

**Strategic Action Programme
for International Waters of
Pacific Islands**

**by: Cook Islands, Federated States of Micronesia, Fiji, Kiribati,
Marshall Islands, Nauru, Niue, Papua New Guinea,
Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu
through their respective
National Task Forces for International Waters**

with the guidance of:

**The Regional Task Force
The South Pacific Organisations Coordinating Committee**

with the financial support of:

**The Government of Australia
The Government of New Zealand
The Global Environment Facility through
The United Nations Development Programme**

**with the assistance of:
the staff of the South Pacific Regional Environment Programme**

August 1997

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Executive Summary

I. Introduction

This Strategic Action Programme (SAP) for International Waters of the Pacific Islands Region was initiated and developed by the thirteen Pacific Island States participating in the work of the Global Environment Facility (GEF). It represents a pioneering effort by our group of small island developing states (SIDS) to integrate our national and regional sustainable development priorities with shared global environmental concerns for protecting International Waters.

The SAP has built on considerable national and regional work related to our International Waters. This work includes, e.g., reports of the National Consultations, the State of the Environment (SOE) Report or National Environmental Management Strategy (NEMS) for each country, the Action Plan for Managing the Environment of the South Pacific Region 1997-2000, the Draft Regional Strategy for Development Priorities of the Forum Island Countries, the Action Strategy for Nature Conservation in the South Pacific Region 1994-1998, the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, the Report to the United Nations Commission on Sustainable Development (UNCSD) on Activities to Implement the Barbados Programme of Action in the Pacific Region (1996) and the 1992 Report to the United Nations Conference on Environment and Development (UNCED) in The Pacific Way.

II. International Waters

International Waters include oceans, large marine ecosystems, enclosed or semi-enclosed seas and estuaries as well as rivers, lakes, groundwater systems, and wetlands with transboundary drainage basins or common borders.

The water-related ecosystems and critical habitats associated with these waters are integral parts of the system. International Waters extend far inland and far out to sea. This is because the global hydrological cycle links watersheds, airsheds, estuaries, and coastal and marine waters through transboundary movement of water, pollutants and living resources.

This definition of International Waters could have been designed with our Pacific Islands in mind. Although separated by vast distances, our islands are linked and controlled by our marine environment. Our land to sea ratio is generally so small that all our islands are wholly coastal in character. The importance of the health of International Waters to our islands cannot be overstated.

III. The Region

This section is descriptive rather than prescriptive, intending to highlight those parts of the Pacific picture most relevant to the sustainable development of our International Waters as a background to the analysis and proposals for action.

IV. Transboundary Environmental Concerns

We have identified three priority transboundary concerns for our International Waters. These are:

1. Degradation of their quality

2. Degradation of their associated critical habitats
3. Unsustainable use of their living and nonliving resources

These concerns are inextricably linked by their causes and by the cumulative, mutually exacerbating effects of these causes on the transboundary concerns.

V. Imminent Threats

Our International Waters are subject to a number of threats giving rise to the transboundary concerns. The threats were examined from the perspective of critical species and their habitats, living marine resources and non-living resources. We consider that the priority transboundary concerns for our International Waters arise from the following imminent threats to the health of those waters:

1. pollution of marine and freshwater (including groundwater) from land-based activities
2. physical, ecological and hydrological modification of critical habitats
3. unsustainable exploitation of living and nonliving resources

Each imminent threat affects each transboundary concern. The linkages between the imminent threats to and the transboundary concerns for International Waters require integrated measures to address the concerns effectively.

VI. Root Causes

The root causes were examined in their legal, institutional, socio-economic and environmental context. We recognised that an important, ultimate root cause underlying the imminent threats is deficiencies in management. The factors contributing to the management root cause can be grouped into two linked subsets: a) governance and b) understanding. The governance subset is characterised by the need for mechanisms to integrate environmental concerns, development planning and decision-making. The understanding subset is characterised by the need to achieve an island-wide ecosystem awareness in our people. This provides a focus for intervention to protect International Waters.

VII. Information Gaps

Our analysis revealed a set of information gaps relevant in particular to decision-makers (as opposed to researchers) who must address ultimate root causes and respond to imminent threats. Particularly important is the lack of strategic information presented in an appropriate manner to decision-makers, resource users, managers and communities to evaluate costs and benefits of, and to decide between alternative activities. Improving information input and exchange at regional and national levels is an objective of this SAP.

VIII. Proposed Solutions

We propose to address the root causes of degradation of International Waters through regionally consistent, country-driven targeted actions that integrate development and environment needs. These actions are designed to encourage comprehensive, cross-sectoral, ecosystem-based approaches to mitigate and prevent imminent threats to International Waters. The SAP provides the regional framework within which actions are identified, developed and implemented. Targeted actions will be carried out in two complementary, linked consultative contexts: Integrated Coastal and Watershed Management (ICWM) and Oceanic Fisheries Management (OFM). Through the

ICWM and OFM approaches, the SAP sets out a path for the transition by our islands from sectoral to integrated management of International Waters as a whole, which we consider to be essential for their protection over the long term.

Management in these two contexts will necessarily include three other pressing concerns in our sustainable development planning, namely: biodiversity, vulnerability to climate change and land degradation. These are both GEF focal and cross-cutting areas, and the remaining three of the seven major issues identified in the Barbados Programme of Action for the Sustainable Development of SIDS as common to most islands. The other three major small island issues from the Barbados Programme have already been addressed above, and the seventh, tourism, can only be effectively dealt with in this type of framework for national sustainable development. The SAP also meets the objectives of the GEF operational programme entitled "Integrated Land and Water Multiple Focal Area," to which International Waters projects addressing the needs and special conditions of small islands are assigned by GEF. Consequently, the SAP is expected to involve and build upon the complementary skills and experience available from organisations and groups active in our region.

Our region is the beneficiary of much development assistance from a variety of donors for a wide range of projects. We will be able to use the SAP together with our donors to plan and coordinate regional and national development assistance for International Waters in order to address imminent threats and their root causes more effectively. The SAP will facilitate the choice and design of high priority interventions, remove duplication, and ensure that projects do not work at cross-purposes. Funding from GEF *per se* can only support a small proportion of such interventions, hence the importance of the SAP to organise and leverage additional assistance in order to receive maximum benefit from available funds. The SAP is designed to comply with the requirements of GEF, but also, and perhaps more importantly, to be a framework for overall national and regional planning and assistance for the management of International Waters.

The SAP complies with the legal framework for regional cooperation and related obligations established by the regional Conventions, the UN Convention on Law of the Sea, the Convention on Biological Diversity, the Framework Convention on Climate Change and other international conventions within which the Pacific Island countries identify common issues and coordinate national approaches to address those issues. Application of ICWM and OFM approaches will facilitate further joint action between sectors nationally and between governments regionally. As experience with ICWM and OFM grows, this SAP will also evolve, reflecting the increased knowledge of and changing conditions in the environment of our islands. To ensure that the SAP remains a living, evolving and useful instrument for sustainable development, and to assess and apply lessons learned from its implementation, the SAP will be reviewed every five years.

IX. Priorities for Action

We are mindful that we cannot address all sustainable development issues related to International Waters in this SAP at once. Therefore we have initially identified four high priority areas for immediate intervention: improved waste management, better water quality, sustainable fisheries and effective marine protected areas.

Targeted action within these activity areas is proposed in five categories: management, capacity-building, awareness/education, research/information for decision-making, and investment. Institutional strengthening is included under management & capacity-building.

The analytical framework within which proposals for assistance should be evaluated under the SAP is set out below.

Goal of SAP: Integrated sustainable development and management of International Waters

Priority Concerns:	Degradation of water quality Degradation of associated critical habitats Unsustainable use of resources
Imminent Threats:	Pollution from land-based activities Modification of critical habitats Unsustainable exploitation of resources
Ultimate Root Causes:	Management deficiencies a) governance b) understanding
Solutions:	Integrated Coastal and Watershed Management Oceanic Fisheries Management
ICWM Activity Areas:	- improved waste management - better water quality - sustainable fisheries - effective marine protected areas
OFM Activity Areas:	- sustainable ocean fisheries - improved national and regional management capability - stock and by-catch monitoring and research - enhanced national and regional management links
Targeted actions:	- management/institutional strengthening - capacity-building - awareness/education - research/information for decision-making - investment

Strategic Action Programme for International Waters of Pacific Islands

I. Introduction

This Strategic Action Programme (SAP) for International Waters of the Pacific Islands Region was initiated and developed by the thirteen Pacific Island States participating in the work of the Global Environment Facility (GEF). The SAP represents a pioneering effort by our group of small island developing states (SIDS) to integrate our national and regional sustainable development priorities with shared global environmental concerns for the protection of International Waters.

The seminal impetus for the work that would ultimately culminate in this SAP was our decision¹ in 1990 to prepare a joint regional position to the 1992 United Nations Conference on Environment and Development (UNCED). UNCED provided the first opportunity for our islands to gather information, analyse the results and build a regional consensus on integrating environmental and developmental concerns into a sustainable whole, using the knowledge and experience gained in the twenty years since the Stockholm Conference on the Environment.

This consensus is embodied in the national and regional studies on sustainable development of our SIDS and the constraints. Their conclusions have been approved by our Governments. We undertook this considerable analytical effort because we realised the need for collective action to achieve a sustainable future for our islands. An overview of this effort to date follows; it became the starting point of the work of the National Task Forces leading to our SAP.

Our consensus position was elaborated in two fundamental documents submitted to UNCED in 1992: Environment and Development: A Pacific Island Perspective, and The Pacific Way: Pacific Island Developing Countries' Report to UNCED. The Perspective synthesises National Reports from the islands and presents extensive additional information on sustainable development in the region.² It is a supporting document for The Pacific Way, which presents a summary of the state of the environment for the islands and a description of the regional priority concerns, both of which continue to be applicable.³

At national level, Pacific Island States participating in this SAP assessed the state of their environment. We then went on to develop National Environmental Management Strategies (NEMS) or programmes with similar objectives, taking into account National Development Plans. Nearly all of this work is either adopted and published or expected to be adopted and available soon.⁴

¹This decision was taken at the third Intergovernmental Meeting of the South Pacific Regional Environment Programme (SPREP) held in Nouméa, New Caledonia, September 1990.

²The Perspective was developed with the financial assistance of the Asian Development Bank (ADB) and the United Nations Development Programme (UNDP).

³See, e.g., State of the Environment Reporting for the Pacific, 1996.

⁴NEMS: Cook Islands (1993), Federated States of Micronesia (1993), Kiribati (1994), Marshall Islands (1992), Nauru (draft under consideration), Niue (1994), Samoa (1994), Solomon Islands

(1993), Tonga (1993), Tuvalu (unpublished). Fiji, Papua New Guinea and Vanuatu have completed variants thereof.

At regional level, and over the same period since UNCED, the members of the South Pacific Organisations Coordinating Committee (SPOCC) reached similar conclusions within their respective mandates on priority concerns for sustainable development. Examination of these concerns engaged national experts in an ongoing regional dialogue, and enabled the islands to compare experiences and develop regional approaches.⁵

We found further confirmation of our assessment of our priority regional concerns in independent studies by, e.g., the Asian Development Bank (ADB) and the World Bank,⁶ and in GEF's Operational Strategy for International Waters. Independent reviews of our region's International Waters were commissioned to ensure that the SAP is based on the most current information available.⁷ These reviews concur that the ample and consistent information on sustainable development concerns and priorities for action in the region remain applicable.

For detailed and extensive descriptions of the full, current regional and national picture of environment and development in our islands, separate consultation is recommended of this comprehensive suite of documentation.⁸ Section III of the SAP briefly summarises the present regional context from these sources, which were provided to the National Task Forces for further ground-truthing during National Consultations for the preparation of the SAP.⁹

Since UNCED we have been actively involved in international programmes of action to address those global transboundary concerns which also reflect our priority transboundary concerns. These programmes have been taken into account in the SAP.¹⁰

⁵Examples of the range of topics addressed specifically to the needs of the region include: an inventory of land-based pollutants, the role of sediments as pollutants in and their transport to the ocean via rivers, an overview of destructive fishing practices, introduction of aquatic organisms, coastal management training needs, coastal protection trends and prospects, issues and activities associated with coral reefs and related ecosystems, natural resource accounting, traditional resource management and oceanic and coastal fisheries management.

⁶See, e.g., A Pacific Framework for Integrated Coastal Management (1994), ADB; Pacific Island Economies (1993), World Bank.

⁷The reviews especially commissioned for the SAP are: Review of Critical Marine Habitats and Species in the Pacific Islands Region by Chris Bleakley (1997); Review of Fishery Management Issues and Regimes in the Pacific Islands Region, by Garry L. Preston (1997); A Review of Non-living Resources and Threats in the Pacific Region, by Russell Howorth (1997); Strategies for Preventing and Mitigating Land-based Sources of Pollution to Transboundary Water Resources in the Pacific Region (1997), by Nancy S. Convard and Andrew Tomlinson.

⁸This work includes, e.g., the reports of the National Consultations, the State of the Environment Report or NEMS, the Action Plan for Managing the Environment of the South Pacific Region 1997-2000, the Draft Regional Strategy for Development Priorities of the Forum Island Countries, the Action Strategy for Nature Conservation in the South Pacific Region 1994-1998, the Report to the United Nations Commission on Sustainable Development (UNCSD) on Activities to Implement the Barbados Programme of Action in the Pacific Region (1996) and the 1992 report to UNCED in The Pacific Way. This documentation is fully referenced in the Bibliography, Annex 1.

⁹The reports of the National Task Forces are appended to the SAP in Annex 7.

¹⁰ The international programmes addressing our region's priority transboundary concerns in particular include:

- the Barbados Programme of Action for the Sustainable Development of Small Island Developing States (SIDS). To coordinate and facilitate its implementation, the South Pacific Forum set up an Advisory Committee in 1994. The Committee's achievements so far are described in its regionally agreed 1996 Report to the UNCSD. The report also reviews priority concerns and needed actions.
- the Global Programme of Action for the Protection of the Marine Environment from Land-Based

Our islands are widely scattered across but closely linked by the Pacific Ocean and they are remarkably diverse. Yet the very existence of this SAP and its profoundly country-driven nature demonstrate our determination to continue to seek a constructive unity in our diversity. With this SAP we aim to enhance a strong history of regional cooperation in sustainably improving the quality of life and protecting our fragile environment for our island peoples in a way that will achieve national, regional and global benefits.

II. International Waters

For purposes of this SAP, International Waters are defined in accordance with GEF's Operational Strategy. International Waters include oceans, large marine ecosystems, enclosed or semi-enclosed seas and estuaries as well as rivers, lakes, groundwater systems, and wetlands with transboundary drainage basins or common borders.

The water-related ecosystems and critical habitats associated with these waters are integral parts of International Waters, which extend inland and seaward. This is because the global hydrological cycle links watersheds, airsheds, estuaries, and coastal and marine waters through transboundary movement of water, pollutants and living resources. Oceans drive the hydrology and the climate of the planet. International Waters encompass all our islands and their health determines the quality of our life there.

GEF's definition of International Waters, with its emphasis on linkages between fresh and marine waters, watersheds and coasts, habitats and resources, could have been designed with our Pacific Islands in mind. Although separated by vast distances, our islands are linked and controlled by our marine environment. The waters and ecosystems within and between our Exclusive Economic Zones (EEZs) are vital to our existence. Our land-to-sea ratio is generally so small that, with the possible exception of the largest land masses of Papua New Guinea, all our islands are wholly coastal in character. This means that the whole island influences, or is influenced by, marine coastal and nearshore activities and processes. It also means that a natural or anthropogenic disaster such as a cyclone or an pollution accident often affects the entire society and economy of an island.

The twenty-two countries and territories of the Pacific Islands region consist of only 550,000 km² of land with 5.2 million inhabitants spread across 29 million km² of ocean. If Papua New Guinea is excluded, the figures drop to 87,587 km² and 2.2 million people. In contrast, our EEZs occupy about one-sixth of the earth's surface, or more than 30 million km². This area is three times larger than either the USA or China.

The importance of International Waters to our islands cannot be overstated; especially important are those waters and associated habitats in the coastal and nearshore area. It is here

Activities (GPA/LBA), adopted in 1995; regional implementation has commenced in the context of the South Pacific Regional Pollution Prevention, Waste Minimisation and Management Programme.

- the International Coral Reef Initiative (ICRI), adopted in 1995; implementation has begun of a specific Pacific Region Strategy developed and endorsed by Forum Island Countries.

that most of our people already live and work in ways that are dependent on healthy International Waters. Here also is focused most national planning for a variety of activities intended to enhance our prosperity by expanding our economic base. The success of national development planning for our SIDS is wholly dependent on the continued health of our International Waters.

III. The Region

A. Physical Setting

In addition to being widely separated from each other as nations, within our individual, national borders we are also widely dispersed. Other than Nauru and Niue, which are single-island countries, we are archipelagic. Many of our constituent islands are separated by vast expanses of ocean, entailing a unique set of sustainable development challenges.

The islands are of two basic types: a) "high," which are large, mainly of volcanic rock, forested, with fertile soil and usually with ample fresh water and b) "low," which are small, often atolls, mainly of coralline limestone, with few trees, poor soil and, usually, little fresh water.¹¹ The type of island is a major determinant of the types of ecosystems present and of the sustainable development options available.¹²

Climate conditions vary in the high islands; smaller islands have mild and humid weather with rainfall typically of 2m or more per year. All the islands lie in tropical latitudes, where sea surface temperatures generally stay above 20°C. These tropical areas are subject to trade winds and vulnerable to devastating cyclones both north and south of the equator.¹³

B. Biological Environment

The island nations have distinctly different terrestrial ecosystems ranging from very diverse and high endemism in large mountainous high islands to the west to quite low diversity and endemism in small low islands and atolls to the east. For some islands, 80% or more of the resident species are endemic. The high endemism is due to the isolated evolution of island species, which also renders these ecosystems vulnerable to disturbance, with a limited ability to recover once disturbed.¹⁴ Any habitat loss on a high island is likely to contribute to extinction of flora and fauna. Susceptibility to such loss depends heavily on the state of the native forests, which must be considered a habitat whose health is as critical to our islands' well-being as is the health of our coastal habitats. Indeed, the health of the latter is intimately linked with the health of the former.¹⁵

Our region is one of the global centers of marine biological diversity which provides the basis for the wealth of living natural resources whose benefits are shared by our communities and the rest of the world. The Western Pacific has the highest marine diversity and the most extensive coral reef systems in the world.¹⁶

¹¹Howorth (1997), op. cit. at note 7.

¹²Bleakley (1997), op. cit. at note 7.

¹³Howorth (1997), op. cit. at note 7.

¹⁴Bleakley (1997), op. cit. at note 7.

¹⁵The Perspective (1992), op. cit. at note 2, pp. 194-198.

¹⁶Bleakley (1997), op. cit. at note 7; Global Marine Biological Diversity (1993), edited by

Elliott A. Norse.

The marine habitats and species most critical to our sustainable development are briefly described below, although the importance of terrestrial habitats, especially forests, must not be forgotten.¹⁷ They are interdependent parts of complex natural processes, including food chains, biogeochemical cycles, sediment fluxes and currents. As such they are linked to the global environment. They are also central to our social and economic well-being. It is not possible to single out one habitat or species for separate management in our region.¹⁸

1. Critical Habitats

a. Coral reefs

Coral reefs are associated with all our islands and are the most important and extensive of the types of ecosystems in our region. Coral reefs provide a variety of vertebrate and invertebrate fishery resources for both commercial and subsistence purposes. They also provide income from tourism, coastal protection, sand for beaches, construction materials, reservoirs of biodiversity, breeding, nursery, feeding and shelter habitats and environmental health indicators.

b. Mangroves

Mangroves are common in the western part of the region and decline towards the east; in the region covered by this SAP only Cook Islands have none. The other Pacific Island nations each have a unique mangrove community structure.¹⁹ They help maintain coastal water quality by acting as a sink for sediments, nutrients, pollutants and contaminants; they provide coastal protection, breeding, nursery, feeding and shelter habitats, a variety of vertebrate and invertebrate fishery resources for both commercial and subsistence purposes, commercial and traditional uses for construction and handicraft materials, fuel wood, medicines, fungicides and dyes.

c. Seagrass beds

Like mangroves, seagrass beds are common in the west and decline towards the east; in the SAP region, only Cook Islands, Nauru and Niue²⁰ have none. They stabilise coastal sediments, provide breeding, nursery, feeding and shelter habitats, are critically important to the endangered dugong and sea turtle species, help to maintain coastal water quality by trapping and recycling nutrients and contribute significantly to coastal productivity.

d. Lagoons and Beaches

¹⁷Unless otherwise indicated, the information which follows, up to the section addressing fish, is principally drawn from Bleakley (1997), op. cit. at note 7.

¹⁸Pacific Regional Report on the Issues and Activities Associated with Coral Reefs and Related Ecosystems (1996).

¹⁹ICRI Pacific Regional Workshop (1996).

²⁰Ibid.

The region's lagoons vary widely, from those broadly open to the ocean to those that are completely enclosed, resulting in unique combinations of conditions and species. Lagoon fisheries are an important resource. Beaches are a dynamic and constantly changing coastal feature found throughout the region, and include landward dunes and sand bars and sand reservoirs offshore to seaward. They provide coastal protection, a tourist attraction, sand for cement and nesting areas for marine turtles.

e. Estuaries

Estuaries are common on high islands with well-developed watersheds. They support mangrove and seagrass areas, breeding, nursery, feeding and shelter habitats and a variety of vertebrate and invertebrate fishery resources for both commercial and subsistence purposes. Estuaries are among the richest and most productive of coastal habitats.

f. The Western Pacific Warm Pool Large Marine Ecosystem

Large Marine Ecosystems (LMEs) are regions where physical conditions and biological communities are so intricately linked and interdependent that the area should be managed as a whole.²¹ So far 49 potential LMEs have been identified; these are more coastal than oceanic.²² Recent research suggests that the Western Pacific Warm Pool might be an appropriate oceanic LME, whose boundaries correspond almost precisely to those of the Western Pacific tuna fishery, and which appear to encompass a functional physical and ecological unit which is of global significance.²³

2. Critical species

These species tend to share a number of the following characteristics (in no particular order): they are economically valuable, nutritionally important, relatively rare, sedentary, easy to catch or collect, slow-growing, slow to reach maturity and reproduce, important to ecosystem maintenance (keystone species), have few offspring and are found towards the upper end of the food chain.

Because of their enormous economic and nutritional value, the region's fish are considered critical as a group, which include four main tuna target species (albacore, big-eye, skipjack and yellowfin), tuna by-catch species, and fish found in reefs and lagoons. At least 3,392 distinct species of reef and inshore fish are known to occur in the region, which is more

²¹Large Marine Ecosystems "are large regions, often over 200,000 km², that have unique bathymetry, hydrography and productivity, and within which populations of plants and animals are assumed to have adapted reproductive, growth and feeding strategies, and where the close linking of physical conditions, biological communities and fish stocks indicate that the area should be managed as a single unit. They include upwellings, semi-enclosed seas, shallow shelf ecosystems on western ocean boundaries, coral reefs, ocean shelf-deltaic-riverain interactive systems." (Description by Sherman and Alexander, quoted in: A Global Representative System of Marine Protected Areas, Volume 1, p. 12, 1995.)

²²Preston (1997), op. cit. at note 7.

²³Ibid.

than half of those known to occur worldwide. By-catch species include billfish and oceanic sharks, as fish; also critical as a by-catch group are non-fish species, especially dolphins, turtles and seabirds.

Other economically and nutritionally critical species²⁴ in the region are: turtles, sharks, trochus, green snail, bêche-de-mer, giant clams, spiny lobster, coconut and mangrove crabs, helmet, trumpet and conch shells. The species critical for other reasons listed above are: dugongs, marine mammals, saltwater crocodile, and certain seabirds. The latter groups of species, and at least two species of seabirds in the region are already classified as vulnerable, threatened or endangered.

C. Cultural Characteristics

Ethnically, the islands are usually classified as either Melanesian (75% of the region's population), Micronesian or Polynesian. Their linguistic diversity is remarkable. The peoples of Melanesia, in particular, and those of Micronesia speak a large number of separate languages, and all are different from the languages of Polynesia. For example, more than 700 languages are spoken in Papua New Guinea, and over 100 in both Solomon Islands and Vanuatu; the four states of the Federated States of Micronesia each speak at least one different language. In Polynesia, each country usually has one language, but that language is very different as between countries. One-fourth of the world's languages are found in Pacific Island countries. This myriad of different languages is vital to social and cultural identity and to transfer traditional knowledge between generations, but it also adds considerable complexity in developing and implementing national management plans, especially at village level.²⁵

Various traditional authority systems exist; these are mostly matrilineal in Micronesia, patrilineal in Polynesia and vary in Melanesia, depending on the dominant members of a given society there. Religious institutions have enormous influence. The status and position of women differs considerably among Pacific Island states because of factors such as cultural traditions, colonial history and level of socio-economic development.

Perhaps the most distinctive cultural characteristic relevant to our sustainable development is the communal ownership and traditional systems of management of land, and usually the adjacent marine area, and the resources of both. This is prevalent in almost all island states, where up to 80% of land is under communal ownership. In many cases fishing rights are maintained from the beach to the seaward edge of outer reefs, and in some cases further offshore.²⁶

Specific ownership and management forms vary widely throughout the region, but all are essentially kin-based and subsistence-oriented.²⁷ These are not strictly systems of property or

²⁴These species are also identified as critical by Preston (1997), *op. cit.* at note 7.

²⁵The Perspective (1992), *op. cit.* at Note 2.

²⁶Bleakley, *op. cit.* at note 7, p. 18.

²⁷Land Tenure in the Pacific (1987), edited by Ron Crocombe.

territory in the Western sense, but are complex and profound expressions of a given island's social structure.²⁸ These traditional land and marine management and tenure systems also carry with them valuable knowledge about associated resources. In many local communities, chiefs maintain control over communal land and resource use, usually with powers that parallel and often supersede those of the national government.²⁹

Our traditional systems must be associated with achieving current economic, political and social goals of our islands. It will be difficult but it is essential to include appropriate and significant principles of traditional systems in national development planning and implementation if these plans are to be truly sustainable.

²⁸Traditional Resource Management in the Melanesian South Pacific: A Development Dilemma (1997), by G.B.K. Baines.

²⁹The Perspective (1992), op. cit. at Note 2.

D. Economic Structure

Our island states are at different levels of economic development, which can vary widely even within one state. Nevertheless, our economies generally share the following elements, in no particular order:³⁰ a narrow resource base, small domestic markets, high costs for energy, access, infrastructure, transportation, communication and servicing; substantial dependence on imported petroleum and on external trade, long distances from export markets and import sources, low and lumpy international traffic volumes, vulnerability and little resilience to natural disasters (at present cyclones generally, earthquakes in certain countries, and possibly sea level rise in the future), burgeoning populations, low economic growth, domination by the public sector, limited opportunities for the private sector, and fragile natural environments.

For the region overall economic growth since the early 1980s has been very low.³¹ Meanwhile, our population has been growing at a natural rate of at least 2.3% per year, a rate which was already considered unsustainable at the beginning of this decade.³² In many of our countries per capita GDP has been declining, or, at best, remaining stagnant. Youth unemployment is one particularly worrying concern. The mutually exacerbating combination of high natural population growth and low economic growth is probably the most important long-term sustainable development issue facing our islands.³³

Population distribution varies widely. Migration to urban areas, usually the national or provincial capital, is steadily increasing. These urban areas are invariably located on the coast. The urban growth rate is at least 50-100% higher than the already large overall population growth rates.³⁴ National averages do not adequately reflect the actual densities found in some parts of the countries, many of which have extraordinarily high concentrations of people in the urban area and very low densities in rural parts of the "capital" island and on outer islands. Already in the early nineties, seven of our countries were more than 50% urban, and the others had at least a quarter of their population living in urban areas.

A distinctive economic characteristic of our region is the predominance of non-monetary subsistence production to provide for basic needs. Both the monetary and subsistence economies of our states are largely based on agriculture, fisheries and tourism. Agriculture, fisheries and tourism are critically dependent on a healthy environment. National economies are augmented by

³⁰The following is compiled from several sources, including: The Perspective (1992), op. cit. at note 2; the Pacific Way (1992), op. cit. at note 8; Pacific Island Economies (1993), op. cit. at note 6; Report to UNCSD on the Barbados Programme of Action (1996), op. cit. at note 8; Bleakley (1997) and Preston (1997), op. cit. at note 7, and comments from the Forum Secretariat (1997).

³¹The six World Bank Pacific Member Countries (Fiji, Kiribati, Samoa, Solomon Islands, Tonga and Vanuatu) averaged 2.2% growth from 1983-1993; the GDPs of most Pacific Island countries fluctuated around 1-3% during 1994-1995.

³²The Pacific Way (1992), op. cit. at note 8; Pacific Island Economies (1993), op. cit. at note 6.

³³Preston (1997), op. cit. at note 7; UNDP (1994), cited therein, p. 10.

³⁴Bleakley, op. cit. at note 7, p. 18.

substantial development aid and, particularly in Polynesia, by cash remittances from relatives overseas. The significance of cash remittances varies widely in the region; they are not reflected in GDP figures.

Agriculture is the largest employer, producing subsistence food such as root crops and garden vegetables and primary commodities such as copra and other coconut products, cocoa, sugar (Fiji) and coffee for export income. Timber production and mining is significant in parts of Melanesia. Non-traditional crops are being tried, such as vanilla and ornamental flowers. Some smaller, atoll islands are physically unable to produce enough food for their populations and must depend upon imported food. Other islands depend on imported food to the extent that their land is being used for export crops.

Despite the importance of agriculture, the amount of arable land per capita in the region is small; atolls have the poorest soil and a consequently even higher dependence on marine resources than high islands. Compared with our tiny land area, the economic importance and potential of our extensive marine area is considerable. Currently, this potential is primarily manifested in the fisheries sector. A brief overview follows.³⁵

Fisheries in the region operate on a variety of scales: at one end are large-scale, high-technology, export-oriented industrial fisheries and at the other are small, labor-intensive, low-technology, subsistence and artisanal fisheries for domestic consumption, with a mix of methods and outlets falling between these two extremes. Although there is some degree of overlap, the sector is usually analysed in two categories:

- a) oceanic fisheries, which primarily include the international tuna fishery straddling the Western Central Pacific Ocean
- b) coastal fisheries, which include reefs, lagoons and estuaries.

The oceanic fishery produces about 1 million tonnes of tuna and an unknown quantity of by-catch per year, most of which is harvested by about 1,300 fishing vessels from 21 countries. About 7% of the catch is taken by Pacific Islanders, and around 400 industrial-scale tuna vessels are based in Pacific Island countries. The annual expenditure of these locally based vessels is estimated at about \$100 million.

The international tuna fishery provides our region with an important source of export revenue, largely through access license fees, although these are a small proportion (about 3.7% or USD\$68 million) of the total value of the regional tuna catch, which was USD\$1.7 billion in 1995, up from about USD\$375 million in 1982. The tuna catch now represents around 10% of the combined GDP of all the nations of the region, and a third of the value of all exports from the region. It provides 6-8% of all wage employment in the region. About 10,000 Pacific Islanders are formally employed on tuna vessels and in tuna processing plants; direct and indirect tuna-related employment is estimated at between 21,000-31,000 people. In terms of actual food, however, less than 0.25% of the international tuna catch enters the domestic food supply of our islands.

The Pacific Islands region is the most important tuna fishing area of the world. About a

³⁵A comprehensive review of living marine resource management regimes and issues specially commissioned for this SAP is found in Preston (1997), op. cit. at note 7. The discussion of tuna fisheries is derived from this review and from written comments on this section by the Forum Fisheries Agency.

third of all tuna in the world comes from this region, and its tuna fisheries dwarf those of the other three main tuna fishing areas both in volume and value. From a regional perspective, tuna produces over nine times the amount of fish as all of the other fisheries of the region combined. In terms of value, the tuna fishery is worth over six times that of all other Pacific Island fisheries combined.

The coastal fishery produces about 108,000 tonnes per year of a highly diverse range of finfish (including tuna), invertebrates and algae by thousands of male and female subsistence, artisanal and commercial fishers from the region itself. Tuna forms a substantial component of the catch of both subsistence and artisanal fisheries, and in terms of volume tuna appears to be the most important family of fish for small-scale fisheries.

The contribution of the fishery sector to public health and welfare is often insufficiently appreciated. Fisheries and related activities have cultural, religious and recreational significance that are vital to social and community cohesion.

In addition to employment, coastal fisheries provide a key source of subsistence protein: only about 20% of the fish and invertebrate catch enters the cash economy. Tuna makes up a substantial portion of all fish consumed, especially in the most economically vulnerable countries of the region. Fish is nutritionally essential to households that are unable to obtain equally sustaining alternative protein sources. The food security situation in several Pacific Island countries, many of which are already categorized by the Food and Agriculture Organisation (FAO) as Low Income Food Deficit Countries, would be even more precarious in the absence of tuna and other fish. Future population pressures, together with the fully exploited nature of inshore and coastal fisheries, mean that the future food security of the region will become increasingly more reliant on its tuna resources.

The quantity of non-tuna exports from domestic capture fisheries is perhaps 5% of coastal fishery production, derived from bottom fish, reef fish and crustaceans. The principal exports by value are *bêche-de-mer* and shell products from trochus and green snail.

The economic contribution of the fishery sector as a whole to the region must not be underestimated, especially because national assessments significantly undervalue its actual importance to national GDP because of inadequate accounting for artisanal and subsistence production.

Women play an important economic role in inshore marine resource use; they, rather than men, are the principal regular suppliers of marine protein for the family meal. The men tend to fish further offshore and for more commercial purposes.³⁶ A large proportion of the subsistence fishery for family consumption is comprised of invertebrates, which are gathered almost exclusively by women.³⁷ Their role as a source of information on the status of the coastal environment is critical, and their involvement in managing the environment is essential to successful management.³⁸

Tourism is showing substantial growth in the region, with receipts of US\$ 723 million, representing about 5% of the region's GDP, in 1994. Receipts were nearing US\$ 1 billion in

³⁶Preston and Bleakley (1997), *op. cit.* at note 7, both strongly emphasise this point in their reviews.

³⁷Preston (1997), *op. cit.* at note 7, p. 18.

³⁸Bleakley (1997), *op. cit.* at note 7, p. 16.

1996. This regional aggregate does not adequately define the importance of tourism to individual economies, with two countries not participating in this SAP accounting for about 42% of those receipts.³⁹ The aggregate figure also does not reflect the different levels of development of tourism in countries in the region. Tourism has considerable economic potential if managed sustainably. The South Pacific region has ideal resources to satisfy the growing interest in cultural and eco-tourism. If development is undertaken so as not to erode the environmental conditions, it will enable the region's unique products to be offered in a highly competitive international market. Tourism places an economic value on cultural and natural resources that can ensure the resources are used in a sustainable manner. Tourism is critically dependent on the management of a healthy environment.

E. Legal Framework

1. International

Our Pacific Island States are linked in a complex group of binding regional and global international agreements which govern sustainable development of International Waters in general and the marine sector in particular. These agreements form an extensive and evolving international legal framework within which our sustainable development activities take place and with which our present and planned activities must comply, for those of us who are full parties, or at least not undermine, for those of us who are as yet only signatories. The SAP is designed to be consistent with and assist in the implementation of our international commitments.

To keep this section to a size somewhat proportionate with the remainder of this overview, the discussion is necessarily brief and furthermore limited to agreements immediately related to the highest priorities, which are primarily land-based, identified in the SAP. Hence it was not possible to address the important, complex and extensive suite of treaties developed under the auspices of the International Maritime Organisation (IMO) dealing with the activities of vessels. Nevertheless, we recognise that, under UNCLOS and the SPREP Convention, the IMO treaties must be addressed as well, and in particular those treaties dealing with vessel-source pollution. Waste management is identified as one of the priority issues under this SAP, and integrated waste management planning requires the inclusion of vessel-based waste.

a. The 1982 United Nations Convention on the Law of the Sea

From the plethora of treaties addressing or affecting International Waters, the most important for this SAP is the 1982 United Nations Convention on the Law of the Sea (UNCLOS, entry into force: 1994), which is the fundamental global treaty addressing International Waters. Of all relevant binding international instruments in force, it is by far the most comprehensive in scope and the most powerful in terms of both rights accorded to and obligations assumed by its parties. All but one of the countries participating in the SAP are either full parties (9) or

³⁹French Polynesia and New Caledonia. Of those states participating in the SAP, Fiji, Papua New Guinea, Vanuatu, Samoa, Solomon Islands and Tonga, in descending order of receipts, all had tourism income in 1996 ranging from US\$ 301 million in Fiji to US\$ 12.6 million in Tonga, according to the latest figures released by the Tourism Council of the South Pacific (TCSP).

signatories (3) to UNCLOS.⁴⁰ UNCLOS is supplemented by an agreement on deep seabed mining⁴¹ and the Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea....Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks.⁴²

⁴⁰As of 25 July 1997, full parties are: Cook Islands, Federated States of Micronesia, Fiji, Marshall Islands, Nauru, Papua New Guinea, Samoa, Solomon Islands and Tonga; signatories are: Niue, Tuvalu and Vanuatu. Kiribati is not a signatory.

⁴¹Agreement Relating to the Implementation of Part XI of the United Nations Convention on the Law of the Sea (adopted 1994).

⁴²As of July 25, 1997, Cook Islands, Federated States of Micronesia, Fiji, Nauru, Papua New Guinea, Solomon Islands, Samoa and Tonga have become parties; Vanuatu is a signatory.

UNCLOS has been described as "a constitution for the oceans."⁴³ This Convention arose from and is specifically founded on the proposition that "**the problems of ocean space are closely interrelated and need to be considered as a whole.**"⁴⁴ This guiding precept is illustrated clearly by, for example, Part XII on the marine environment, which addresses pollution of the marine environment from any source, including those sources from land and air as well as from the sea. In keeping with its constitutional nature, UNCLOS is designed to facilitate development of agreements addressing or affecting specific marine issues in requisite detail and at appropriate operational levels. In its holistic approach to management of International Waters, GEF's Operational Strategy is consistent with UNCLOS.

Although much remains to be done in our region to implement UNCLOS,⁴⁵ compatible actions undertaken pursuant to other international and regional conventions addressing or affecting marine issues may be viewed as a promising start to implementing UNCLOS as well, as are compatible actions developed in the context of international and regional organisations addressing and affecting marine issues. Such conventions, organisations and actions include those described below and in the following two parts of this overview.

b. The Convention on Biological Diversity

In the context of this SAP, which requires linkages to other GEF focal areas, the Convention on Biological Diversity⁴⁶ (CBD, 1992) and the Framework Convention on Climate Change⁴⁷ (FCCC, 1992) are important.

In implementing the CBD, the Jakarta Mandate on Marine and Coastal Biological Diversity (1995) sets out a programme specifying that action should be taken by parties in five areas; the first three are particularly relevant to this SAP and in the same order of priority action: Integrated Marine and Coastal Area Management, Marine and Coastal Protected Areas and Sustainable Use of Coastal and Living Marine Resources.⁴⁸

⁴³Remarks by H.E. Tommy T.B. Koh, President of the Third United Nations Conference on the Law of the Sea, at the final session of the Conference in December 1982. *The Law of the Sea*, UN Official Text (1983), p. xxxiii.

⁴⁴UNCLOS, Preamble, third paragraph. *The Law of the Sea*. UN Official Text (1983), p. 1. Attempts in the nineteen fifties and sixties to deal with ocean issues individually in separate treaties had been unsuccessful.

⁴⁵See, e.g., *Environmental Law in the South Pacific* (1996), edited by Ben Boer; *Evaluation of the Implications of the United Nations Convention on the Law of the Sea for SPREP Activities* (1996), by Martin Tsamenyi.

⁴⁶In 1996 10 Pacific Island states participating in this SAP are parties to the CBD: Cook Islands, Fiji, Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Papua New Guinea, Samoa, Solomon Islands and Vanuatu. Non-parties are Niue, Tonga and Tuvalu.

⁴⁷Only Tonga is not a party to the FCCC, of the countries participating in this SAP.

⁴⁸The other two are: Implementing Environmentally Sustainable Mariculture Practice and Introduction of Alien Species. This list is taken from: *Biodiversity in the Seas* (1996), by de Fontaubert *et al.* Note that these are also issues in the Pacific Islands region, but they have not been identified for immediate priority action under this SAP.

In the Pacific Islands region, implementation of the CBD has commenced through the South Pacific Biodiversity Conservation Programme (SPBCP). It is funded by GEF and executed by SPREP, containing regional and national, terrestrial and marine components with local community participation as a unifying theme. The SPBCP has supported the establishment of sixteen community-based conservation area projects in the region. Two species-focused regional programmes consistent with the CBD and UNCLOS are the Marine Turtle and the Marine Mammal Conservation Strategies, executed by SPREP.

As required under UNCLOS and the CBD, the SAP also took into account other international conventions specifically concerned with protection of species and habitats. These include (in order of entry into force): the Whaling Convention,⁴⁹ the World Heritage Convention,⁵⁰ CITES,⁵¹ the Wetlands or Ramsar Convention⁵² and the Migratory Species or Bonn Convention (1979).⁵³ A draft Regional Wetlands Action Plan for the Pacific Islands has been developed under the auspices of SPREP that could assist in implementing relevant provisions of, e.g., the CBD, the Wetlands Convention and UNCLOS.⁵⁴ The actions proposed in this SAP are compatible with the CBD and will contribute directly and indirectly to the conservation of marine and terrestrial biological diversity in our region.

c. The Framework Convention on Climate Change

Comprehensive and coordinated support by GEF to the Pacific Island parties for implementation of their national reporting obligations under the FCCC commenced in 1997 under the Pacific Islands Climate Change Assistance Project (PICCAP), executed by SPREP. A second phase of CC:TRAIN, the GEF-funded global climate change training programme, is expected to assist at least nine Pacific Island countries.

Pacific Islands are particularly vulnerable to the effects that climate change may have on sea level rise. The actions proposed in this SAP with regard to, in particular, protection of critical habitats, will have the additional benefit of mitigating effects of sea level rise.

⁴⁹International Convention on the Regulation of Whaling, Washington, 1946 and Protocol, International Whaling Commission, 1956.

⁵⁰Convention Concerning the Protection of the World Cultural and Natural Heritage, Paris, 1972. None of the participants in this SAP are parties; only Solomon Islands and Fiji are signatories.

⁵¹Convention on International Trade in Endangered Species, Washington, 1973. Of the states participating in this SAP, only Papua New Guinea and Vanuatu are parties.

⁵²The Convention on Wetlands of International Importance Especially as Waterfowl Habitat, Ramsar, 1971 (entry into force: 1975; 1982 Protocol). Of those participating in this SAP, only Papua New Guinea is a party.

⁵³Convention on the Conservation of Migratory Species of Wild Animals, Bonn, 1979.

⁵⁴Annex 6.2 of the Report of the ICRI Pacific Regional Workshop (1995).

2. Regional

The main regional conventions relevant to International Waters are, in order of entry into force: the Forum Fisheries Convention,⁵⁵ the Wellington or Driftnet Convention,⁵⁶ the Apia Convention,⁵⁷ the Nouméa or SPREP Convention⁵⁸ and the Niue Treaty.⁵⁹ Not yet in force is the Waigani Convention.⁶⁰ The Forum Fisheries, Wellington and Niue Conventions address oceanic fisheries.

The Nouméa Convention places the most extensive responsibilities on its parties with regard to protecting the marine environment. The Nouméa Convention includes land-based activities affecting the marine environment; thus parties also have terrestrial obligations under this Convention, as they do under UNCLOS. It is implemented largely through the SPREP Action Plan (currently 1997-2000), which is approved by the Heads of Government at the annual SPREP meeting, who also review the progress of the Action Plan.

The Apia Convention addresses both terrestrial and marine habitats. It is implemented through an Action Strategy adopted at a dedicated Conference held every four years. The achievements of the current Action Strategy⁶¹ will be reviewed at the Sixth Conference, to be held in Pohnpei in October 1997. The Action Strategy also aims to ensure consistency with the CBD and its implementing programmes, in particular the SPBCP and other relevant regional plans.

In this section attention has primarily been given to legally binding international and regional treaties and conventions. A number of non-binding but widely endorsed international instruments relevant to this SAP have been considered.⁶² Despite their non-binding nature, these

⁵⁵The South Pacific Forum Fisheries Convention, Honiara, 1979.

⁵⁶The Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific, Wellington, 1989.

⁵⁷The Convention on the Conservation of Nature in the South Pacific, Apia, 1990.

⁵⁸The Convention for the Protection of Natural Resources and Environment of the South Pacific Region and its two Protocols on, respectively, prevention of pollution by dumping and cooperation in combating pollution emergencies, Nouméa, 1990. Of the Pacific Island States participating in this SAP, Cook Islands, Federated States of Micronesia, Fiji, Marshall Islands, Nauru, Papua New Guinea, Samoa and Solomon Islands are parties; Tuvalu is a signatory; Kiribati, Niue, Tonga and Vanuatu are not signatories.

⁵⁹The Treaty on Cooperation in Surveillance and Law Enforcement in the South Pacific, Niue, 1993.

⁶⁰The Convention to Ban the Importation into Forum Island Countries of Hazardous and Radioactive Wastes and to Control the Transboundary Movement and Management of Hazardous Wastes within the South Pacific Region, Waigani, adopted in September 1995, not yet in force.

⁶¹ Action Strategy for Nature Conservation in the Pacific Region 1994-1998, adopted at the Fifth South Pacific Conference on Nature Conservation and Protected Areas, Tonga, October 1993.

⁶²Such instruments include (in order of adoption): Agenda 21 (1992), the Barbados Programme of Action for SIDS (4/1994), the International Coral Reef Initiative (ICRI, 5/1994), the Code of Conduct for Responsible Fisheries (10/1995), the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (11/1995) and the ICRI Pacific Regional Strategy (12/1995).

instruments are useful in developing state practice and in helping to establish a presumption in favor of such practice becoming "generally recommended," a status which, under UNCLOS, contributes to the eventual evolution of that practice into international law.⁶³

⁶³The Duty to Respect Generally Accepted International Standards (1991), by Bernard H. Oxman.

3. National

At national level, implementation of conventions has been fragmentary. This is due to several factors, including a limited awareness of the implications of the conventions and the extent of the obligations imposed. These obligations engage numerous divisions of national administrations, which need enhanced capacity to develop cross-sectoral approaches. A related issue is the general need for Pacific Island nations to develop integrated national legislation that supports sustainable development policies, and that is also consistent, enforceable and in keeping with appropriate customary principles. The requisite institutional and administrative capacity and mechanisms are largely insufficient at present.⁶⁴

F. Intergovernmental Cooperation

Intergovernmental cooperation for Pacific Island development started again after World War II, with the establishment in 1947 of the South Pacific Commission (SPC), the oldest intergovernmental organisation in the South Pacific. As the issues to be addressed by the governments of the region increased in scope and complexity, four other regional intergovernmental organisations with different mandates were created between 1971 and 1979.⁶⁵ Their activities are coordinated by the South Pacific Organisations Coordinating Committee (SPOCC), formed for that purpose. The role and function of each organisation are regularly reviewed.⁶⁶ The regional system for dealing with marine issues spans an extensive range of activities.

The South Pacific Commission (SPC), with 27 members, is one of the major general development agencies in our region. Under its apolitical mandate, it provides advisory, consultative and training services to governments on scientific, economic, social, environmental, health, agricultural, rural development, community health, education, demographic and cultural matters. Its broad marine experience ranges from village-level and coastal projects such as

⁶⁴See, e.g., *Environmental Law in the South Pacific* (1996), *op. cit.* at note 45; the critical reviews by, respectively, Bleakley, Convard, Howorth and Preston (1997), *op. cit.* at note 7; *Evaluation of Implications of UNCLOS for SPREP Activities* (1996), *op. cit.* at note 45; *Report on the Sub-regional Meetings to Identify Coastal Management Training Needs*, by SPREP (1995), *Overview of Destructive Fishing Practices in the Pacific Island Region*, by Joeli Veitayaki *et al.* (1995), *Pacific Island Economies* (1993), *op. cit.* at note 6; *The Perspective* (1992), *op. cit.* at note 2; *The Pacific Way* (1992), *op. cit.* at note 8.

⁶⁵These four are, chronologically: the South Pacific Forum (SPF), convened for the first time in 1971 with its Secretariat established in Suva, Fiji in 1973; what is now known as the South Pacific Applied Geoscience Commission (SOPAC), created in 1972, also based in Fiji; The South Pacific Regional Environment Programme (SPREP), created in 1976 and now based in Apia, Samoa; the South Pacific Forum Fisheries Agency (FFA), established in 1979 and based in Honiara, Solomon Islands. The other members of SPOCC are (in alphabetical order): the Pacific Islands Development Programme (PIDP) at the East-West Center in Honolulu, HI, the Tourism Council for the South Pacific (TCSP) in Suva, Fiji, and the University of the South Pacific (USP), with several branches in the region and headquartered in Suva, Fiji.

Unless otherwise indicated, the information in this section is based on the final report of the review of regional institutional arrangements in the marine sector, commissioned by SPOCC, (1995), *The Perspective* (1992) *op. cit.* at note 2, and comments from SPOCC members (1997).

⁶⁶A review focussing on institutional arrangements in the marine sector, was commissioned by SPOCC and completed in 1995. The recommendations of the review of ForSec have now been implemented. A review of SPC was undertaken earlier this year.

transfer of appropriate boat-building technology, subsistence and artisanal fisheries research and development, coastal fishery stock assessment and protection, all through its Coastal Fisheries Programme, to scientific research on oceanic fisheries, especially tuna and billfish, in its Oceanic Fisheries Programme. The latter prepares an annual report on the status of tuna stocks, monitors and compiles regional tuna fishery statistics, and is studying the dynamics of the Warm Pool of the Western Pacific, an LME which encompasses much of the region. The SPC works closely with the Forum Fisheries Agency (FFA) in this area.

The Forum Fisheries Agency (FFA) was established pursuant to the Forum Fisheries Convention (FFC) in 1979, and serves as the FFC's secretariat. The FFA developed from the consideration that a regional approach would be an effective way for Pacific Island countries to capitalise on opportunities being created in the mid-1970s by the Third United Nations Conference on the Law of the Sea, which were dramatically altering international thinking on ownership, management and use of ocean resources.⁶⁷ FFA's 16 members include 14 Pacific Island nations, Australia and New Zealand, but, purposely, no distant water fishing nations (DWFNs). For fisheries issues, this difference between FFA and SPC in eligibility for membership is an important distinction between the two organisations.

FFA's objective is to assist members with sustainable development and management of their fisheries and related activities. FFA advises members on, e.g., maritime boundary delimitation, legal, technical and economic issues, monitoring and surveillance of foreign fishing activity, human resource and institutional strengthening, applied fisheries research, policy assessments and representation at international fisheries meetings. FFA is developing opportunities to increase member country involvement in existing foreign-based operations.

FFA helped conclude and serves as the secretariat for the Wellington Treaty and Niue Convention. It takes a key role in assisting member countries to develop effective and comprehensive fisheries management arrangements for tuna across the full geographical range of the stock, including the high seas. It collaborates with SPC in pelagic fisheries data.

The South Pacific Forum is comprised of all 16 independent and self-governing nations of the Pacific Islands region, whose Heads of Government meet annually. Its secretariat (ForSec) executes the requirements of the Heads of Government expressed at the annual meetings. The Secretary-General of ForSec provides the permanent Chair of SPOCC and the Division of Development and Economic Policy serves as SPOCC's secretariat; ForSec thus provides the lead coordination role in the region.

ForSec's mission is to enhance the economic and social well-being of the people of the Pacific Islands, in support of the efforts of national governments. Its responsibility is to facilitate, develop and maintain cooperation and consultation between and among its members on issues such as trade, economic development, transport, energy, telecommunications and other related matters. It seeks to support its members in pursuing their objectives through multilateral fora.

⁶⁷This Conference would culminate in the 1982 UN Convention on the Law of the Sea (UNCLOS), discussed further in section E of this part.

Currently, ForSec is concentrating on development and economic policy, trade and investment policy, and political and international affairs. Focal areas include economic reforms (especially public sector restructuring), development planning and cross-sectoral sustainable development issues. ForSec also aims to assist private sector development, to provide financial support to encourage exports and improve industrial skills, improve the regional investment climate and increase awareness in its members of developments in the international trading environment. The Pacific Forum Line is an example of a commercial marine enterprise resulting from consultations within the framework of the Forum: it is a commercial shipping service set up, owned and managed by 10 Forum members to meet specific regional needs. ForSec provides advice and coordination services in international relations, security and law enforcement issues and assists with legislative drafting.

ForSec is assessing developments in the Asia-Pacific Economic Cooperation (APEC) process and represents its members on the Pacific Economic Cooperation Council (PECC). It maintains a direct practical role with key regional donors, including the European Union (EU).

The South Pacific Applied Geoscience Commission's (SOPAC) overall mandate is to assist its members in assessment, exploration and development of their nearshore and offshore mineral and other marine non-living resource potential. Its work also includes baseline data for coastal engineering and development, hazard evaluation, assistance and training for local hydrography and "lands and survey"-type activities. SOPAC advises Pacific Island states on environmental effects of physical modifications to the coast. SOPAC has regional responsibility for the water and sanitation sector; it coordinates with SPC on health-related issues and SPREP on pollution issues.⁶⁸

The University of the South Pacific (USP) was created by royal charter. It is governed by the University Council comprising representatives from its twelve member countries.⁶⁹ USP provides tertiary education and undertakes scholarly and applied research and is closely involved on educational matters with the Pacific Island governments, in most of whose countries it has a branch. In the marine sector, USP features a Marine Studies Institute and Programme and cooperative projects with other regional intergovernmental agencies such as FFA and SOPAC. Environmental and pollution monitoring and EIAs are significant activities of the Institute of Applied Science. The International Ocean Institute undertakes training for regional personnel in marine and coastal management issues.

The Tourism Council of the South Pacific (TCSP)⁷⁰ is jointly owned by its 12 member countries. Its role is to work with national tourist offices, international airlines and tour operators to increase visitor arrivals in the region, to market and promote tourism and to help the private sector enhance the quality of their products and services through a variety of programmes on training, tourism awareness and preservation of the environment. TCSP's other services include production and distribution to the travel industry worldwide of South Pacific Travel Manuals and Guides in English, French and German, organising regional participation at international travel exhibitions, maintaining an internet site (SPICE) and collection and dissemination to the region of tourism statistics, sector reviews, environmental guidelines and visitor surveys.⁷¹

The Pacific Islands Development Programme (PIDP) has 22 members. It draws academic resources from regional and international organisations to plan and conduct projects mainly concerned with private sector development, senior-level private and public sector management training, formulation of national development policies and strategies and publication of research results on these topics.

⁶⁸Of the countries participating in this SAP, Nauru and Niue are not members of SOPAC.

⁶⁹Of the countries participating in this SAP, the Federated States of Micronesia and Papua New Guinea are not members of USP.

⁷⁰The following is drawn from the TCSP's own public information materials (1997) and TCSP's comments on this section.

⁷¹Of the countries participating in this SAP, Federated States of Micronesia, Nauru and Marshall Islands are not members of TCSP.

The South Pacific Regional Environment Programme (SPREP) is the regional technical and coordinating body responsible for environmental matters in the Pacific region. Its membership comprises 26 Pacific Island States, territories and metropolitan countries, all of whom have agreed that their mission in this organisation, facilitated by its secretariat, is to "promote cooperation in the South Pacific region and to provide assistance in order to protect and improve its environment and to ensure sustainable development for present and future generations. SPREP shall achieve these purposes through the Action Plan adopted from time to time by the SPREP meeting, setting the strategies and objectives of SPREP."⁷² The Action Plan for 1997-2000 was adopted at the Ninth SPREP meeting in November 1996. The principal goal for the next four years is to "build national capacity in environmental and resource management through support to government agencies, communities, NGOs and the private sector."⁷³ SPREP also serves as the secretariat for the Apia and Nouméa Conventions; it will serve as the secretariat for the Waigani Convention when the latter enters into force.

The Economic and Social Commission for Asia and the Pacific (ESCAP), through its Pacific Operations Center (ESCAP/POC) in Port Vila, and backed-up by its Environment and Natural Resource Division at its headquarters in Bangkok, Thailand, provides a variety of advisory services to Pacific Island countries. In recent years these services have included reviews of national marine fisheries economics and management and of other issues related to sustainable development. ForSec has assigned to ESCAP and SPREP the joint responsibility for monitoring and reporting on the implementation of the Barbados Programme of Action in the region.⁷⁴

G. Non-governmental Organisations

Non-governmental organisations (NGOs) are playing a steadily increasing role in our region's sustainable development. They vary widely in their approach, the services they provide, issues they address and their level of focus which may be local, national, regional and international. International NGOs active in this region which address environmental aspects of sustainable development include Greenpeace International, the Nature Conservancy, and the World Wide Fund for Nature (WWF). A unique form of non-governmental and intergovernmental organisation is represented by the IUCN World Conservation Union, whose programmes are described in section H below.

Regional NGOs include the Foundations for Peoples of the South Pacific International (FSPI; now with branches in most Pacific Island countries), Maruia Society, Meltrust (the umbrella organisation of national, local community-based development NGOs located in New Caledonia, Papua New Guinea, Solomon Islands and Vanuatu) and the South Pacific Action Committee on the Human Environment and Ecology (SPACHEE).

National Councils of Women are established in all Pacific Island States and serve as the

⁷²Article 2 of the Agreement Establishing SPREP (1993).

⁷³SPREP Action Plan 1997-2000, p. 5.

⁷⁴Information provided by Dr. Charles Kick, ESCAP/POC, 1997.

umbrella women's organisation in most countries. Church and women's groups are also active; the latter particularly assist women to improve their family's standard of living. Traditional leadership councils often work as a form of NGO in determining land and coastal waters management; they are gaining legal recognition for this role.

National NGOs play an important role in sustainable development in the region. Their methods of operation, autonomy and sources of funding vary widely. Establishment of effective partnerships between NGOs, the private sector and government will be essential to sustainable development.

H. Global Programmes

The Pacific Island region is involved in a variety of international programmes related to International Waters. A brief, indicative selection follows.

- FAO's Fishery and Forestry programmes
- ICLARM and WCMC's Global Database on Coral Reefs and their Resources (ReefBase)
- IMO's programmes for the prevention of vessel-based pollution
- IUCN - the World Conservation Union - has many programmes of relevance to the SAP, particularly the Marine and Coastal Programme and the global network focussed on developing a Global Representative System of Marine Protected Areas.
- UNDP's Capacity 21 Programme, with four main components related to sustainable development: national frameworks, planning and financing, land and sea resources management capacity and contribution of landholder organisations.
- UNEP's Regional Seas Programme in which the Noumea Convention and the SPREP Action Plan represent the Pacific Islands.
- UNESCO/IOC programmes including: Environment and Development in Coastal Regions and Small Islands; IOC/UNEP/WMO Global Ocean Observing System; Global Coral Reef Monitoring Network.
- WHO's Healthy Islands Programme

IV. Transboundary Environmental Concerns

The preparations for UNCED first enabled us to clearly identify and agree on principal environmental concerns shared by all the Pacific Island States.⁷⁵ These concerns were (no priority implied):

- a. Proliferation of waste in various forms on our land and into our waters
- b. Degradation of land (includes deforestation (high islands), agrodeforestation (high & low islands), soil erosion and coastal erosion
- c. Depletion or loss of coastal/inshore living marine resource and other species
- d. Degradation of freshwater quality
- e. Degradation and loss of habitats.⁷⁶

These concerns became - and have remained - for us the priority environmental issues in the region on which we have focussed since UNCED through appropriate regional organisations.⁷⁷

⁷⁵Certain concerns, such as salinisation, air pollution, sea-based pollution, and the effects of mining are not considered significant regional issues at present, although they are nationally significant for certain states in our region.

⁷⁶See, e.g., The Pacific Way (1992), op. cit. at note 8.

⁷⁷See, e.g., Report to UNCSD on Activities to Implement the Barbados Programme of Action (1996), op. cit. at note 8.

After the focal area and definition of International Waters was set out in GEF's Operational Strategy and work on this SAP began, we reviewed our priority regional environmental concerns in this more inclusive, globally focused, transboundary context.⁷⁸ Table 1 presents the environmental and socio-economic effects of each concern which have transboundary implications.

Viewed globally, our International Waters are of considerable importance. Our region is a major centre in the world for marine biodiversity, with remarkably high levels of terrestrial biodiversity and endemism (particularly on our high islands) as well. Our region is also home to or provides migratory, nursery, breeding or feeding grounds for globally significant populations of vulnerable, rare and endangered species, including marine turtles, dugong, seabirds and certain cetaceans.⁷⁹

We have the most extensive system in the world of marine habitats (especially coral reefs) that are critical to maintaining this biodiversity. The global role of these extraordinarily productive systems as carbon sinks, and thus as potential moderators of the effects of climate change, cannot be underestimated, though it remains to be precisely quantified.⁸⁰

These habitats are also globally significant as natural filters of land-based pollution and as natural protection against storms and sea-level rise.⁸¹ The natural filters help maintain the health of offshore waters, ecosystems and associated species including oceanic fisheries. The natural coastal protection helps maintain the physical security of our own people, their homes and their livelihoods, and of commercial enterprises that also depend on a protected coast, such as international tourism and shipping.

Furthermore, through their function as breeding, nursery and feeding grounds, these habitats help maintain internationally important fish stocks, some of which range over the full width of the Pacific Ocean. One reviewer remarks that: "the tuna fishery of the Western Central Pacific Ocean is one of only two remaining major fisheries in the world still considered to be in healthy condition and amenable to increased exploitation. This fishery, and the large marine ecosystem on which it is based, is a global asset which requires the concerted attention and support of the international community if it is to be managed sustainably."⁸²

In addition to providing an important source of food to the rest of the world, primarily through our oceanic fisheries, the health of our International Waters is also important to maintain our own domestic food security, source of income and employment, and social and cultural

⁷⁸The Report of the Brainstorming Session on International Waters by the Scientific and Technical Advisory Panel (STAP), 1996, was found helpful in setting our regional priorities in the context of transboundary concerns.

⁷⁹Bleakley (1997), op. cit. at note 7.

⁸⁰Oceanography: A View of the Earth (1995), by M. Grant Gross.

⁸¹Reviews by Bleakley, Convard, Howorth, Preston (1997), op. cit. at note 7.

⁸²Preston (1997), op. cit. at note 7. p. 2.

cohesion and welfare, in particular through our coastal fisheries and other resources. Environmental refugees and the attendant social unrest are becoming an increasing international problem. Maintaining the health of our International Waters will help us ensure that our people do not risk becoming part of this issue.

Viewed in terms of activities that affect the health of International Waters, many if not all of our priority concerns are already or will soon become transboundary by virtue of the fact that these activities are prevalent in all thirteen of our island countries. This prevalence is likely to have deleterious and cumulative effects on International Waters which will, if unchecked, seriously impair the health of International Waters in and far beyond our region. This assessment is supported by evidence of detrimental effects on the waters in and around our islands already.

Finally, we considered the importance of our regional water system in a global context. **We see ourselves as the custodians of one-sixth of the earth's surface, of which less than 2% is land, and which harbors unique, diverse and fragile forms of life** on that land and in its waters.⁸³ The Pacific Island region covered by this SAP is arguably the largest regional water system on earth. This system is internationally shared not only by us, the participants in this SAP, but also by fourteen other states and territories in the Pacific region. This water system is also vital to the continued health of the planet as a whole. It is likely to be at risk from our priority concerns; viewed in terms of their effect on International Waters as a system, these concerns are interdependent and mutually exacerbating nationally, regionally, and so, inexorably, globally.

We came to three conclusions from our globally-focused review. First, our priority concerns remain essentially unchanged. Second, many, if not all of these concerns are transboundary in their linkages throughout our region with disquieting consequences for the International Waters we share and on which we all crucially depend. Finally, viewed from the global perspective of the effects of our priority concerns on International Waters, three overarching transboundary concerns could be identified within which our regional priorities could be clustered. These are:

1. Degradation of the quality of our International Waters (regional priority concerns a,b,d,e)
2. Degradation of their associated critical habitats (regional priority concerns a,b,d,e)
3. Unsustainable use of living and nonliving resources (regional priority concerns b,c,e)

V. Imminent Threats

Our International Waters are subject to a number of threats giving rise to the transboundary concerns. The preparation process for this SAP included the identification of these threats from a regional perspective and an assessment of their imminence by the reviewers. The National Task Forces were asked to review their conclusions. The reviewers each examined the threats to International Waters from a different perspective: critical species and their habitats, living marine resources and non-living resources. Their findings were clear, consistent and bolstered even more by having been arrived at from these different points of departure, as illustrated by a brief overview of the threats as perceived by each reviewer.

The three sets of threats to **critical species and habitats**⁸⁴ consist first of several forms of land-based sources of pollution. The most serious threat is nutrients derived from sewage, soil

⁸³The Perspective (1992), op. cit. at note 2, p. 147.

⁸⁴Bleakley (1997), op. cit. at note 7, pp. 16-18.

erosion and agricultural fertilisers. Nutrient overloads particularly affect coral reef ecosystems, weakening the reef carbonate skeleton and smothering the reef with algae. The other two most serious land-based pollution threats are solid waste disposal and sedimentation. Sedimentation is derived from soil erosion, dredging, coastal development and upstream, inland activities.

The second set of threats derives from physical alterations of the seabed or coastline, in particular through destruction of fringing reefs, beaches, wetlands and mangroves for coastal development and by sand extraction. The final set of threats derives from overexploitation. Coastal food fisheries, especially near urban areas, are under pressure from overfishing, as are commercially valuable vertebrate and invertebrate export species.

Tropical marine systems can be remarkably robust in recovering from severe natural disturbances such as cyclones. But this natural resilience may be weakened in the face of chronic threats such as overfishing, pollution, elevated nutrient levels and sedimentation. Mitigating these threats is vital not just for the species and habitats themselves, or even just as resources, but also for the sake of maintaining the overall health of marine systems.

The threats to **living marine resources**⁸⁵ are divided into two sets: overexploitation and environmental degradation. Overexploitation, principally of inshore fisheries, is exacerbated by destructive fishing methods, which include explosives and various types of toxic compounds such as traditional vegetable poisons, household bleach, cyanide and herbicides,⁸⁶ and by inappropriate government incentives for coastal fisheries. Environmental degradation in the islands is manifested in a number of ways, whose effects often exacerbate each other.⁸⁷ In many cases the degradation is chronic, with gradual rather than sudden changes in the resources, making the relationship between cause and effect less obvious, and reducing the likelihood of timely and appropriate action being taken. Fisheries management efforts alone, whether carried out with regard to specific resources or to the ecosystem as a whole, may be insufficient to protect coastal fisheries in the absence of actions to mitigate the deleterious effects of these threats.

Finally, the **non-living resource**⁸⁸ that all the Pacific Islands share and that is most seriously threatened is the quality of both fresh and marine water. Groundwater is at particular risk because its loss or degradation is often irreversible. The principal threat to water is from land-based sources of pollution. These derive in particular from sewage (poor sanitation), sediments (soil erosion, agriculture, forestry), urban runoff, agro-chemicals and solid waste.

⁸⁵Preston (1997), op. cit. at note 7, pp. 23-25.

⁸⁶A detailed, country-by-country description of this threat and its effects in the Pacific Islands is provided by the Overview of Destructive Fishing Practices (1995), op. cit. at note 64.

⁸⁷The threats to living marine resources from coastal degradation are:

- organic pollution from human settlements (sewage), agricultural practices (fertilisers) or food processing activities (sugar mills, fish canneries and transshipment sites)
- increased freshwater runoff and siltation from logging, mining, land clearance, coastal construction and other major disturbances to watersheds and the terrestrial ecosystem
- loss of fish nursery grounds and other critical habitats, especially mangroves and seagrass beds, due to deforestation, reclamation or other coastal activities
- physical damage to habitat from coastal sand and gravel mining, dredging, coastal construction, blasting of reef passages, use of destructive fishing methods (explosives) and shipwrecks
- chemical pollution from agriculture (pesticides), industrial sites, mining, petrochemical extraction and handling, ships running aground and use of poisons for fishing.

⁸⁸Howarth (1997), op. cit. at note 7, pp. 33-39.

Beaches, reef flat sand and coastal aggregates are another major non-living resource that is threatened by overexploitation; extraction rates far exceed natural replenishment rates. Beaches are also an important habitat.

We concluded that three overarching imminent threats to our International Waters could be derived from the reviews:⁸⁹

1. their pollution from land-based activities
2. physical, ecological and hydrological modification of their critical habitats
3. unsustainable use of their living and nonliving resources

We consider prioritisation of the threats to be inappropriate, because each threat affects each concern. Pollution from land-based activities threatens water quality, critical habitats and sustainable use of resources. Habitat modification of the habitats threatens those habitats, water quality and sustainable use of resources. Excessive exploitation of resources threatens their sustainable use, the habitats and water quality. The linkages between the imminent threats to and the transboundary concerns for International Waters require comprehensive measures to address the concerns effectively.

VI. Root Causes of the Transboundary Concerns

The root causes were examined in their legal, institutional, socio-economic and environmental context. Differentiating between proximate and ultimate root causes was found to be a useful analytical approach.⁹⁰

It was evident from the analysis that each imminent threat was composed of a subset of contributory physical problems which each had their own proximate root causes. These problems differ both in type and severity and hence in the nature and extent of the effect of the overarching threat on the transboundary concerns. Based on prior regional and national studies, the commissioned reviews, and the work of the National Task Forces, priorities were also established among the contributory physical problems in terms of the severity of their effects on the transboundary concerns. The results are presented in Table 2.

The ultimate root causes of the threats were found in factors that influence the actions of our island peoples in such a way as to result in the degradation of our International Waters. Based on prior regional and national studies, the commissioned reviews, and the work of the National Task Forces, priorities were also established among those factors. The results are presented in Table 3.

⁸⁹Our conclusions were also supported by regional work cited elsewhere (see, e.g., notes 2, 6 and 8) and the ground-truthing by the National Task Forces.

⁹⁰Proximate causes are those producing the actual, demonstrable physical effects that threaten International Waters and thus culminate in the transboundary concerns. Ultimate root causes are those that influence human actions which then result in the proximate causes of the observable physical effects. The innovative work of Dr. Laurence Mee on proximate and ultimate root causes in the GEF focal area of International Waters must be recognised; the analysis in this SAP has benefitted from his paper: International Waters and Environmental Security (1997).

We recognised that an ultimate root cause underlying the imminent threats is deficiencies in management. The management issue permeates our society at all levels: from the individual citizen right on up through the household and the village to private companies, national government and regional organisations. Management deficiencies can be grouped into two linked subsets: a) governance and b) understanding. The governance subset is characterised by the need for mechanisms to integrate environmental concerns, development planning and decision-making. The understanding subset is characterised by the need to achieve an island-wide ecosystem awareness in our people. Table 4 presents the management issues arising under the two subsets.

This provides a focus for intervention to protect International Waters.⁹¹ For example, the governance mechanisms envisaged include those which enable timely identification of development plans for activities which affect International Waters. They must ensure that these plans explicitly consider other and alternative uses, including environmental uses and effects, and all relevant stakeholders. Planning time scales must be expanded to comprise long-term costs and benefits as well. The mechanisms must support the taking of clear, motivated decisions and their enforcement.

Successful application of these governance mechanisms involves the understanding subset. Understanding includes the ability to access and use information related to resources and environment. Narrow, short-term individual sector-based perceptions of International Waters resources by managers and users must also change to an inclusive and generally equitable perspective. Increasing the understanding of these issues by the general public is central to achieving effective management. Improved understanding of the consequences of behavior by the people will assist with enforcement of management decisions. Sustainable development is a national objective that requires active, correctly informed engagement by all citizens.

The independent reviews commissioned for this SAP and the other work referred to above confirm both our own and the GEF's assessment of the priority transboundary concerns, their root causes and, consequently, the fundamental need for improved integrated cross-sectoral management of the resources of our International Waters to achieve sustainable development.

VII. Information Gaps

Our analysis also revealed a set of information gaps relevant in particular to the work of decision-makers (as opposed to researchers) in developing ways to address ultimate root causes and to respond to imminent threats. These information gaps are presented in Table 5. The islands already share national information through various regional mechanisms, which is also required by the regional Conventions and UNCLOS. Improving information input and exchange at regional and national levels is an objective of this SAP.

⁹¹We note that our identification of management deficiencies as an ultimate root cause of the degradation of our International Waters is consistent with the assessment of this issue for SIDS by GEF.

Attention is particularly drawn to the lack of strategic information presented in an appropriate manner to decision-makers, resource users, managers and communities to evaluate costs and benefits and decide between alternative activities. This information is vital to planning for International Waters, because the uses of these waters are so versatile. That very versatility is a significant asset in a development portfolio. Appropriately and adaptively managed with correct information, International Waters can sustainably support a variety of uses which are now more generally perceived as conflicting and mutually exclusive.

Information gaps do not prevent actions being taken. The gaps serve as a salutary reminder of the need to apply the precautionary principle in developing activities and choosing between alternatives, and of the corollary that preventing environmental problems almost always costs far less than trying to remedy them after they occur.

VIII. Proposed Solutions

We propose to address the root causes of degradation of International Waters through regionally consistent, country-driven targeted actions that integrate development and environment needs. These actions are designed to encourage comprehensive, cross-sectoral, ecosystem-based approaches to mitigate and prevent imminent threats to International Waters. The SAP provides the regional framework within which these actions are identified, developed and implemented. Targeted actions will be carried out in two complementary, linked consultative contexts: Integrated Coastal and Watershed Management (ICWM) and Oceanic Fisheries Management (OFM).

A fundamental criterion for the success of targeted actions is the establishment of appropriate ecosystem management units for national sustainable development planning. These management units are the same for both developmental and environmental purposes. On our islands these units should be comprised of upstream watersheds and their adjacent coastal and offshore areas. Adding the inland watershed to the management unit for development planning is essentially an upstream extension of the principles of Integrated Coastal Management (ICM). The lack of effective mechanisms to include upstream activities has hampered the achievement of ICM. Furthermore, such few models for this form of management as do exist are derived from large, well-endowed countries, and are inappropriate for Pacific Islands. Hence the development of the ICWM approach by our islands is established by the SAP.

A complementary consultative context established by this SAP is Oceanic Fisheries Management (OFM), which concentrates initially on the tuna fishery. The international complexities and specialised requirements of the oceanic fisheries sector involves DWFNs, regional organisations and national governments in ongoing consultations at the highest level.⁹² The Western Pacific Warm Pool Large Marine Ecosystem is proposed for investigation as a suitable management unit. Enhancement of regional fishery management in light of developments with regard to the UN Convention on the Law of the Sea and the UN Implementing Agreement, innovative ecosystem-based management approaches in the context of an LME, research on the status of tuna stocks, examination of by-catch and other components of the ecosystem and the integration of those aspects of oceanic fisheries relevant to overall national and regional International Waters resource management are the principal elements of the OFM approach.

Crucial to the organizing principle and implementation of the SAP is the recognition that ICWM and OFM are interdependent elements along the continuum that is the essence of International Waters. As with the great oceanic gyres, ICWM and OFM are flywheels with cogs that drive each other, but the mechanisms governing their relationship are not well understood. The SAP aims to improve that understanding. Through the ICWM and OFM approaches, the SAP sets out a path for the transition by our islands from sectoral to integrated management of International Waters as a whole, which we consider to be essential for their protection over the

⁹²The most recent of these was the Second Multilateral High-Level Conference on the Management and Conservation of Highly Migratory Fish Stocks in the Western and Central Pacific, Majuro, Republic of the Marshall Islands, June 1997.

long term.

The SAP meets the objectives of GEF's operational programme entitled "Integrated Land and Water Multiple Focal Area," to which International Waters projects addressing the needs and special conditions of small islands are assigned by GEF. Interventions under the SAP will necessarily include three other pressing concerns in our sustainable development planning, namely: biodiversity, vulnerability to climate change and land degradation. The first two are GEF focal areas and the latter is a GEF cross-cutting area.⁹³ Consequently, the SAP is expected to involve and build upon the complementary skills and experience available from organisations and groups active in the region.

Our region is the beneficiary of much development assistance from a variety of donors for a wide range of projects. Donors and the islands will be able to use the SAP to plan and coordinate regional and national development assistance for International Waters to address imminent threats and their root causes more effectively. The SAP will facilitate the choice and design of high priority interventions, remove duplication, and ensure that projects do not work at cross-purposes. Funding from GEF *per se* can only support a small proportion of such interventions, hence the importance of the SAP to organise and leverage additional assistance in order to receive maximum benefit from the available funds. The SAP is designed to comply with the requirements of GEF, but also, and perhaps more importantly, to be a framework for overall national and regional planning and assistance for the management of International Waters.

The SAP complies with the legal framework for regional cooperation and related obligations established by the regional Conventions, UNCLOS, CBD, FCCC and other international conventions within which the Pacific Island countries identify common issues and coordinate national approaches to address those issues. Application of ICWM and OFM approaches will facilitate further joint action between sectors nationally and between governments regionally. As experience with ICWM and OFM grows, this SAP will also evolve, reflecting the increased knowledge of and changing conditions in the environment of our islands. To ensure that the SAP remains a living, evolving and useful instrument for sustainable development, and to assess and apply lessons learned from its implementation, the SAP will be reviewed every five years.

IX. Priorities for Action

Achieving the goals of the SAP is a long-term effort. It is necessary to maintain regional and national momentum, build in feedback and learning loops, and be able to measure success in incremental but encouraging steps. We are also mindful that we cannot address all sustainable development issues related to International Waters in this SAP at once. Therefore we have initially identified the following high priority activity areas for immediate intervention. These are:

- improved waste management
- better water quality

⁹³These are also the remaining three of the seven major issues identified in the Barbados Programme of Action as common to most islands. The other three major small island issues from the Barbados Programme have already been addressed above, and the seventh, tourism, can only be effectively dealt with in this type of framework for national sustainable development.

- sustainable fisheries
- effective marine protected areas.

Targeted actions within these activity areas are proposed in the following five categories: management, capacity-building, awareness/education, research/information for decision-making, and investment. Institutional strengthening is included under management & capacity-building.

The targeted actions are designed to:

- assist decision-makers in changing sectoral development policies to make them consistent with sustainable development,
- facilitate and catalyse GEF funding and "regular" assistance⁹⁴ from the IAs and other donors,
- benefit from and be coordinated with other relevant national, bilateral, regional and international sustainable environment/development initiatives in the Pacific Islands,
- assist with the implementation of international treaty obligations and commitments,
- promote collective action to address regional issues and minimise duplication of effort.

The analytical framework within which proposals for assistance should be evaluated under the SAP is set out below.

Goal of SAP: Integrated sustainable development and management of International Waters

Priority Concerns: Degradation of water quality
 Degradation of associated critical habitats
 Unsustainable use of resources

Imminent Threats: Pollution from land-based activities
 Modification of critical habitats
 Unsustainable exploitation of resources

Ultimate Root Causes: Management deficiencies
 a) governance
 b) understanding

Solutions: Integrated Coastal and Watershed Management
 Oceanic Fisheries Management

ICWM Activity Areas: - improved waste management
 - better water quality
 - sustainable coastal fisheries
 - effective marine protected areas

OFM Activity Areas: - sustainable ocean fisheries
 - improved national and regional management capability
 - stock and by-catch monitoring and research
 - enhanced national and regional management links

Targeted actions: - management/institutional strengthening

⁹⁴In assessing the proposals, it is important to note that the baseline and agreed incremental cost section of the project proposals are indicative estimates only, given that the incremental costs must be agreed between the GEF and the recipient country. Determining incremental costs is a process to be initiated within the framework of the SAP. These project proposals are the initiation of that process, for further elaboration between the relevant national authorities, the GEF and the Implementing Agencies. Detailed technical negotiations between the country and GEF are expected. The Operational Strategy envisages that the IAs will assist substantively, each according to its specialisation, with the development of project proposals from concept papers to full project proposals.

- capacity-building
- awareness/education
- research/information for decision-making
- investment

From a regional perspective, the SAP is designed to encourage proposals with diverse applications that achieve global benefits while maintaining the fundamental unity of approach and discipline established by the SAP. The SAP intends to enable development of projects reflecting the different national styles and circumstances of each participating country, and it is designed to be sufficiently flexible to accommodate these differences. This variety will enable rapid regional learning, provide examples of approaches tailored to disparate situations and assist national adaptations as countries analyse and share the results of their work.

As the first SAP for International Waters of SIDS to be developed under the auspices of the GEF, we are also concerned that our work be available and useful to other groups of SIDS. Insofar as they may share our transboundary concerns and the root causes, we hope that our proposed solutions will serve as examples for consideration beyond our own region.

Table 1: Environmental and Socio-economic Effects

I. Transboundary concern: Degradation of water quality

A. Threat: Land-based sources of pollution

1. Sewage-related liquid and solid microbial pollution

Environmental effects

- a. Marine and aquatic organism infections and diseases*
- b. Depletion of fish stocks and biodiversity*
- c. Changes in biological diversity and food webs*

Socio-economic effects

- a. Human health effects*
- b. Increased costs of human health protection
- c. Loss of tourism/recreation value*
- d. Loss of aesthetic values
- e. Increased intake treatment costs
- f. Increased potential for upstream/downstream conflicts*
- g. Increased costs of alternative water supplies
- h. Increased costs of medical treatment and prevention
- i. Increased costs of fisheries product processing*

2. Solid waste (domestic, industrial, litter, dredge spoil)

Environmental effects

- a. Habitat loss*
- b. Hydrological modification
- c. Entanglement/suffocation of marine organisms*
- d. Beach and sediment compositional changes
- e. Endangerment of species

Socio-economic effects

(a)-(d) in (1) above

- e. Endangerment of commercial species*
- f. Loss of property value
- g. Increased costs of wildlife protection
- h. Increased costs of clean-up
- i. Increased costs of navigational surveys and dredging*

3. Nutrients (includes sewage and fertilisers)

Environmental effects

- a. Redox changes (extreme anoxia)
- b. Eutrophication

- c. Increased algal blooms
- d. Changes in algal community
- e. Changes in macrophyte community
- f. Changes in fish community with loss in case of anoxia
- g. Loss of habitat (e.g., coral reefs)*
- h. Changes in biological diversity and food webs*

Table 1: Environmental and Socio-economic Effects (continued)

3. Nutrients (includes sewage and fertilisers)
Socio-economic effects
(a)-(d) in (1) above
(e)-(f) in (2) above
g. Loss of water supplies*
h. Costs of water treatment
i. Change in fisheries value*
j. Compromise of options for aquaculture development
k. Loss of property values
l. Costs of weed control
m. Loss of wildlife (including migratory bird) sanctuaries*
n. Increased costs of navigational clearance*
o. Increased costs of fish surveillance & processing for toxin prevention*
p. Costs of reduced fish marketability*

4. Sediments
Environmental effects
a. Habitat modification*
b. Changes in biological community composition*
c. Changes in species growth/survival/reproduction*
d. Increased erosion
e. Increased sedimentation/siltation
f. Destruction by smothering of benthic communities*
g. Changes in sediment redox conditions (organics)
h. Loss of water quality

Socio-economic effects
a. Increased costs of navigational surveys and dredging*
b. Loss of reservoir storage capacity
c. Damage to equipment from particle scouring
d. Loss of tourism/recreational values*
e. Increased water treatment costs
f. Increased costs of coastal protection from waves/storms/erosion
g. Increased costs of cleaning intakes
h. Increased vulnerability to sea level rise*

5. Toxic wastes (domestic, agricultural, industrial, hazardous)
Environmental effects
a. Reproductive dysfunction in organisms*
b. Behavioral dysfunction in organisms*
c. Modified community structure*

- d. Increased mortality of organisms*
- e. Changes in biological diversity and food webs*

Table 1: Environmental and Socio-economic Effects (continued)

5. Toxic wastes (domestic, agricultural, industrial, hazardous)
Socio-economic effects
 - a. Loss in fisheries*
 - b. Loss of protected areas*
 - c. Increased costs of human health protection
 - d. Increased costs of fish processing*
 - e. Reduced options for other uses
 - f. Increased costs of water treatment
 - g. Loss of tourism/recreation value*
 - h. Potential for upstream/downstream conflict*

6. Spills
Environmental effects
 - a. Increased mortality in bird & other marine/aquatic life*
 - b. Habitat damage*
 - c. Long-term contamination of beaches & sediments with associated ecological changes*
Socio-economic effects
 - a. Costs of clean-up
 - b. Costs of preventive measures
 - c. Costs of contingency measures
 - d. Real or perceived damage to fisheries
 - e. Loss of tourism/recreation values (temporary/permanent)*
 - f. Costs of litigation
 - g. Costs of insurance
 - h. Loss of protected areas and associated wildlife*
 - i. Costs of disruption to shipping, fishing, science & other activities during clean-up*

Table 1: Environmental and Socio-economic Effects (continued)

II. Transboundary concern: Degradation of critical habitats

A. Threat: Physical, ecological and hydrological modifications of critical habitats

Environmental Effects (common to all seven ecosystems)

- a. Loss of natural productivity
- b. Loss of biodiversity*
- c. Loss of natural storm barriers*
- d. Loss of natural protection from erosion
- e. Loss of carbon sinks & release of carbon to atmosphere*
- f. Loss of migratory species using the habitat*
- g. Altered migratory patterns*
- h. Effects on adjacent marine ecosystems*
- i. Damage to endangered, threatened or endemic species*
- j. Changes in community structures
- k. Loss of natural filtration/cleansing systems*
- l. Spread of disease*
- m. Spread of exotic species*
- n. Physical downstream changes of coastal dynamics*
- o. Changes in ecosystem stability
- p. Loss of environmental assimilative capacity*
- q. Possible outbreaks of ciguatera

Socio-economic effects (common to all seven ecosystems)

- a. Reduced capacity to meet basic human needs (food, fuel, shelter) for local populations
- b. Changes in employment opportunities for local populations & associated changes in social structures
- c. Loss of aesthetic/recreational values for local populations
- d. Loss of existing & future income from fisheries, tourism*
- e. Loss of possible new commercial opportunities for the ecosystem (e.g., pharmaceuticals)
- f. Human migration*
- g. Human conflicts*
- h. Loss of educational and scientific value*
- i. Loss of land due to loss of physical protection
- j. Health damage/loss of life due to loss of physical protection
- k. Increased costs of responding to risks
- l. Disregard of intergenerational equity*
- m. Loss of cultural heritage*
- n. Costs of replacing natural protections with substitute services

- o. Increased vulnerability to sea level rise*
- p. Loss of opportunity for sustainable economic development*
- q. Costs of restoration

Table 1: Environmental and Socio-economic Effects (continued)

2. Freshwater shortage (ground and surface)
 - Environmental Effects
 - a. Water quality change
 - b. Saltwater intrusion
 - c. Land subsidence
 - d. Reduced aquifer capacity and recharge
 - e. Reduced vegetation cover
 - f. Increased soil erosion
 - g. Increased penetration of pollutants/contaminants
 - h. Desertification/land degradation*
 - i. Reduction in stream flow
 - j. Modification of riparian habitats*
 - k. Changes in sediment budgets
 - l. Depletion of fishstocks and species diversity*
 - m. Decreased wetland areas*
 - n. Reduced groundwater recharge
 - o. Reduced capacity to transport sediments
 - p. Increased siltation
 - q. Changes in biological diversity and food webs*
 - r. Alteration of coastal ecosystems*
 - Socio-economic Effects
 - a. Damage to infrastructure
 - b. Increased costs for pumping and deepening wells
 - c. Loss of drinking water supply
 - d. Increased potential for upstream/downstream conflicts*
 - e. Loss of future use options
 - f. Increased cost of alternative water supplies
 - g. Increased vulnerability to sea level rise*
 - h. Loss of agricultural uses
 - i. Loss of tourism/recreational value*
 - j. Loss of aesthetic values
 - k. Loss of coastal harbors and inland transport*
 - l. Loss of hydro-electric power production
 - m. Loss of industrial uses
 - n. Reduced availability of fish for food
 - o. Loss of waste assimilative capacity*
 - p. Population migration*
 - q. Potential for conflict*

Table 1: Environmental and Socio-economic Effects (continued)

3. Species depletion or loss
Environmental effects
 - a. Loss of biodiversity*
 - b. Loss of natural productivity
 - c. Effects on adjacent ecosystems*
 - d. Changes in community structures
 - e. Damage to endangered, threatened or endemic species*
 - f. Changes in ecosystem stability
 - g. Loss of migratory species using the habitat*
 - h. Altered migratory patterns*
 - i. changes in population genome & gene frequencies*
 - j. Reduction of gene pool of wild stocks
Socio-economic effects
 - a. Loss of existing & future income from fisheries, tourism*
 - b. Loss of protein for human consumption

4. Introduction of non-indigenous species
Environmental effects
 - a. Long-term changes in population genome & gene frequencies*
 - b. Reduction of gene pool of wild stocks
 - c. Loss of biodiversity in breeding areas/ecosystems
 - d. Replacement of/competition with indigenous species
 - e. Pest/disease introduction
Socio-economic effects
 - a. Increased risks for commercially valuable species*
 - b. Increased risk of disease

Table 1: Environmental and Socio-economic Effects (continued)

III. Transboundary concern: Unsustainable resource use

A. Threat: Excessive exploitation

1. Overfishing (primarily inshore)

Environmental effects

- a. Changes in biological community structure*
- b. Depletion of key commercial species*

Socio-economic effects

- a. Reduced economic returns to country
- b. Loss of employment
- c. Conflict between user groups*
- d. Loss of protein for human consumption/health effects
- e. Loss of import substitution function
- f. Loss of cash income

2. Destructive fishing (primarily inshore)

Environmental effects

- a. Changes in biological community structure
- b. Habitat modification*
- c. Loss of protected species*
- d. Decreased productivity
- e. Possible increase in crown-of-thorns starfish
- f. Retarded recovery after natural destructive events

Socio-economic effects

- a. Loss of tourism/recreational values*
- b. Loss of earnings/employment
- c. Possible ciguatera outbreaks
- d. Loss of food protein
- e. Loss of coastal protection (reef destruction)
- f. Physical harm to fishers employing the methods
- g. Possible human health effects of tainted/poisoned food
- h. Loss of commercial species

3. Excessive by-catch and discards (inshore and oceanic)

Environmental effects

- a. Changes in food webs favoring scavengers
- b. Changes in biological community structure*
- c. Loss of protected species*

- d. Loss of sports species*

Socio-economic effects

- a. Loss of income from tourist sport-fishing
- b. Loss of food protein sources
- c. Loss of income from target species (more work for less target catch)

Table 2: Proximate Root Causes

I. Transboundary concern: Degradation of water quality

A. Threat: Land-based sources of pollution

1. Sewage-related liquid and solid microbial pollution
 - a. direct discharge of untreated or poorly treated sewage, animal and hospital wastes into water or onto land
2. Solid waste (domestic, industrial, litter, dredge spoil)
 - a. deliberate dumping
 - b. casual discards
 - c. thoughtlessness
 - d. limited waste disposal options
3. Nutrients (includes sewage and fertilisers)
 - a. sewage
 - b. fertilisers/animal wastes in agriculture
 - c. soil/sediment erosion, leaching, remobilisation
 - d. draining of wetlands
 - e. dredging, damming
 - f. intensification of cash cropping
 - g. water impoundment
4. Sediments
 - a. soil erosion by runoff/aeolian transport
 - b. land/road development (excavation, earthmoving, construction, logging)
 - c. sewage/sewage sludge discharges
 - d. urban waste discharges
 - e. intensification of cash cropping
 - f. dredging
 - g. mining
5. Toxic wastes (domestic, agricultural, industrial, hazardous)
 - a. urban/industrial waste discharge
 - b. leachates from solid waste landfill

- c. weed/pest control, including antifoulants
 - d. disease vector control
 - e. road runoff
6. Spills
- a. Inadequate accident minimisation measures
 - b. Inadequate contingency response measures
 - c. Human error
 - d. Force majeure

Note: increased growth and density of population and urbanization is a major proximate root cause common to the issues in Table 2.

Table 2: Proximate Root Causes (continued)

II. Transboundary concern: Degradation of critical habitats

A. Threat: Physical, ecological and hydrological modifications of critical habitats

1. Destruction or modification of ecosystems*
 - a. conversion/use for food, fuel, industry, waste dumping, agriculture, aquaculture, construction, infrastructure (housing, hotels, harbors, ports, marinas, airports, causeways)
 - b. subsistence/survival needs
 - c. poverty
 - d. lack of employment
 - e. upstream activities (agriculture, logging, damming)
2. Species depletion or loss**
 - a. all of the above under (1)
 - b. destructive fishing practices
3. Freshwater shortage (ground and surface)
 - a. increased demand from population growth, food production, cash cropping, urbanisation, tourism, industrialisation, life style changes
 - b. urban drainage and impermeability
 - c. rural land use patterns
 - d. agro-deforestation
 - e. impoundments, damming, canalisation
4. Introduction of non-indigenous species
 - a. Discharge of untreated ballast water
 - b. Deliberate introduction of stock (aquaculture/recreation/pest control)

*In approximate order of vulnerability: coral reefs, mangroves, lagoons, seagrass beds, wetlands, estuaries, beaches.

**In approximate order of vulnerability: turtles, crocodiles, dugong, certain cetaceans, sharks, spiny lobster, coconut crab, seahorses, seabirds; no order: bêche-de-mer, certain fish, giant clams, green snail, grouper (live), pearl oysters, trochus.

Table 2: Proximate Root Causes (continued)

III. Transboundary concern: Unsustainable resource use

- A. Threat: Excessive exploitation
 - 1. Overfishing (primarily inshore)
 - a. too many boats and too many fishers
 - b. subsistence/survival needs
 - 2. Destructive fishing (primarily inshore)
 - a. inappropriate technology
 - b. poor harvest procedures
 - c. need for cash
 - d. traditional fish "drives"
 - 3. Excessive by-catch and discards (primarily oceanic)
 - a. poor fishing gear selectivity (especially purse seine/longline)
 - b. fishing tactics (e.g., around debris, associated non-target species such as porpoises)
 - c. overfishing of target species
 - d. perishability
 - e. lack of storage facilities
 - f. low economic value

Table 3: Ultimate Root Causes

I. Transboundary concern: Degradation of water quality

A. Threat: Land-based sources of pollution

1. Sewage-related liquid and solid microbial pollution
 - a. inadequate regulation of waste disposal
 - b. lack of enforcement
 - c. institutional deficiencies
 - d. inadequate management expertise
 - e. uncoordinated sectoral management
 - f. failure to charge costs of environmental degradation
 - g. lack of capacity to repair/maintain existing systems
 - h. sectoral/fragmented water quality monitoring/assessment
 - i. no reuse of organic waste, sewage, sludge, effluent
2. Solid waste (domestic, industrial, litter, dredge spoil)
 - a. (a)-(g) above under (1)
 - b. increased use of unnecessary packaging
 - c. customary land tenure conflicts over dump siting
 - d. deficiencies in land-use planning
 - e. no EIA used for dump sites
 - f. no business planning for waste disposal
 - g. deficiencies in or no recycling programmes
3. Nutrients (includes sewage and fertilisers)
 - a. (a)-(h) above under (1)
 - b. deficiencies in land-use planning
 - c. no EIA for land development
4. Sediments
 - a. (c)-(h) above under (1)
 - b. (b)-(c) above under (3)
5. Toxic wastes (domestic, agricultural, industrial, hazardous)
 - a. (a)-(h) above under (1)
 - b. lack of infrastructure to transfer technology
6. Spills
 - a. Lack of development & implementation of preventive & remedial measures
 - b. Lack of governmental capacity, will or budget

Table 3: Ultimate Root Causes (continued)

II. Transboundary concern: Degradation of critical habitats

- A. Threat: Physical, ecological and hydrological modifications of critical habitats
1. Destruction or modification of ecosystems
 - a. lack of integrated coastal area/watershed management
 - b. lack of EIA in development planning
 - c. deficiencies in land-use planning
 - d. uncoordinated sectoral management
 - e. lack of enforcement
 - f. national development pressures
 - g. customary land tenure
 - h. loss of traditional management practices
 - i. national trade and investment policies
 - j. lack of waste management
 - k. undervaluation of ecosystem
 - l. lack of involvement of local communities
 2. Freshwater shortage (ground and surface)
 - a. (a)-(f) above under (1)
 - b. inappropriate water pricing
 - c. subsidies and other inappropriate incentives
 - d. inappropriate reservoir operation
 - e. lack of protection of recharge areas
 3. Species depletion or loss
 - a. (a)-(l) above under (1)
 - b. high prices
 - c. open access
 4. Introduction of non-indigenous species
 - a. Failure of regulations re ballast water
 - b. Failure of quarantine regulations
 - c. Inadequate planning
 - d. Uncoordinated sectoral management

Table 3: Ultimate Root Causes (continued)

III. Transboundary concern: Unsustainable resource use

- A. Threat: Excessive exploitation
 - 1. Overfishing (primarily inshore)
 - a. subsidies and other inappropriate incentives
 - b. high prices
 - c. open access
 - d. lack of integrated coastal/watershed management
 - e. uncoordinated sectoral management
 - f. lack of enforcement
 - g. loss of traditional management practices
 - h. lack of implementation at local/village level
 - i. high extra-regional demand
 - 2. Destructive fishing (primarily inshore)
 - a. (d)-(i) above under (1)
 - b. lack of appropriate harvest gear/technology
 - c. lack of ecological education
 - d. lack of other local income sources
 - e. easy availability of explosives and poisons
 - 3. Excessive by-catch and discards (primarily oceanic)
 - a. lack of research on product marketability
 - b. reluctance to keep/provide data by captains
 - c. inadequate on-board observer coverage

Table 4: Management Issues

A. Governance

1. no clearly defined responsibilities & poor coordination among government agencies responsible for different sectors
2. inadequate coordination & delegation of responsibility between local, state, provincial, national & sectoral levels of government
3. inadequate laws & regulations
4. inadequate harmonisation of laws
5. issues of traditional & customary property & user rights & practices
6. deficiencies in stakeholder participation
7. inadequate implementation, monitoring & enforcement
8. inappropriate domestic and international pricing
9. subsidies and perverse incentives
10. national investment policies
11. inadequate operating budgets

B. Understanding

- a) poor public education & awareness of issues & options
- b) insufficient capacity to implement and enforce laws
- c) inadequate understanding of valuation of environmental goods & services in sustainable development planning
- d) inadequate knowledge of technical response options
- e) failure to use current information in decision-making
- f) selecting inappropriate technology
- g) ineffective data interpretation for management
- h) inadequate/insufficient socio-economic analyses & data
- i) inadequate or unreliable data collected through national data & statistical programmes
- j) inadequate pre-operational prediction and planning (e.g., prior comparative analysis of options, risk assessments, environmental/social/economic impact assessments, complete costing)
- k) inadequate ongoing and post-operational analysis
- l) inadequate access to information at the regional and international level by governments
- m) inadequate scientific understanding
- n) inadequate or inappropriate advice

Table 5: Information Gaps

I. Transboundary concern: Degradation of water quality

- A. Threat: Land-based sources of pollution
1. Sewage-related liquid and solid microbial pollution
 - a. Data on current & projected waste volumes
 - b. Data on sources, pathways & impacts of waste
 - c. Data on levels & effects of contaminants in water
 2. Solid waste (domestic, industrial, litter, dredge spoil)
 - (a)-(c) in (1) above
 - d. Population response to pollution charges
 - e. Likely recycling markets & stability
 - f. Actual, specific training needs
 3. Nutrients (includes sewage and fertilisers)
 - a. Relative importance of sources in a given situation
 - b. Limitations of information on incidence & bioavailability of nutrient forms (N & P)
 - c. Lack of precision of comparison among options
 - d. Insufficiently predictable outcomes of management intervention
 4. Sediments
 - a. No data on suspended sediments budget in region
 - b. No quantified links between upstream causes & downstream effects
 5. Toxic wastes (domestic, agricultural, industrial, hazardous)
 - (a)-(c) in (1) above
 - d. No data on production rates, use & location of chemicals
 - e. Difficulty in quantifying relative magnitudes of sources
 6. Spills
 - a. scale and timing of causes and effects

Table 5: Information Gaps (continued)

II. Transboundary concern: Degradation of critical habitats

A. Threat: Physical, ecological and hydrological modifications of critical habitats

1. Destruction or modification of ecosystems
 - a. Recovery times after use
 - b. Extent of ecological damage after use
 - c. Carrying capacity
 - d. Valuation methods
 - e. Lack of current information on ecosystems & their resources for decision-makers
 - f. Lack of data on which to design and evaluate ICM
 - g. Amount & rate of sea level rise
 - h. Lack of detailed bioinventory
 - i. Effects on women as major inshore gleaners
 - j. Actual physical areas of ecosystems, e.g., of reefs
2. Freshwater shortage (ground and surface)
 - a. Effects of demographic & land-use changes on hydrology
 - b. Regional effects of climate change
 - c. Lack of water resource data
3. Species depletion or loss
 1. Insufficient knowledge on seagrass beds, including links to coastal fisheries & areas threatened by coastal developments
 2. Insufficient valuation of mangroves
 3. Little knowledge about & local expertise in marine mammals in the region: especially effects from subsistence, traditional & commercial harvests, bycatch & collisions with vessels
 4. Little data on dugong abundance, distribution & threats
 5. Little data on reef fish biodiversity
 6. Little data on species from deeper reef & shore systems
 7. Very little background biological data on invertebrates
 8. Need quantification of effect on mangrove cutting for smoking bêche-de-mer
4. Introduction of non-indigenous species
 - a. scale and timing of causes and effects

Table 5: Information Gaps (continued)

III. Transboundary concern: Unsustainable resource use

A. Threat: Excessive exploitation

1. Overfishing (primarily inshore)
 - a. Inadequate information on fish resources
 - b. Little information on socio-economic aspects, especially in local communities & on women (I)
 - c. Little information on population biology & fishery dynamics of target reef-associated finfish (I)
 - d. Little documentation on traditional & small-scale shark fisheries (I)
 - e. Very little background biological information on invertebrates to allow for stock assessment & determination of sustainable harvests; catch & trade data are absent, incomplete & inconsistent; actual valuation for local fishers expected to be high but needs quantification (I)
 - f. Lack of information on species interaction and response to exploitation
 - g. Lack of suitable, standardised rapid assessment and monitoring techniques & regional information based on these techniques
 - h. Lack of data on economic value of artisanal & subsistence fishery (I)
 - i. No basis on which to determine maximum productivity & sustainability level of inshore fisheries (I)
 - j. Lack of knowledge of physical areas of ecosystems like reefs make extrapolation from scaling factors based on individual surveys impossible (I)
 - k. Need for management rule-of-thumb techniques
 - l. Poor understanding of interaction issues & economic consequences
 - m. Poor understanding of non-tuna biotic components and system dynamics of the Western Pacific Warm Pool LME
 - n. Long-term sustainable financing of international fishery management & research
2. Destructive fishing (primarily inshore)
 - a. Little quantified data on environmental effects linked to destructive causes
 - b. Little data on nature & extent of destructive practices
 - c. Little data on relationship between ownership, access & destructive fishing
 - d. Little data on role of women in destructive practices
3. Excessive by-catch and discards (primarily oceanic)
 - a. Prioritising between reducing and using bycatch
 - b. Abundance, biology & exploitation status of tuna by-catch species unknown
 - c. Little data on by-catch & discard levels

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Annex 2 Acronyms and Abbreviations

ADB	Asian Development Bank
APEC	Asia-Pacific Economic Cooperation
CBD	Convention on Biological Diversity
CITES	Convention on International Trade in Endangered Species
DWFN	Distant Water Fishing Nation
EEZ	Exclusive Economic Zone
ESCAP	Economic and Social Commission for Asia and the Pacific
EU	European Union
EIA	Environmental Impact Assessment
FAO	Food and Agriculture Association
FCCC	Framework Convention on Climate Change
FFA	Forum Fisheries Agency
ForSec	Forum Secretariat
FSPI	Foundation for Peoples of the South Pacific International
GDP	Gross Domestic Product
GEF	Global Environment Facility
GPA/LBA	Global Programme of Action for the Protection of the Marine Environment from Land-Based Activities
ICLARM	International Centre for Living Aquatic Resources Management
ICM	Integrated Coastal Management
ICWM	Integrated Coast and Watershed Management
ICRI	International Coral Reef Initiative
IMO	International Maritime Organisation
IOC	Intergovernmental Oceanographic Commission
IUCN	International Union for the Conservation of Nature and Natural Resources - World Conservation Union
LME	Large Marine Ecosystem
NEMS	National Environment Management Strategies
NGO	Non-governmental Organisation
OFM	Oceanic Fisheries Management
PECC	Pacific Economic Cooperation Council
PICCAP	Pacific Islands Climate Change Assistance Programme
PIDP	Pacific Islands Development Programme
SAP	Strategic Action Programme
SIDS	Small Island Developing States
SOPAC	South Pacific Applied Geoscience Commission
SPACHEE	South Pacific Action Committee on the Human Environment and Ecology
SPBCP	South Pacific Biodiversity Conservation Programme
SPC	South Pacific Commission
SPF	South Pacific Forum
SPOCC	South Pacific Organizations Coordinating Committee

SPREP	South Pacific Regional Environment Programme
STAP	Scientific and Technical Advisory Panel
TCSP	Tourism Council for the South Pacific
TNC	The Nature Conservancy
UN	United Nations
UNCED	UN Conference on Environment and Development
UNCLOS	UN Convention on the Law of the Sea
UNCSD	UN Commission on Sustainable Development
UNDP	UN Development Programme
UNEP	UN Environment Programme
UNESCO	UN Educational, Scientific and Cultural Organisation
USP	University of the South Pacific
WCMC	World Conservation Monitoring Centre
WPAC	World Protected Areas Commission
WWF	World Wide Fund for Nature

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Annex 5 The SAP Process

The United Nations Development Programme (UNDP), SPREP and the Government of Australia co-financed a Global Environment Facility (GEF) Pacific regional training and scoping workshop in Nadi, Fiji, 1-4 August 1995. It was agreed at this workshop that a regional proposal for preparation of a Strategic Action Programme (SAP) to the GEF from Pacific Islands would combine the following activity areas:

- integrated conservation and sustainable management of coastal resources, including fresh water resources;
- integrated conservation and sustainable management of oceanic resources;
- prevention of pollution through the integrated management of land- or marine-based wastes, and
- monitoring and analysis of shore and near-shore environments to determine vulnerability to environmental degradation.

An early draft of the proposal was endorsed by the 8th SPREP meeting in October 1995. Block B funds were requested from GEF in November 1995. Following further regional and national consultation the proposal was submitted to and endorsed by Heads of Government of participating island countries at the 1996 27th South Pacific Forum. SPREP was requested by the South Pacific Forum to coordinate implementation of the proposal.

The proposal was approved by UNDP on 19 April 1997. The Chief Technical Adviser commenced work on April 22, 1997. The initiation of the project was announced to participating countries, SPREP National Focal Points, the SPREP collaborating institutions, Pacific Island Countries' (PIC) Missions to the United Nations (UN) and members of the South Pacific Organisations Coordinating Committee (SPOCC) in SPREP Circular No. 523. Participating countries were asked to establish the National Task Force (NTF) and nominate Task Force Coordinators (TFCs) in SPREP Circular No. 524.

A Regional Task Force (RTF) to oversee preparation of the SAP was established, with one representative from each of five of the participating countries (Fiji, Marshall Islands, Samoa, Tonga, Vanuatu), 3 members of and chosen by SPOCC (SPC, SPF, SPREP), 3 GEF Implementing Agencies (UNDP, UNEP, WB), 2 NGOs (IUCN, TNC) and 1 private sector representative (Fiji Dive Operators Association, recommended by TCSP). The ADB and ESCAP also participated.

The RTF met on 5 and 6 June 1997 in Apia. It considered draft regional reviews, draft guidelines for national consultations, and draft terms of reference for the TFCs. The report of the RTF meeting was circulated.

The TFCs met in Apia on 8 and 9 July 1997 to receive a briefing on GEF, the SAP preparation process and objectives and suggested methodology for national consultations. They also received the draft reviews and other materials for the consultations. The report of the TFC meeting was circulated.

The SAP was prepared in accordance with the results of the national consultations. The results, in the form of national reports and targeted project proposals, were endorsed by the SPREP national focal point and were submitted to SPREP.

A preliminary draft executive summary of the SAP was circulated to participating countries, SPREP National Focal Points, PIC Missions to the UN, SPOCC members, RTF and TFCs in SPREP Circular No. 541.

The draft SAP was reviewed and approved by the RTF and the TFCs on 2 and 3 September 1997 at a joint meeting held in Apia. The report of the meeting was circulated.

The SAP was reviewed by the Heads of Government of the South Pacific Forum at their twenty-eighth meeting in Rarotonga on 15-19 September, 1997.