focus on environment protection. Section 3(d) states that the objects of this Act include "protecting and conserving the natural resources threatened by human activities, particularly those resources of national and ecological significance as may be classified under the categories of terrestrial vegetation, coral, fish and marine life."<br>"Environment" is broadly defined to include "all natural and social and cultural systems and their constituent parts, and the interactions of their constituent parts, including people, communities and economic, aesthetic, culture and social factors."<br>Significantly, the functions of the Minister include the responsibility to "protect, restore and enhance the quality of the environment of Kiribati, balanced against the need to promote sustainable development" (s 6 (b)). For the purposes of promoting sustainable development under subsection (1)(b), the Act includes four elements that should guide the Minister "as far as practicable". These are:<br>(a) the precautionary principle, which means that the lack of full scientific certainty should not be used as a reason for not acting to prevent any environmental damage or degradation;<br>(b), or enhanced, for the benefit of future generations; fairness to future generations in that the present generation should ensure that the health, diversity, and productivity of the environment is maintained<br>(c) conservation of biological diversity and ecological integrity;<br>(d) improved valuation and pricing of environmental resources.<br>These elements can only characterized as guidelines and are not enforceable as such. In any case, all four of these elements are helpful as a basis for promoting ecosystem-based adaptation in Kiribati. |

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| **Nature conservation laws** | ***Wildlife Conservation Ordinance [Cap 100]***<br>This is an outdated piece of legislation primarily directed to protect certain species, such as birds and turtles. It also provides for the setting up of wildlife sanctuaries. |
| **Environmental assessment laws** | ***Environment Act 1999:***<br>This Act includes two levels of assessment: An Initial Environmental Report (IER), which is a brief report presenting the results of a preliminary environmental assessment, and an environmental impact statement. The Act provides for applications for "prescribed" development, these are listed in the Schedule and include a wide range of activities. In this context, the most relevant of these are in the "public works sector" including, inter alia, landfills, infrastructure developments, soil erosion, beach erosion and siltation control, hydropower schemes, desalination plants, reservoir development, causeways, drainage and disposal systems, dredging, watershed management, ports and harbours, seawalls and land reclamation. Under s 13, prescribed development applications must be accompanied by either an initial environment evaluation report or an environmental impact statement. |
| **Strategic planning laws** | ***Kiribati Land Planning Ordinance 1977:***<br>Operates under the administration of a central land planning board and local planning boards. General land use plans are made for every designated area, delineating the use, or class of use, to which the relevant land may be put, in terms of development or redevelopment. Detailed land use plans may be made by local boards in accordance with the general plans. The Central Board may make regulations providing, inter alia, for the control of development and redevelopment ((Section 33(1)(d)). |
| **Commentary** | In view of the threats to Kiribati from climate change, and the reduction of habitable land, the Constitution's inclusion of fundamental rights, and freedoms concerning, are important.<br>In reforming the Kiribati Environment Act 1999, in the light of climate change concerns, it would be desirable to strengthen the four elements that should guide the Ministers, and cast them more particularly in the form of principles, which would be applied to decisions concerning the environmental protection, exploitation and conservation of natural resources.<br>Further, in relation to the provisions on environmental impact assessment (Sections 17 to 21), it would be desirable to include a specific section to deal with the effects of climate change, making it compulsory to include a consideration of the need to encourage ecosystem-based adaptation approaches in the contents of both the initial environmental report and the environmental impact statement.<br>Concerning the Land Planning Ordinance, in the absence of special provisions, sufficient power nevertheless exists for the Central Board, and the local planning boards, to make regulations addressed to making plans which take into account the effects of climate change.<br>However, it would be more desirable for the Kiribati Government to consider amending both its Environment Act and its Land Planning Ordinance to specifically address climate change issues and, in particular, to include provisions promoting ecosystem-based adaptation. |

# Republic of Fiji Islands

Fiji's existing legislation does not explicitly address the impacts of climate change. However, a range of laws relating to protected areas, natural resource management and environmental impact assessment have the potential to play an important role in maintaining and enhancing ecosystem resilience in the face of climate change.

## SUMMARY OF RELEVANT LEGISLATION

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| **Constitution** | ***Constitution (Amendment) Act 1997***<br>Rather than recognising custom as a source of law, the Constitution requires Parliament to recognise customary law and dispute resolution processes by enacting legislation. |
| **Land and natural resource tenure** | ***Native Lands Act [Cap 133]***<br>Recognises and maintains communal ownership of native lands.<br>***Native Land Trust Act [Cap 134]***<br>Establishes the Native Land Trust Board, and empowers the board to:<br>(1) enter into leases and licenses on behalf of native landowners;<br>(2) place conditions on the use of leased native land;<br>(3) declare certain areas to be native reserves. |
| **Natural resource laws** | ***Forest Decree 1992***<br>Provides for regulation of forestry activities and empowers the Minister for Forests to:<br>(1) declare multiple use forest reserves;<br>(2) declare strict nature reserves.<br>***Fisheries Act 1992***<br>Provides for regulation of fishing, recognises customary fishing rights and provides for the declaration of restricted fishing areas.<br>***Land Conservation and Improvement Act [Cap 141]***<br>Establishes the Land Conservation Board and empowers the board to make orders, including conservation orders,, closing orders and work orders.<br>***Water Supply Act [Cap 144]***<br>Empowers the Minister to declare protected water catchment areas. |

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| **Nature conservation laws** | ***Bird and Game Protection Act [Cap 139][Cap 170]***<br>Prohibits the killing, wounding or taking of protected bird species and regulates the hunting of game species.<br>***National Trust of Fiji Act [Cap 265]***<br>Establishes the National Trust of Fiji, and empowers the trust to:<br>(1) acquire property of natural or cultural heritage significance;<br>(2) create by-laws for the protection of Trust properties;<br>(3) enter into conservation covenants with landowners;<br>(4) declare national heritage areas.<br>***Endangered and Protected Species Act 2002***<br>Prohibits the possession, sale, display or trade of listed endangered and protected species. |
| **Environmental assessment laws** | ***Environment Management Act 2005***<br>Requires environmental impact assessment of development activities that are likely to have a significant impact on the environment. The national EIA administrator is responsible for assessing a range of development types, including development that could:<br>alter tidal action, wave action, currents or other natural processes of the sea, including, but not limited to, reclamation of the sea, mangrove areas, foreshore, rivers or creeks;<br>jeopardize the continued existence of any protected, rare, threatened or endangered species or its critical habitat or nesting grounds;<br>harm or destroy designated or proposed protected areas including, but not limited to, conservation areas, national parks, wildlife refuges, wildlife preserves, wildlife sanctuaries, mangrove conservation areas, forest reserves, fishing grounds (including reef fisheries), fish aggregation and spawning sites, fishing or gleaning areas, fish nursery areas and any other category or area designated by a written law;<br>destroy or damage an ecosystem of national importance including, but not limited to, a beach, coral reef, rock and gravel deposit, sand deposit, island, native forest, agricultural area, lagoon, sea-grass bed, mangrove swamp, natural pass or channel, natural lake or pond, a pelagic (open ocean) ecosystem or an estuary.<br>The Minister has broad powers to enact regulations under the Act. The Environment Management (EIA Process) Regulations 2008 sets out detailed procedures for EIA, but does not explicitly address climate change adaptation. |
| **Strategic planning laws** | ***Town Planning Act [Cap 139]***<br>Provides for the preparation of planning schemes for designated urban and rural areas. Planning schemes may require proponents to seek permission from the relevant local authority before undertaking development. The matters, which may be dealt with in a planning scheme, comprise a broad range of town planning considerations, including "any matter necessary or incidental to town planning." The Act does not make specific reference to protection of ecosystems or climate change adaptation. |

**Commentary**

The country's existing laws do not explicitly address the impacts of climate change. However, laws relating to environment protection, natural resource management, environmental impact assessment and protected areas, if appropriately amended, have the potential to play an important role in maintaining and enhancing ecosystem resilience to climate change.

The existing legal framework offers a range of mechanisms with the potential to support the establishment of protected areas (for example: conservation covenants under the National Trust of Fiji Act, nature reserves declared under the Forest Decree, and restricted fishing areas declared under the Fisheries Act). The conservation potential of these mechanisms is currently underutilised.

The absence of a coherent legal framework for the establishment and management of protected areas presents barriers to the development of an effective and resilient protected area network. In particular, existing laws do not provide for the active involvement of customary resource owners in the identification, establishment and management of protected areas.

Existing legal mechanisms, such as nature reserves and restricted areas, tend to be inflexible, with no opportunity for resource owners to develop management rules or to modify those rules over time. There is a need to develop legislation that provides for management of protected areas by local communities, in collaboration with government and civil society.

***Natural Resource Management***

Existing natural resource management laws provide a range of mechanisms for regulating the impacts of natural resource use on natural ecosystems. However, implementation of these laws at local level is limited, resulting in poor resource management outcomes. The current arrangements present major compliance and enforcement challenges for resource owners, who are constrained by national criminal law, yet not adequately supported by natural resource laws and institutions.

Unsustainable forestry practices continue to have a significant impact on terrestrial and freshwater ecosystems. The impacts of logging could be significantly reduced by: rigorous enforcement of the national logging code of practice, the monitoring of logging operations by community forest wardens, increased penalties for forestry offences, a legal obligation that ensures reforestation of logged areas, and the use of environmental bonds. The current practice of issuing short-term forest leases is a key barrier to sustainable forest management and should be abandoned.

Improved fisheries management enhances the productivity and resilience of marine ecosystems. There is an urgent need to improve compliance with fisheries laws. Priority actions for improving fisheries compliance include: improved training and resources for community fish wardens, fisheries enforcement training for police and magistrates, increased penalties for non-compliance, empowering the Department of Fisheries to revoke fishing licences for breaches of the Fisheries Act, a clear and efficient process for gazetting restricted areas, and management powers for community resource management committees.

**Commentary** *(cont.)*

***Environmental Impact Assessment***

Legislatively mandated EIA for a comprehensive range of development activities, coupled with detailed procedural requirements and robust enforcement mechanisms, presents real potential for securing improved protection of ecosystems and supporting ecosystem-based adaptation

Realisation of this potential will rely, to a significant extent, on effective administration by government officers, combined with active participation by customary landowners and members of the public.

The environmental impact assessment (EIA) procedures, required under the Environment Management Act 2005, present opportunities for ensuring that landowners are informed of the environmental impacts of proposed developments before consenting to development on their land.

The public participation procedures set out in the Act also provide an opportunity for other stakeholders, including downstream landowners, to raise concerns about potential environmental impacts. It is essential that the national government allocate adequate resources to promote awareness of the Act and to ensure its lawful and efficient administration.

To enhance the capacity of the Environment Management Act 2005, and to support ecosystem-based adaptation to climate change, it is recommended that the national government amend the legislation to require explicit consideration of the impacts of a proposed development on ecosystem resilience.

***Strategic Planning***

Recognising the importance of strategic planning in adapting to the impacts of climate change, it is recommended that Fiji undertake a comprehensive review of its planning laws, with a view to clarifying and strengthening the relationship between planning and EIA processes.

To facilitate community-based adaptation planning in rural areas, it would be useful to enact laws that empower local communities to develop binding land use and adaptation plans.

Strategic planning processes that respect the roles of traditional leaders, while providing opportunities for broad community engagement, will strengthen prospects for successful community-based adaptation planning.

# Samoa

Samoa's existing legislation does not explicitly address the impacts of climate change. However, a range of laws relating to protected areas, natural resource management and environmental impact assessment have the potential to play an important role in maintaining and enhancing ecosystem resilience in the face of climate change.

## SUMMARY OF RELEVANT LEGISLATION

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| **Constitution** | ***Constitution of the Independent State of Samoa 1960:***<br>The Constitution recognises customary title to land and recognises as a source of law 'any custom or usage which has acquired the force of law in Samoa'. |
| **Land and natural resource tenure** | ***Village Fono Act 1990:***<br>This Act recognises traditional village council (fono) and seeks to "validate and empower the exercise of power and authority by the village fono in accordance with custom and usage of their villages." Each fono is empowered, inter alia, to make rules governing the development and use of village land and impose punishment in accordance with custom and usage. |
| **Natural resource laws** | ***Fisheries Act 1988***<br>This Act provides for management of fisheries, including prohibited fishing methods and licensing. Regulations may provide for the conservation and management of fisheries, including closed seasons, protected areas, size limits and prevention of marine pollution.<br>The Fisheries Department may make fisheries by-laws, in consultation with fishermen and village representatives. Village councils (*fono*) may impose a penalty for a breach of a by-law. By-laws have been used as a tool to give legal effect to Village Fisheries Management Plans (Fa'asili and Kelekolio 1999 at 289).<br>***Forests Act 1967***<br>This Act provides for the designation of forest land, management of forestry operations and declaration of protected land. The objects of the Act are: (a) to maintain, and establish where necessary, areas of forest adequate to protect the climate, soil and water resources of the country; (b) as far as possible to provide, on a sustained yield basis, the forest produce requirements of the people and the industry of the country and to encourage an export trade; and (c) to ensure the best use of all forest lands for the general benefit of the country.<br>***Water Resources Management Act 2008***<br>This Act provides for the management, conservation and use of water resources in Samoa. The Act sets out the principles of sustainable management of water resources, defines rights to control and manage water resources, regulates the taking and use of water, provides for the protection of watersheds, provides for community involvement in water management, provides for enforcement and defines offences. The Act requires the precautionary principle to be observed. Control of water resources is vested in the Government. The granting of rights to take or use water may only be done in accordance with the provisions of this Act. |

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| **Nature conservation laws** | ***National Parks and Reserves Act 1974:***<br>This Act provides for the establishment, preservation and administration of national parks and reserves, including marine reserves.<br>***Lands, Surveys and Environment Act 1989:***<br>This Act provides for the protection of the environment and the establishment of protected areas. The Act empowers the Minister to, *inter alia*:<br>• enter into agreements with owners and occupiers of customary lands for the purpose of protecting their natural resources and environment;<br>• establish land use and environmental management guidelines for government agencies, village authorities and developers;<br>• make legally binding management plans for the protection and management of national parks, reserves, water resources, coastal zones, forests, soil, pollution or 'any other matter relating to the environment'.<br>The approval of the Minister is required for any activity that is likely to alter the natural configuration of the foreshore. |
| **Environmental assessment laws** | ***Planning and Urban Management Act 2004:***<br>This Act requires proponents to seek development consent unless a sustainable management plan states otherwise (see below).<br>Sets out matters the Agency must consider in determining a development application, including 'environmental effects' and 'consideration of natural hazards.' The Act also establishes a Planning Tribunal, to which applicants, or people who have made submissions concerning a development application, can appeal. |
| **Strategic planning laws** | ***Planning and Urban Management Act 2004:***<br>This Act establishes the Planning and Urban Management Agency and establishes a framework for planning the use, development, management and protection of land.<br>The Agency is empowered by the Act to prepare sustainable management plans. These plans can regulate the use, development, protection or conservation of any land, by requiring development consent or imposing development standards. A plan may include codes or guidelines relating to the use or development of land. |
| **Commentary** | Samoa's existing legislation does not explicitly address the impacts of climate change. However, the existing body of law provides a strong foundation for implementation of effective adaptation responses, including ecosystem-based adaptation.<br>In particular, the legislative framework in Samoa:<br>• provides a strong foundation for community-based adaptation planning, by empowering the village *fono* to make rules in relation to development and use of land;<br>• provides a mechanism for local fisheries management, by empowering village fono to enforce fisheries by-laws;<br>• provides a clear framework for strategic planning and environmental assessment;<br>• establishes a flexible mechanism for the preparation of legally binding management plans;<br>• provides a modern framework for management of water resources.<br>To enhance the effectiveness of the existing body of law, it is recommended that:<br>• each village *fono* be provided with the resources and technical support necessary to prepare a village-based climate change adaptation plan;<br>• sustainable management plans be reviewed, to assess the extent to which each plan supports climate change adaptation, including ecosystem-based adaptation;<br>• regulations be enacted, and guidelines developed, to require the consideration of climate change impacts and ecosystem resilience during the EIA process. |

# 9. Key Priorities and Recommendations

The key priorities and recommendations set out below are based, among other things, on a consideration of the potential and gaps found in the six case studies, the National Action Plans for Adaptation and a review of the legal implications of some of the current scientific literature on ecosystem-based adaptation strategies.

In making recommendations regarding legislative provisions to address ecosystem-based adaptation, we are mindful of David Farrier's comment concerning Pacific Island environmental law:

> *[T]he need to enact environmental legislation must be carefully justified rather than assumed, and the precise components of that legislation must be tailored to the policy context and needs of PICs and not based on imported models from developed countries [… ] more attention needs to be given to the development of community-driven, strategic land use planning processes (Farrier 2003).*

## Key priorities for legal and policy responses to climate change include:

1. Conducting a detailed review of existing laws and policies of all Pacific Island jurisdictions (including the legislation in the state jurisdictions in the Federated States of Micronesia and the provincial instruments in Solomon Islands), covering natural resource management and environmental protection, assessment and planning laws, with a view to improving their effectiveness.
2. Developing new laws, policies and institutions that will effectively respond to the scale, intensity and uncertainty of climate change impacts.
3. Promoting the integration of community level adaptation planning with national laws and policies, as a means for securing effective, adaptive responses to climate change impacts.
4. Establishing appropriate legal and institutional arrangements for accessing existing and emerging international climate change mechanisms, including financing mechanisms.

## General Recommendations

1. A further protocol to the SPREP Convention could be considered, specifically focussed on the effects of climate change, and that promotes the introduction of ecosystem-based adaptation methods, both at a policy and legislative level.
2. A Pacific-wide initiative on legally embedded, strategic, national planning for ecosystem-based adaptation approaches should be developed, using the National Action Programmes for Adaptation and the Pacific Adaptation to Climate Change project (PACC) as a starting point.
3. All Pacific Island environmental, natural resources and planning laws should be reviewed and reformed to the extent necessary in the context of the effects of climate change, with a view to providing an enhanced legal basis for ecosystem-based adaptation strategies.
4. Specifically, all Pacific Island legislation concerning terrestrial and marine protected areas should be reviewed with a view to strengthening their provisions with regard to ecosystem-based approaches to climate change adaptation. Model legislative provisions and/or regulations should be prepared as a basis for legislative amendments.
5. Model legislative provisions and/or regulations setting out the scope and content of environmental impact assessment, with regard to the effects of climate change and in particular provisions relating to ecosystem-based adaptation should be prepared and made available to all Pacific Island countries.

6. Local community and local government implementation and enforcement of legal mechanisms directed to ecosystem-based adaptation strategies should be encouraged, with provisions made in the relevant legislation and regulations as appropriate.
7. The use of customary mechanisms at the village level, such as *tabu* systems, should also be encouraged.
8. Capacity building workshops should be conducted to assist in preparing drafts of legal provisions that would amend current legislation in the Pacific Island countries.

# Specific Recommendations

## Terrestrial Ecosystems:

### PROTECTED AREAS:

9. To maintain biological diversity and ecosystem services in the face of climate change, there is a pressing need to develop protected areas legislation for all Pacific Island countries that provides for management of protected areas by local communities, in collaboration with government and civil society organisations. The processes being developed for connectivity conservation should be investigated for their potential to be incorporated into legislative provisions in appropriate jurisdictions.

### FOREST MANAGEMENT:

10. To maintain forest carbon storage and ecosystems, it is recommended that each country aim to achieve no further net loss of forest cover, by introducing legislation that:
    - requires the completion of national forest inventories;
    - requires the preparation of sustainable harvest plans;
    - sets high penalties for breaches of forestry law;
    - creates a legal obligation to ensure reforestation of logged areas;
    - provides for the use of environmental rehabilitation bonds.

## Freshwater Ecosystems:

### CATCHMENT PROTECTION:

11. To maintain water quality and availability over time, it will be necessary to introduce effective mechanisms for the protection and management of water catchments, including restrictions on clearing and burning in drinking water supply catchments and riparian zones.

### WATER QUALITY:

12. National water quality legislation and standards (where they exist) should be examined with a view to ensuring that they adequately address the impacts of poor water quality on the productivity, health and resilience of freshwater, estuarine and coastal marine ecosystems.

### WATER EXTRACTION:

13. In order to reduce pressure on water resources, particularly in low-lying countries, national legislation on water use should be closely examined with a view to ensuring that they can provide for appropriate restrictions on water extraction from freshwater lenses and natural watercourses.

## Coastal and Marine Ecosystems:

### MANGROVE CONSERVATION:

14. To control coastal erosion, reduce the impact of extreme weather events and maintain fisheries productivity, it is essential that Pacific Island countries take urgent action to prevent clearing and unsustainable harvesting of mangroves.

### FISHERIES MANAGEMENT:

15. To enhance the resilience of coastal fisheries and coral reefs, it is recommended that each country review its national legislation to provide for the management of coastal fisheries by local communities, in collaboration with government agencies.

### MARINE PROTECTED AREAS:

16. To enhance the resilience of coastal fisheries and coral reefs, it is recommended that each country review its national legislation to provide for the establishment of locally managed marine areas by local communities, in collaboration with government agencies.

## Environmental Impact Assessment:

### MAINTAINING ECOSYSTEM RESILIENCE:

17. To manage the impacts of development on ecosystem resilience, it is recommended that each country adopt EIA regulations requiring consideration of the extent to which a proposed development is likely to increase vulnerability to the predicted impacts of climate change.
18. To promote robust assessment and approval processes, it is recommended that regional guidelines be developed that consider the impact of proposed developments on ecosystem resilience.
19. To ensure that adaptation measures do not result in unintended consequences, it is recommended that 'hard' infrastructure proposals (e.g. sea walls) be subject to rigorous, mandatory environmental assessment, including consideration of 'soft' alternatives (e.g. mangrove restoration).
20. The 2011 amendments to the Kosrae *State Code* Title 19 should be regarded as a starting point for the review of other Pacific island jurisdictions, in terms of amending the relevant legislation concerning the building and maintenance of 'hard' infrastructure.

### IDENTIFYING IMPACTS OF CLIMATE CHANGE ON PROPOSED DEVELOPMENTS:

21. To promote the consideration of climate change impacts on the viability of proposed developments, it is recommended that each country adopt regulations requiring consideration of climate change impacts on proposed developments during the EIA process.
22. To promote robust assessment and approval processes it is recommended that regional guidelines be developed for the consideration of climate change impacts on proposed developments.

### ENHANCING ENVIRONMENTAL OUTCOMES THROUGH PUBLIC PARTICIPATION

23. To strengthen the effectiveness of EIA legislation, it is recommended that each country implement a public education program, aimed at empowering local communities and traditional resource owners to participate in environmental assessment and approval processes.

## Strategic Planning:

24. Recognising the importance of strategic planning in adapting to climate change impacts, it is recommended that Pacific Island countries build on existing models of community-based land use planning, by empowering local communities to develop binding land use and adaptation plans.

### PUBLIC PARTICIPATION:

25. To strengthen long-term prospects for successful community-based adaptation planning, it is recommended that strategic planning processes be developed that respect and reinforce the roles of traditional leaders, while providing opportunities for broad community engagement.

### MANAGING INTERNAL DISPLACEMENT:

26. To manage future conflict over land and resources, it is recommended that each country develop a national plan for minimising displacement, review national legislation to ensure that the rights of internally displaced persons are adequately protected by law, and ensure that movements of internally displaced people do not further degrade natural ecosystems.

## Monitoring and Adaptation

27. Legal frameworks for environmental impact assessment should be adapted to facilitate empowerment of local communities in monitoring and adaptation, directed to local adaptive management of natural resources and ecosystems.

## Compliance and Enforcement

28. Legal frameworks should be adapted with a view to strengthening participation of local communities in compliance and enforcement activities in natural resources management.

29. Continuing capacity-building programs should be instituted in order to ensure that public officials, prosecutors, police and, to the extent necessary, the judiciary, are fully informed of the scope of and duties under the relevant legislation.

## Financing Mechanisms

30. Legal frameworks should be developed to facilitate payments for ecosystem services, in order to encourage resource owners and managers to engage in activities that build ecosystem resilience.

31. The charging of entrance to protected areas, and ensuring that funds are directed to enhancing the protected area and, in particular, to promoting ecosystem resilience, should be considered in appropriate jurisdictions.

32. Legislative provisions for establishment of protected area trust funds should be investigated for all Pacific Island jurisdictions and should be based, for example, on the provision in the 2010 Solomon Islands *Protected Areas Act*, and specifically directed to activities promoting ecosystem resilience.

33. The concepts of offset markets, REDD financing, adaptation funds, and international insurance funds, which are concerned with the integration with existing and emerging international mechanisms, should be examined as an essential component of legal responses to the impact of climate change in the Pacific Island region.

# References

## Books, articles and reports


Alcala AC, Russ, G.R. 2006. No-take marine reserves and reef fisheries management in the Philippines: A new people power revolution. Ambio 35:245-254.

Aswani, S. Albert, S. Sabetian, A. and Furusawa, T. 2007. Customary management as preventive and adaptive management for protecting coral reefs in Oceania. Coral Reefs 26:1009-1021.

Boer, B.W. 1992. Strengthening Environment Management Capabilities in Pacific Island Developing Countries: Solomon Islands: Review of Environmental Law SPREP, Samoa.

Boer, B.W. (ed) 1995. Environmental Law in the South Pacific, Environmental Law and Policy Paper, IUCN Environmental Law Centre, Bonn, Germany.

Care, J.C. and Zorn, J.G. 2001. Legislating pluralism - statutory developments in Melanesian customary law. Journal of Legal Pluralism and Unofficial Law 46:49-101.

Cinner, J.E. Marnane, M.J. McClanahan, T.R. 2005. Conservation and community benefits from traditional coral reef management at Ahus Island, Papua New Guinea. Conservation Biology:1714-1723.

Clarke, P. and Erasito, E. 2008. Discussion Paper: Proposal to Establish a National Protected Areas Committee. National Environment Council, Republic of Fiji Islands.

Clarke, P. and Gillespie, T. 2007. Legal Mechanisms for the Establishment and Management of Protected Areas in Fiji Islands. IUCN Regional Office for Oceania.

Clarke, P. and Jupiter, S. 2010 Law, Custom and Community-Based Natural Resource Management in Kubulau District, Republic of Fiji Islands. Environmental Conservation 37:98-106.

Clarke, P. and Jupiter, S. 2010 Principles and Practice of Ecosystem-Based Management: A Guide for Conservation Practitioners in the Tropical Western Pacific, Wildlife Conservation Society. URL: www.wcs.org/files/pdfs/EBMguide0510_low.pdf.

Conservation International, 2011. Background Paper No 2: The Potential for Ecosystem-based Adaptation (EbA) in the Pacific Islands.

Convention on Biological Diversity Strategic Plan 2011-2020, Montreal: Convention on Biodiversity Secretariat.

Cook Islands, *National Sustainable Development Plan 2006-2010* www.sprep.org/att/IRC/eCOPIES/Countries/Cook_Islands/52.pdf

Das S, Vincent JR (2009) Mangroves protected villages and reduced death toll during Indian super cyclone, Proceedings of the National Academy of Sciences 106: 7357-7360

Development Review Commission. 2000. The Coastal Shoreline Management Plan, at http://www.kosraecoast.com/summary.pdf

Di Vara, M. 2011. Legal Framework for Connectivity Conservation., Bonn: IUCN Environmental Law Centre, preliminary research report, on file with authors).

Drew, J. 2005. Use of traditional ecological knowledge in marine conservation. Conservation Biology 19: 1286-1293.

Dudley, N. et al 2010. Natural Solutions, Helping People Cope with Climate Change, IUCN -WCPA, The Nature Conservancy, United Nations Development Programme, NDP, WCS, The World Bank and WWF.

Techera, E. 2005. Protected Area Management in Vanuatu. Macquarie Journal of International and Comparative Environmental Law 2:107-119.

Fa'asili, U. and Kelekolio, I. 1999. The Use of Village By-Laws in Marine Conservation and Fisheries Management. Information Paper 17, First SPC Heads of Fisheries Meeting, Noumea, New Caledonia, 9–13 August 1999.

Farrier, D. 2003. 'Emerging Patterns in Environmental Legislation in Pacific Island Countries' Journal of South Pacific Law, 7(1):3.

Govan, H et al. 2009. Status and potential of locally-managed marine areas in the South Pacific: meeting nature conservation and sustainable livelihood targets through wide-spread implementation of LMMAs. SPREP/WWF/WorldFish-Reefbase/CRISP, Suva, Fiji.

Green A, Lokani P, Sheppard S, Almany J, et al. 2008. Scientific design of a resilient network of marine protected areas. Kimbe Bay, PNG: The Nature Conservancy. Pacific Island Countries Report No 2/07.

Hale, L. Meliane I, Davidson S, Sandwith T, et al. (2009) Ecosystem-based adaptation in marine and coastal ecosystems, Renewable Resources Journal 25: 21-28.

Hale, L. et al. 2009. Ecosystem-based Adaptation in Marine and Coastal Ecosystems, The Nature Conservancy. www.nature.org.

Horokou, J. 2002. Review and assessment of priority environmental concerns in Solomon Islands, Environment and Conservation Division, Ministry of Forests, Environment and Conservation, Honiara, Solomon Islands.

IISD, IUCN and SEI 2003. Livelihoods and Climate Change: Combining disaster risk reduction, natural resource management and climate change adaptation in a new approach to the reduction of vulnerability and poverty: www.iisd.org/pdf/2003/natres_livelihoods_cc.pdf.

Intergovernmental Panel on Climate Change, 2007. Fourth Assessment Report, Cambridge: Cambridge University Press.

IUCN, 2008. Ecosystem-based adaptation: An approach for building resilience and reducing risk for local communities and ecosystems. Gland, Switzerland: IUCN.

Kaufman, L. Heneman, B. Barnes, J.T. and Fujita, R. 2004 Transition from low to high data richness: An experiment in ecosystem-based fishery management from California. Bulletin of Marine Science 74: 693-708;

Kiribati, 2008. National Adaptation Program of Action, http://unfccc.int/files/adaptation/application/pdf/coastal_marine_e.pdf.

Kolmannskog, E. 2008. Climates of displacement. Nordic Journal of Human Rights 26(4):302-320.

Kwa, E. 2009. 'Climate change and indigenous peoples in the South Pacific: the need for regional and local strategies', in Richardson, B.J. Le Bouthillier, Y. McLeod-Kilmurray, H. Wood, S. (eds) Climate Law and Developing Countries. Cheltenham: Edward Elgar.

Lal, P. 2005 Information, institutions and conflict management in the natural resource sector. Peace Building and Conflict Prevention Workshop, Nadi, Fiji, 25-27 April 2005.

Lane, M.B. 2008 Strategic coastal governance issues in Fiji: The challenges of integration. Marine Policy 32:856-866.

Lausche, B. 2011 Guidelines for Protected Areas Legislation, IUCN Environmental Policy and Law Paper No. 81. Bonn: IUCN.

Leisher, C van Beukering, P. Scherl, L.M. 2009. Nature's investment bank: How marine protected areas contribute to poverty reduction: The Nature Conservancy

Lindsay, J. 1998. Designing legal space: Law as an enabling tool in community-based management. International workshop on Community-Based Natural Resource Management, Washington D.C., USA, 10-14 May 1998.

Lynch, O. 1998. Law, pluralism and the promotion of sustainable community-based forest management, Unasylva 194: http://www.fao.org/docrep/W8827E/w8827e09.htm.

Margoluis R, Salafsky N (1998) Measures of success: designing, managing, and monitoring conservation and development projects. Island Press: Washington DC.

McClanahan, T.R. Marnane, M.J. Cinner, J.E. Kiene, W.E. 2006. A comparison of marine protected areas and alternate approaches to coral reef management. Current Biology 16:1408-1413.

McLeod, E. Salm, R. Green, A. Almany J. 2009. Designing marine protected area networks to address the impacts of climate change. Frontiers in Ecology and the Environment 7:362-370.

McLeod E, Salm, RV (2006) Managing Mangroves for Resilience to Climate Change. IUCN. http://data.iucn.org/ dbtw-wpd/edocs/2006-041.pdf.

Millar, I. 2008. There's No Place Like Home – Human Displacement and Climate Change; see Project Officer Calls for Relocation of Atoll Islanders, http://www.sprep.org/article/news_detail.asp?id=937;

Minter, A. 2008. Compliance and Enforcement for Coastal Fisheries Management in Fiji, IUCN Regional Office for Oceania, Suva, Fiji.

Munro, D.M. 1996. A case study of traditional marine management systems in Pukapuka Atoll, Cook Islands. FAO Field Report (RAS/92/T05) 96/2, Rome 68.

New Zealand Law Commission, 2006. Converging currents: Custom and human rights in the Pacific. Study Paper 17. New Zealand Law Commission, Wellington, New Zealand.

Norwegian Refugee Council. http://www.nrc.no/?aid=9411918.

Obura, D. Grimsditch, G, 2009. Resilience Assessment of coral reefs: Assessment protocol for coral reefs, focusing on coral bleaching and thermal stress. IUCN working group on Climate Change and Coral Reefs. Gland, Switzerland: IUCN.

Obura, D.O. 2005. Resilience and climate change: lessons from coral reefs and bleaching in the Western Indian Ocean. Estuarine, Coastal and Shelf Science 63:353-37

Powles, G. 2003. Customary Law Systems and the Pacific Island State: The Search for Workable Relationships. New Pacific Review 2:263.

Phoenix Islands Protected Area. 2007 http://www.phoenixislands.org/index.php

Reti, I. 1993. The role of custom in environmental management and law in the Pacific. In: Boer, B. (ed) Strengthening environmental legislation in the Pacific Region Workshop Proceedings. Samoa: South Pacific Regional Environment Programme.

Ruckleshaus, M, Klinger, T, Knowlton, N, DeMaster, D.P. 2008. Marine ecosystem-based management in practice: scientific and governance challenges. BioScience 58:53-63.

Saudamini, D. and Vincent, J.R. 2009. 'Mangroves protected villages and reduced death toll during Indian super cyclone' PNAS vol. 106 no. 18.

Scaglion. R. 1999. Law. In: The Pacific Islands: Environment and Society, M. Rapaport (ed). Honolulu, United States: Bess Press.

Secretariat of the Convention on Biological Diversity, 2010. Global Biodiversity Outlook 3: Montréal.

Secretariat of the Pacific Regional Environment Program (SPREP) (2006) Community-level adaptation to climate change: action in the Pacific. Apia, Samoa. www.sprep.org/ att/ publication/ 000431_CBDAMPIC.pdf.

Secretariat of the Pacific Regional Environment Program (SPREP) and Conservation International 2011. Biodiversity, Ecosystems, and Climate Change in the Pacific – Analysis and Needs Assessment Project, Background Papers 1, 2 and 3.

Secretariat of the Pacific Regional Environment Program (SPREP), 2009. Pacific Adaptation to Climate Change for Solomon Islands http://www.sprep.org/att/publication/000671_Solomon Islands_NationalPACC_Report_Finalb.pdf at 7.

SPREP News 2011.New Law passed for FSM to climate-proof infrastructure. http://www.sprep.org/article/news_detail.asp?id=913

Techera, E. 2009. Customary Law and Community-Based Fisheries Management across the South Pacific Region, JALTA 23: 279.

Tiraa A 2006. Ra'ui in the Cook Islands - today's context in Rarotonga. SPC Traditional Marine Resource Management and Knowledge Information Bulletin. Noumea, New Caledonia 19:11-15.

UNEP, 2011. Taking Steps toward Marine and Coastal Ecosystem-Based Management: An Introductory Guide, UNEP Regional Seas Reports and Studies No. 189.

UNFCC, undated, a. Carbon market, international offset mechanisms critical in meeting climate change challenge: http://unfccc.int/press/news_room/newsletter/in_focus/items/4553.php

UNFCC, undated, b. Reducing emissions from deforestation in developing countries: http://unfccc.int/methods_and_science/lulucf/items/4123.php

UNFCC, undated, c. Adaptation Fund: http://unfccc.int/cooperation_and_support/financial_mechanism/adaptation_fund/items/3659.php

Veitayaki, J. 1997. Traditional marine resource management practices used in the Pacific Islands: an agenda for change. Ocean & Coastal Management 37:123-136

Veitayaki, J. 2000. Fisheries resource-use culture in Fiji and its implications. In: Hooper A (ed) Culture and sustainable development in the Pacific. Asia Pacific Press, Canberra, Australia, p. 116-130.

Wells, M. 1992. Biodiversity Conservation, Affluence and Poverty: Mismatched Costs and Benefits and Efforts to Remedy Them. Ambio 21(3):237-243.

Wong, P.P. Marone, E. Lana, P. and Fortes, M. 2005. 'Island Systems', in Hassan R (ed) Ecosystems and human well-being: current state and trends. Millennium Ecosystem Assessment. www.millenniumassessment.org.

Worboys, G. Lockwood, M. and De Lacey, T. 2010. Connectivity Conservation Management. Earthscan.

## International Instruments

*Convention on International Trade in Endangered Species of Wild Fauna and Flora 1973*

*Convention on Conservation of Nature in the South Pacific 1976* (Apia Convention)

*Convention for the Protection of the Natural Resources and Environment of the Pacific Region and Related Protocols 1986 (SPREP Convention)*

*Framework Convention on Climate Change 1992*

Convention on Biological Diversity 1992

## National Legislation

*Note: the legislation listed below is drawn from jurisdictions of the six case studies. Not all of the laws are discussed in the body of the report, nor is the list not exhaustive. It is included to assist in future analysis of the main laws of the individual jurisdictions with respect to ecosystem-based approaches to climate change. Many pieces of relevant legislation are on the SPREP legal database: http://www.sprep.org/legal/national.htm*

### COOK ISLANDS

*Conservation Act 1986-87*
*Cook Islands Constitution 1965*
*Environment Act 2003*
*Land Use Act 1969*

### FEDERATED STATES OF MICRONESIA

*Constitution of the Federated States of Micronesia 1975*
*Federated States of Micronesia Environmental Protection Act 1999 [Title 25 Chapter 7]*
*Marine Resources Act 2002*
*Marine Resources Amendment Act 2001*
*Environmental Protection Act*
*Environmental Impact Assessment Regulations*

*Kosrae State*
*Title 11. Land and Environment*
*Chapter 11. Marine Life*
*Chapter 12. Rivers and Streams*
*Chapter 13. Protection of Environment*
*Chapter 16. Wildlife*

### FIJI ISLANDS

*Birds and Game Protection Act [Cap 170]*
*Endangered and Protected Species Act 2002*
*Endangered and Protected Species Regulations 2003*
*Environment Management Act 2005*
*Fisheries Act [Cap 158]*
*Fisheries (Protection of Turtles) Amendments) Regulations 2004*
*Forest Decree 1992*
*Land Conservation and Improvement Act [Cap 141]*
*National Trust of Fiji Act [Cap 265]*

*Native Land Trust Act [Cap 134]*
*Rivers and Streams Act [Cap 136]*
*Town Planning Act [Cap 139]*
*Water Supply Act [Cap 144]*

### KIRIBATI

*Environment Act 1999*
*Fisheries Ordinance 1979[Cap 33]*
*Kiribati Constitution 1995*
*Kiribati Land Planning Ordinance 1977*
*Land Planning Ordinance [Cap 48]*
*Phoenix Islands Protected Area Regulations 2008*, made under the *Environment Act 1999*
*Recreational Reserves Act 1996*
*Special Fund (Waste Material Recovery) Act 2004*
*Wildlife Conservation Ordinance [Cap 100]*

### SAMOA

*Constitution of the Independent State of Samoa 1960*
*Fisheries Act 1988*
*Forests Act 1967*
*Lands, Surveys and Environment Act 1989*
*National Parks and Reserves Act 1974*
*Planning and Urban Management Act 2004*
*Plants Act 1984*
*Samoa Water Authority Act 2003*
*Stevenson Memorial Reserve and Mount Vaea Scenic Reserve Ordinance 1958*
*Village Fono Act 1990*
*Water Resources Management Act 2008*
*Water Act 1965*

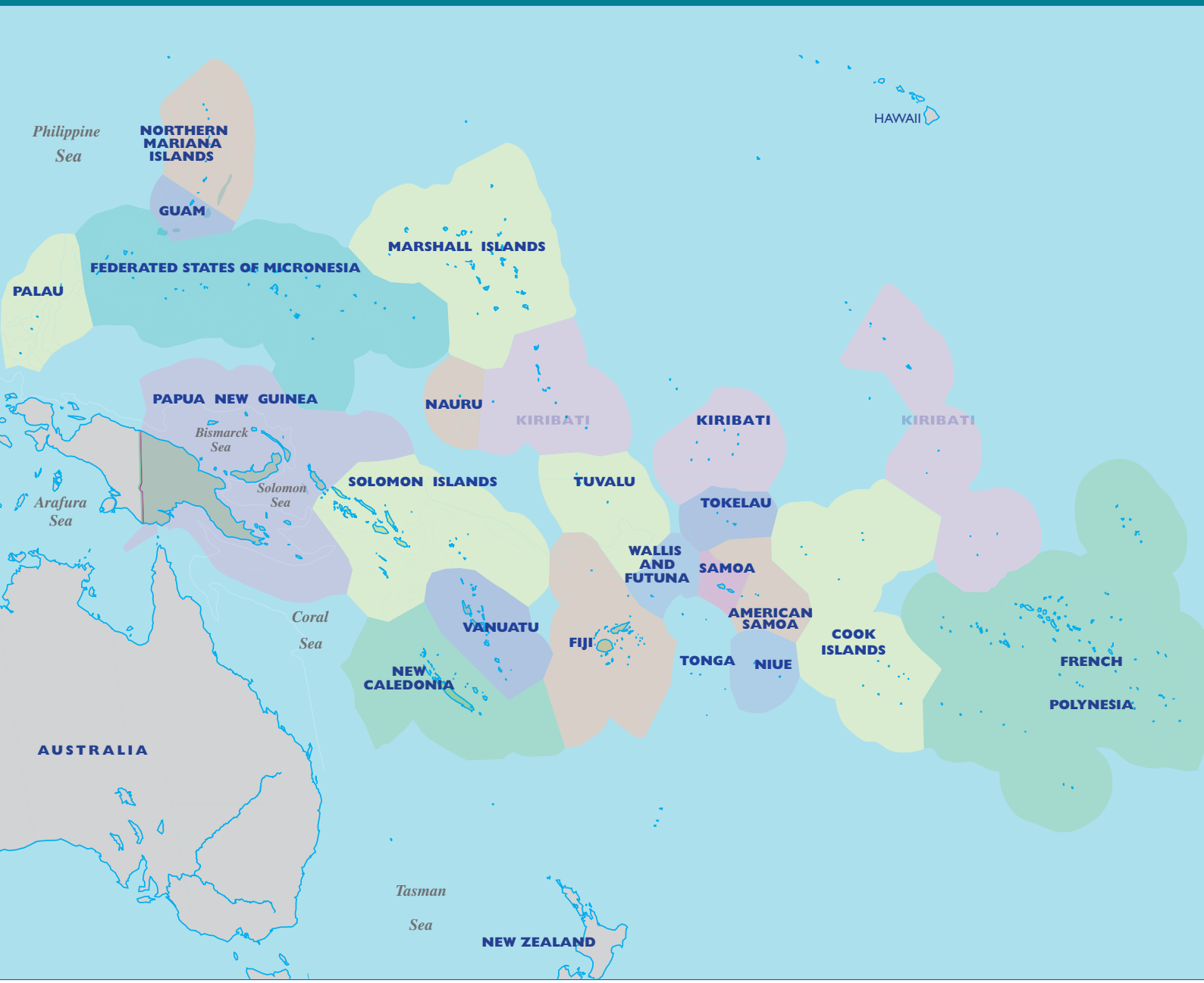
### SOLOMON ISLANDS

*Customary Land Records Act, 1994*
*Customs Recognition Act 2000*
*Environment Act 1998*
*Environmental Health Act [Cap 99]*
*Fisheries Act 1998*
*Forest Resources and Timber Utilisation Act [Cap 40]*
*Mines and Minerals Act [Cap 42]*
*National Parks Act [Cap 149]*
*Protected Areas Act 2010*
*River Waters Act [Cap 135]*
*Town and Country Planning Act [Cap 154]*
*Wild Birds Protection Act [Cap 45]*
*Wildlife Protection and Management Act 1998*

# About the Authors

**Ben Boer** is Professor of Law at the Research Institute of Environmental Law, Wuhan University, Hubei Province, People's Republic of China and Emeritus Professor in Environmental law, University of Sydney. Professor Boer has over 20 years working experience with small island states, having worked on small island state environmental and natural resource law issues since 1991 in both the Pacific region and Caribbean.

**Pepe Clarke** is the Chief Executive officer of the nature Conservation Council of New South Wales. Prior to that, Mr. Clarke was the legal advisor for IUCN Oceania where he was charged with establishing and coordinating IUCN's regional environmental law capacity-building and technical assistance program for the Oceania region. Mr. Clarke holds a masters degree in law from the University of Sydney Australia and has ten years experience in environmental law.




SPREP
Secretariat of the Pacific Regional Environment Programme

PO BOX 240
Apia, Samoa

E: sprep@sprep.org
T: +685 21 929
F: +685 20 231

W: www.sprep.org