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Rethinking Oceans and Marine Resource Management

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Introduction

Strategic development and management of the Pacific Ocean's marine resources at national and regional level is critical to Pacific islanders' ability to meet their changing needs and aspirations and to maintain their unique lifestyle.

The Pacific region is renowned for its small islands and big ocean, and the natural beauty of its people, places and cultures. The Pacific community prides itself on its 'Pacific way' lifestyle, where communal living and reciprocal social relationships are emphasised, and which is often at odds with the pressures of individualism encouraged by market forces. The Pacific is also a region that is going through rapid change due to high population growth and the changing needs and aspirations of its people, including increasing consumerism. The people of the Pacific live in the modern world, but at the same time have strong traditional ties and have kept their culture alive. But traditional systems are being gradually weakened by the forces of globalisation and the market economy.

The coastal and marine environment, a source of subsistence as well as commercial activities, is an integral part of the Pacific lifestyle. The islands of the Pacific are renowned for their ecologically diverse environments and landscapes, and high biodiversity and endemism; in some habitats, such as coral reefs, the Pacific has the highest known biodiversity in the world. The natural beauty of the coastal areas and the islands and oceans, combined with the friendly people and traditional cultures, is a magnet for tourists from as far away as Europe and North America, as well as the more traditional markets of Australia and New Zealand. Most Pacific islands rely on their coastal resources to earn tourism dollars, which in 2003 contributed about \$US1 billion, or approximately 5 per cent of the region's GDP.

With large exclusive economic zones (EEZs), very high sea-to-land ratios (Table 4.1) and relatively undeveloped natural environments, most Pacific island countries (PICs) rely on coastal and offshore fisheries and tourism as their main sources of income and export earnings. Pelagic tuna-based offshore fisheries contribute about 11 per cent of the gross domestic product of all the PICs (Gillet, McCoy *et al.*, 2001) and account for around 50 per cent of the region's total exports. On the other hand, coastal resources are the cornerstone of subsistence and domestic economic activities, contributing about 15 per cent of GDP.

Table 4.1: Sea-to-land ratio in Pacific Island Forum countries

Country	Land mass (km ²)	EEZ (million km ²)	Sea-to-land ratio
Cook Islands	236	1.8	7,627
Fiji Islands	18,272	1.3	71
Federated States of Micronesia	702	3.0	4,274
Kiribati	726	3.5	4,821
Marshall Islands	181	2.1	11,602
Nauru	21	0.3	14,286
Papua New Guinea	462,840	3.1	7
Samoa	2,857	0.1	35
Solomon Islands	29,785	0.6	20
Tonga	747	0.7	937
Tuvalu	26	0.7	26,923
Vanuatu	12,200	0.6	49

Source: Adapted from PIFS, 2000, www.ffa.int.wuw/index

Management challenges

Specific challenges in the marine sector have their origins in international as well as domestic development pressures. Pacific island countries' dependence on limited marine and other resource-based export commodities make them highly vulnerable to global forces, such as changes in fish prices and the effects of international trade liberalisation and increasing fossil fuel prices. Many of the Pacific island countries are also highly prone to regular natural disasters, such as cyclones, earthquakes and volcanic eruptions. They also face the emerging challenge of the increasing frequency of extreme climate events, coupled with rising sea levels resulting from global climate change. Such challenges are further exacerbated by the islands' geographical isolation within the region, as well as from the long distances to their main export markets. Poor domestic transport infrastructure and communications add to the problem of being made up of many small islands widely scattered across the ocean under one national jurisdiction. The growing populations of most PICs and the increasing emphasis on consumerism have encouraged them to emphasise economic development goals, often with only cursory regard for the impact on the environment or on social equity.

The Pacific island countries are also under constant international pressure to preserve their biodiversity and their natural ecosystems for the global good, since the Pacific is generally regarded as one of the the last remaining unspoilt natural environments. However, international calls for the protection of key species and their habitats are often at odds with the economic development desired by the people of the region and encouraged by its governments to meet the need for income for basic needs, such as education and children's clothing. Pacific leaders have recognised the need to maintain a balance between conservation in the international interest and economic development to meet the needs and aspirations of their citizens. Over the last decade or so, Pacific countries

have identified many common issues, including those related to offshore and coastal marine resources, which relate both to their own livelihoods and to the global good. This is reflected in the statement made by the then Prime Minister of Fiji Islands, Mr Laisenia Qarase, when he noted during the launch of the Pacific Islands Regional Ocean Policy in 2004 that:

We stand as the guardians of the Oceanic heritage. But we do this not just for ourselves – for the benefit of our sovereign nations. We act for the entire planet, knowing that the Pacific is a treasure for all humanity, a resource for the world.

Offshore tuna fisheries

One of the ongoing concerns in the region is the sustainability of tuna resources; for many countries tuna is an important source of GDP, foreign exchange and employment. The value of the catch rose in the 1980s and 1990s – from US\$375 million in 1982 to US\$1.9 billion in 1998 (Gillet, McCoy *et al.*, 2001). However, since 1998 the value of the tuna catch has declined dramatically. The Western Pacific Regional Fisheries Management Council reports that the total value of the 2006 catch of the four main tuna species was US\$1.1 billion, a 31.3 per cent decline from the 1998 figure. Skipjack tuna stocks are considered to be healthy, with potential for an increase in harvest. However, the larger tunas, including yellowfin, albacore and blue-eyed tuna, are considered to be fully exploited, with yellowfin and bigeye over-exploited. In addition to the problem of declining stocks, there are concerns about the effects of climate change on some tuna species due to El Niño/La Niña Southern Oscillation (ENSO), which affects sea temperatures. Fluctuations in fish stocks and a decline in tuna catches could have a devastating impact on small economies which depend on them for their export earnings and GDP.

Other issues of concern, particularly for the Pacific countries that have had a special trading relationship with the European Union (EU) as members of the African, Caribbean and Pacific (ACP) group, include the potential impact of globalisation and trade liberalisation. Papua New Guinea, Solomon Islands and Fiji Islands export their fish and fish products to the EU. Only Papua New Guinea and Fiji Islands are benefiting from the duty free and quota access provided by the EU. From 1 January 2008, under the Economic Partnership Agreements (EPAs), all the remaining countries that are non-LDCs reverted to the Generalised System of Preferences, and LDCs traded under the EU Everything but Arms (EBA) initiative. This, together with tighter sanitary and phytosanitary regulations, is expected to have a far-reaching impact, if favourable regional fisheries partnership agreements are not forthcoming and if countries are not more proactive in their ocean and marine resource management.

For many countries, the relatively low value of returns from their tuna resources is a growing concern. They receive only about 5 per cent of the value of tuna harvested from Pacific EEZs by distant water fishing fleets. Because of these low direct benefits, the domestication of tuna fisheries has always been an ongoing interest of most Pacific island countries. Many have considered going into joint venture arrangements or encouraging

domestic industry. However, the Pacific nations have so far found it difficult to realise their dream of having a local tuna fishing industry (Gillet, 2003), largely because of the high capital and technical know-how that would be necessary.

Coastal resources

Coastal resources throughout the region also face serious challenges. As the population increases and national economies grow, the pressure on coastal fisheries resources has gradually mounted and is expected to increase further, particularly within short distances of major settlements. Over-fishing of target fin-fish and non-fish species within the range of small motor-powered boats is expected to become more common (Box 4.1).

Box 4.1. Over-fishing of trochus and green snail in Vanuatu

Trochus and green snails, two of the main export products of Vanuatu, are in danger of becoming over-harvested. The commercial exploitation of trochus and the green snail fishery began in the 1920s with the demand for raw material for buttons, jewellery and ornaments, and inlay work for furniture. The industry has grown and the processed shells are exported to south-east Asia; together with smoked and dried bêche-de-mer, it was worth about US\$3.7 million over the last ten years. These species provide an important source of income for rural isolated islands, which lack transportation, refrigeration facilities, and markets for fresh fish and agricultural products.

However, trochus and green snails are now scarce on many islands and are becoming difficult to find. A recent survey of trochus fisheries suggest that the industry has almost collapsed; the only surviving shell company has reported that it cannot find enough raw material to remain viable. The few viable stocks in remote areas are also seriously endangered. Over-harvesting, combined with the slow growth rate of the green snails, make them particularly vulnerable to extinction.

The Government has banned green snail exports, but the snail population is showing no signs of recovery. Efforts to transplant brood stocks of green snails have been unsuccessful. Similarly, mariculture of trochus and the release of larvae on outer reefs have been attempted, but as yet there has been no population increase.

Source: Lovell, Sykes *et al.*, 2004, p. 350

The pressure on coastal resources is also expected to increase with changing international demand for key fisheries products from the Pacific (Box 4.2).

One of the effects of the over-fishing of key species is a shift in the dynamics of coral reefs and natural ecosystems, which have become more susceptible to overgrowth by macroalgae and plagues of coral predators, such as crown of thorn. Other pressures include the impact of land-based activities. Sediments from poor land use, deforestation and dredging smother coral reefs, and reclamation of mangroves and other habitats affects

Box 4.2. Impact of rising prices and over-fishing of bêche-de-mer in Marovo Lagoon, Solomon Islands

In Solomon Islands, bêche-de-mer, or sea cucumber, is a multi-million dollar industry and is second only to tuna as the country's most valuable marine resource. Because of the ease of harvesting and processing bêche-de-mer, it has become one of the largest sources of cash in many coastal communities throughout the islands. It is highly regarded by Asians as a delicacy, with powerful qualities as a traditional medicine and aphrodisiac. In addition, bêche-de-mer is an important source of protein for the Solomon Islanders, who have one of the highest per capita seafood consumption rates in the world, with over 80 per cent of the population deriving their protein from marine resources. Bêche-de-mer is an important source of livelihood for coastal villagers and during the recent political crisis was one of the stable sources of income.

Increased demand for bêche-de-mer, resulting in higher prices, has led to over-harvesting and a decline in stock of some species. In 1991, the white teatfish was valued at S\$30 per kilo but today it fetches about S\$220–270 per kilo. Because of the rising price, the teatfish has been over-harvested to such an extent that in recent years the catch has fallen. In 1999, more than 50 per cent of the total catch was white teatfish, but by 2002 this species accounted for only 2 per cent. Catches and exports of teatfish fell from 715 tonnes in 1992 to less than half this figure in 2005.

Rising prices have also led to an increase in dangerous fishing practices. It is noted that 'Ten years ago people were happy to free-dive or simply collect the sea cucumbers at low tide. Now people are night diving with torches, using weighted "bombs" with steel barbs, and even using dredges to harvest from deeper waters' (Ramofafia, a bêche-de-mer specialist). The growing use of 'hookah', or diving using air compressors and long hoses, has contributed to an increasing number of deaths in Solomon Islands' Western Province.

Source: Adapted from Steve Menzies, International Waters Programme Project media release, 7 July 2005, www.sprep.org, accessed on 29 October 2005

coastal productivity and species composition. Nutrient and chemical pollution from untreated and poorly managed human sewage and animal wastes, and wastes from agriculture and in limited cases industrial pollutants all have a negative impact on coastal ecosystems. Such effects are often localised and their cumulative effects can vary from low to very high within a country (Lovell, Sykes *et al.*, 2004: 341). However, countries differ in the risks to which local inhabitants are exposed.

Ecosystems in the Pacific are affected in far-reaching ways by global activities, as well as by human activities within the region. Coastal ecosystems and coral reefs, especially, are under threat from climate change, including more frequent switches in El Niño and

La Niña, and increased frequency and intensity of tropical storms. Furthermore, climate change is expected to result in increases in dissolved carbon dioxide in water, which is believed to cause coral bleaching and coral mortality. Major bleaching was reported in 1998, 2000 and 2002. In 1998 alone, global coral bleaching throughout the world led to a loss of 16 per cent of the world's coral reefs. Fiji Islands reported serious coral bleaching in 2000 and 2002, with 40–80 per cent coral mortality on many reefs. Although some recovery has been reported, it is slow in some damaged areas, such as Beqa barrier reef and the western Astralobe reefs. Overall, only about 10 per cent of the coral reefs affected by bleaching in the south-west Pacific during 2000–2002 have recovered to their pre-bleaching levels (Lovell, Sykes *et al.*, 2004).

Coral reefs and other habitats are under constant threat from wave and wind actions caused by extreme weather events, such as those recently experienced by countries such as Samoa, Nauru and Niue. In 2000, for example, cyclone Heta caused damage to 13 per cent of coral reefs in Samoa. In 2003, Nauru experienced major coral bleaching and mass fish kills, due possibly to elevated sea level temperatures.

Such changes in coastal ecosystems can have far-reaching effects beyond the decrease in the availability of fish. They can undermine the tourist industry, which relies on diverse colourful and healthy corals supporting a large diversity and abundance of coral and fish species, and the presence of megafauna, such as sharks, manta rays and turtles. For countries such as Cook Islands, where tourism is the backbone of the local economy, such changes can have a drastic impact on people's livelihoods. To address such pressures on oceanic and marine resources, including coral reefs and other coastal ecosystems, more stringent and strategic management is important; it should be based on an ecosystems approach and underpinned by reliable information. The issue will become more acute over time, as population increases and global attention shifts towards the last remaining relatively healthy tuna stocks and more dynamic coastal ecosystems.

Management responses

Pacific island countries have adopted both national and regional approaches to the management of their domestic oceanic and marine resources. Confronted by ever-increasing pressure from distant water fishing nations for increased access to pelagic resources, the Pacific island states have generally taken a regional approach without necessarily compromising their sovereign rights and interests. Much of the research and policy discussion has been supported by two regional agencies, the Forum Fisheries Agency (FFA) and the Secretariat to the Pacific Community (SPC), guided by their governing councils. These agencies hold annual scientific and policy meetings to guide member countries in their deliberations and negotiations with distant water fishing nations. Since 2006, discussions have also been held under the auspices of the Western and Central Pacific Tuna Commission, which includes distant water fishing nation representatives as members.

National programmes and policies to address such challenges vary across the region. Management of coastal and ocean resources has been predominantly sectoral in nature. Generally, the environmental aspects of the coastal and marine sector are managed inde-

pendently of the fisheries sector. Agencies that manage various aspects of the marine sectors are separate and operate under different legislation, with little or no co-ordination. Thus, for example, the fisheries harvest in Fiji Islands is managed by the Fisheries Department under the Fisheries Act, while coastal mangrove resources, which are important nursery grounds for fish, are managed by the Forestry Department under the Forestry Act. Pollution of coastal waters is either addressed under the Public Health Act or by municipal councils under town and country legislation. Some effort has also been made to use other instruments such as environmental impact assessment (EIA) procedures to screen projects. Usually, however, these have only been applied by the Department of Environment to very large projects, if at all.

The activities of these various organisations are often unco-ordinated, largely because each department operates within its narrow legislative mandate and there are no cross-cutting institutional mechanisms for the co-ordination of management response. In most cases, management relies on a top-down regulatory approach, using command and control strategies. In the case of coastal fisheries, instruments such as licences, size limits, bans on the harvesting of certain species, restrictions on gill net mesh sizes or restrictions on gear are commonly used. These have generally been found to be ineffective largely because government fisheries departments do not have adequate resources for monitoring and enforcement or because penalties are inadequate to act as deterrent (Box 4.3).

Box 4.3. Management of bêche-de-mer in Solomon Islands

Economically, bêche-de-mer is a very important resource for Solomon Islands, but the Government's 'top-down' approach to management has simply not worked. The Government does not at present have the capacity or resources to enforce regulations such as size limits, bag limits, gear restrictions and seasonal closures. In fact, there are no national regulations or guidelines to safeguard the fishery, except for a 1998 ban on fishing for sandfish, which was repealed in 2000. At the same time, the resources are owned communally under the traditional system of tenure, but people do not have much say in the management of the resources.

It is generally acknowledged that the only way to protect these resources is to actively involve fishing communities and resource owners in developing and implementing their own management strategies. Some have argued that management should be transferred to communities and that they should be responsible for enforcing regulations such as bag limits, gear restriction, seasonal closures, species rotation and area restrictions. These regulations should be implemented in accordance with the local system of customary marine tenure and the national government should develop policy and regulatory frameworks that help to support this community-based management.

Source: Adapted from Steve Menzies, International Waters Programme Project media release, 7 July 2005, www.sprep.org, accessed on 29 October 2005

Recently, countries such as Samoa, Tonga and Cook Islands have adopted integrated coastal zone management strategies and plans, although their implementation has from lack of resources and co-ordination among government agencies.

Some effort has been made to encourage greater community participation in coastal fisheries development and management, particularly with the assistance of development partners. Examples of this are the Samoan Fisheries Development Project, funded by AusAID, the Fiji Local Level Management Areas and a conservation area project in Vanuatu, carried out under the South Pacific Biodiversity Conservation Programme, funded by the Global Environment Facility (GEF). In places like Fiji Islands, local community members are also trained and hired as fisheries wardens to increase the effectiveness of the fisheries regulations. But such efforts have taken very sectoral approaches, with little co-ordination between different initiatives. In many instances, the link between coastal zone management initiatives and national development planning and budgetary processes is at best limited and in most cases non-existent.

Regional responses

The Pacific region has several regional intergovernmental organisations that provide technical advice and assist independent island nations and territories in the management of their coastal and marine resources, and their offshore tuna fisheries. However, countries face major challenges in making the most effective use of regional support. Nor do the regional programmes necessarily address country-specific priority issues; regional projects often depend on the availability of development partner support, which in many instances is for programmes that reflect international interests.

Regional marine resource and environment-related projects are primarily implemented by SPREP, South Pacific Applied Geoscience Commission (SOPAC), FFA and SPC, with the PIFS co-ordinating and providing policy advice to government leaders. These agencies tend to focus on areas of immediate interest as mandated by their governing councils. SPC, the primary regional organisation responsible for marine living resources, has until recently focused on coastal and offshore fisheries development and capacity building activities. FFA, on the other hand, has focused on helping countries with offshore tuna fisheries management, including access negotiation and technical backstopping in relation to monitoring and stock assessment (in collaboration with SPC). SOPAC largely deals with non-living aspects of the EEZ, including mapping mineral resources and defining maritime boundaries. SPREP addresses the environmental aspects of oceanic and marine resources, including protection of key species such as whales and turtles, and the effects of climate change.

With limited member contributions, each of the regional organisations relies largely on support from development partners and UN agencies under various multilateral environment agreements. As a result, their activities have tended to be stand-alone projects supported by development partners under different international instruments, particularly the GEF, established as part of the 1992 UN Convention on Biodiversity.

Many regional activities have focused on research, capacity development and regional action strategies. They include UNDP/GEF-funded national environmental management strategies, the National Biodiversity Strategic Action Plan (NBSAP), the South Pacific Biodiversity Conservation Programme (SPBCP), the National Adaptation Program of Action (NAPA), comprehensive hazard and risk management (CHARM) and the Pacific Islands Climate Change Action Programme (PICCAP).

Regional bodies which are agencies of the Council of Regional Organisations in the Pacific (CROP) have developed projects on themes that are of particular interest to development partners and open up funding opportunities. They should therefore be categorised as supply driven, although the projects have broadly reflected regional concerns. This situation is slowly changing and more specific activities are being carried out in response to national requests.

Overall, regional projects have produced some very valuable information and many technical reports, and have increased local awareness of specific resource and environmental management issues. However, many of the projects do not seem to have delivered on their stated objectives or produced the desired outcome.

Regional fisheries aquaculture projects, such as those for giant clam, implemented with the support of SPC and the International Center for Living Aquatic Resources Management, did not produce the desired replenishment of the giant clam on coral reefs for subsistence and much needed income. Despite the fact that over US\$10 million has been invested from many different sources, very few countries have seen any marked change in their stocks of giant clams or any increase in commercial harvests. If anything, giant clam populations continue to decline. One of the reasons for this is that only the technical aspects of the culture have been looked at, without any explicit consideration of the slow growth rate, marine tenure or market conditions (Lal and Keen, 2002).

Other reasons include inappropriate project design and projects that do not adequately reflect the science-economics-policy continuum. Some projects have failed to focus on the agents of change and their incentive structures. Many ocean and marine strategies focused on command and control management without also using economic or financial instruments (Schoeffel, 1996; Veitayaki, 2000; Baines *et al.*, 2002; Lal and Keen, 2002; World Bank, 2005). In some cases, projects were designed on the basis of traditional management systems, disregarding the weakening of traditional systems, increasing individualism and erosion of tradition principles of reciprocity and redistribution (South *et al.*, 2004).

This is expected to change with the adoption of ecosystem-based management (EBM), endorsed by PIF leaders and adopted by FFA and SPC. However, operational challenges remains as to how this can be holistically and systematically applied.

The challenge of integrating science-focused projects into national policy processes, as well as mainstreaming sectoral programmes into national level planning and budgetary processes, remains a common theme throughout the region in all areas of natural resource and environment management. Successful completion of technical projects, albeit in the limited sense of scientific outputs, are noteworthy achievements supported

by the CROP agencies. However, unless they also address associated analytical policy issues and enabling institutional environments, as well as the social dynamics and incentive structures necessary to encourage individual behavioural change, such efforts are likely to continue to produce less than satisfactory outcomes and/or projects that do not deliver on the original stated goals.

These issues have recently been recognised by the CROP agencies and this has been explicitly reflected in the various regional policies, and frameworks and plans of action that have been developed over the last three years. The challenge remains to operationalise these regional frameworks at national level.

Regional policies and action plans

With the support of various development partners, particularly AusAID and NZAID, the CROP agencies have helped member countries to develop regional policies and plans of action, including the Pacific Islands Regional Oceans Policy (PIROP). PIROP comprises five guiding principles: improving the understanding of the oceans; sustainably developing and managing the use of ocean resources; maintaining the health of the oceans; promoting their peaceful use; and creating partnerships and promoting co-operation. Regional policies and plans of actions tend to reflect the issues emphasised in international agreements, as well as lessons learned from past development efforts in the region (Table 4.2). However, although many of these instruments have some relevance to coastal and marine resources and environment management, attempts to implement them have generally not been as systematic, programmatic and holistic as was agreed in the 2002 Johannesburg Plan of Implementation or the 2005 Mauritius Strategy for Implementation. Nor has much effort been made to appropriately sequence the development efforts to produce synergistic impacts and achieve the desired outcome.

National level implementation of these regional policies is the next set of challenges, particularly in bringing together appropriate government agencies and community-based stakeholders, together with development partners, to identify and implement an interdisciplinary programme of activities to achieve the desired outcomes in the most cost-effective manner.

International response

Pacific SIDS have also responded to international calls and have endorsed various instruments, such the Law of the Sea, the Barbados Plan of Action, the Johannesburg Plan of Implementation and the Mauritius Strategy. Common elements of these include the need for national sustainable development strategies, reflecting:

- A balanced focus on the three pillars of sustainable development – economic well-being, environmental conservation and social harmony;
- A programmatic whole-of-country approach to development and management;

Table 4.2. Principles, themes and objectives of regional policies, frameworks and plans of action

Regional policies, frameworks and plans of action	Key principles/themes/objectives/strategies
Pacific Islands Regional Ocean Policy	<p>Improve the understanding of the oceans Sustainably develop and manage the use of ocean resources Maintain the health of the oceans Promote the peaceful use of the oceans Create partnerships and promote co-operation (CROP Marine Sector Working Group, 2002)</p>
Natural Disaster Risk Reduction and Disaster Management Framework, 2006–2015	<p>Improve governance and organisation, and institutional, policy and decision-making frameworks Improve knowledge, information, public awareness and education Undertake analysis and evaluation of hazards, vulnerabilities and elements of risk Adopt a holistic approach that includes planning for effective preparedness, response and recovery Develop effective, integrated and people-oriented early warning systems Reduce underlying risk factors (SOPAC, 2005)</p>
Solid Waste Management Strategy	<p>Develop and implement appropriate waste management infrastructures Develop practical, sound and effective waste management policies, legislation and regulations Implement appropriate communication strategies to support effective waste management activities Develop mechanisms that support waste management in a financially and economically sustainable manner Develop national capacity to assist Pacific islanders to manage their waste in an environmentally sustainable manner (SPREP, 2000)</p>
Pacific Regional Action Plan for Sustainable Water Management (Pacific RAP)	<p><i>Water resource management:</i> water resource assessment and monitoring; rural water supply and sanitation; integrated water resource management and catchment management <i>Island vulnerability:</i> disaster preparedness; dialogue on water and climate <i>Awareness:</i> advocacy; political will; community participation; environmental understanding; gender <i>Technology:</i> appropriate technologies; demand management and conservation; human resources <i>Institutional arrangements:</i> institutional strengthening; policy, planning and legislation <i>Financing:</i> costs and tariffs; alternative models; role of donor organisations and financing Institutions (SOPAC, 2003)</p>

- The use of market-based financial instruments, together with a command and control approach, including legislation, to address environmental problems; and
- A participatory process to improve integrated decision-making processes and environmental governance at all levels.

In many instances, international commitments have not been translated into national legislation and action or, where they have been translated, improvements at national level have been piecemeal and spasmodic, as in Vanuatu (McIntyre and Wilson, 2004). Only in limited cases has a national action followed a specific international commitment. Even then, implementation has not necessarily been followed through, as in the case of the live coral trade in Fiji Islands (CITES, 2002; Fiji Government, 2002). Where national legislation that is consistent with international commitments has been enacted, it has not always been implemented, or enforcement has been weak, as with EIA requirements for development projects. Capacity in government environment departments is often very low, and much staff time and energy is spent in attending international meetings or preparing reports to meet MEA requirements. Little time and resources have been available for the implementation of national work programmes.

In some cases, the international community has encouraged community-based development efforts in response to the lack of success of 'top-down' development and conservation assistance. Such top-down development efforts are often driven by political interests rather than by national priorities. Internationally, this has led to greater emphasis on stakeholder-based development planning and implementation.

At one end of the spectrum, the pendulum has swung towards community-based activities, which by their nature focus on local issues. These projects have had mixed success for several reasons, including a lack of adequate consideration of equity issues in their design and the scope for rent-seeking and free-rider behaviour. Community-based projects have also failed to include strategies for scaling-up experiences and lessons learned at a national level. Consequently, their impact has remained small, despite the expenditure of large sums of money. At the other end of the spectrum, greater emphasis has been placed on community consultation and the importance of a stakeholder-based planning process, such as developing a national sustainable development strategy.

In summary, the ocean and marine resource governance challenges outlined above are multifaceted. Although the details may vary between sectors and across member countries, there is a common set of governance challenges at the national level, regardless of which issue, sector or theme is considered. Among those identified by member countries are:

- The pursuit of the economic development of ocean and marine resources without consideration of its impact on the environment, and an emphasis on economic development, with low priority and thus smaller budgetary allocations given to environmental issues;

- A disconnect between national planning and budgetary processes and sectoral or thematic priorities;
- Emphasis on top-down planning and management with no regard for traditional decision-making processes;
- Emphasis on a bottom-up community level project development approach, without any explicit link to national decision-making and budgetary processes;
- Piecemeal and sector-based management with little cross-sectoral co-ordination;
- Limited capacity in integrated planning that reflects ecological and economic connectivity, economic planning and cross-sectoral planning;
- Inadequate analytical skills in integrated and interdisciplinary assessment and decision-making;
- Limited translation of international commitment into national legislation.

Regionally, the key challenges include:

- Lack of co-ordination of support amongst different regional organisations;
- Limited integration of scientific, economic and social analysis to underpin development and management advice;
- Absence of a programmatic approach to regional services.

Internationally, the challenges include:

- Limited co-ordination of the development support provided by different international agencies organisations;
- Failure of external support to reflect national development goals and priorities (CROP, 2005).

Lessons learned

Pacific island countries acknowledge that national sustainable development goals cannot be achieved without assistance from international development partners and regional organisations. Learning from past efforts – both the successes and the difficulties, the region has recently embarked on initiatives that show promise in overcoming some of the key constraints to achieving sustainable natural resource and environment management. These include a shift towards improving the decision-making process at all levels by developing national sustainable development strategies, placing greater emphasis on community-based management linked to national government efforts, utilising economic and financial instruments, and moving towards ecosystem-based management.

The endorsement of the Pacific Plan by the leaders of the Pacific island countries in October 2005 could help to improve the co-ordination of services provided to member

countries by regional organisations and collaboration with other development partners. Internationally, too, the adoption of the Paris Declaration on Aid Effectiveness and in-country adoption of national planning and budgetary processes linking sectoral and cross-cutting thematic plans and priorities shows promise. Through NSDS-linked sectoral priorities and budgetary processes, countries are more likely to utilise external support effectively to complement their own national efforts to meet the needs and aspirations of their people.

National sustainable development strategies

In response to the growing awareness of key constraints to sustainable development, Pacific island leaders have endorsed the adoption of a national sustainable development strategy process to improve their national planning and budgetary processes. They are attempting to improve decision-making at national, sectoral and community levels, reflecting the core principles of sustainable development and good governance (Box 4.4).

Box 4.4. The NSDS approach

As promoted in the WSSD, a sustainable development strategy is a set of co-ordinated mechanisms and processes that collectively offer a participatory approach to developing vision, goals and targets for sustainable development and to co-ordinating their implementation and review. In a national sustainable development strategy process, there is emphasis on:

- Society as a whole having the responsibility for development, rather than seeing the government as being exclusively responsible;
- Adopting a participatory process involving all relevant stakeholders in a concerted effort and in a transparent negotiation process, rather than having a centralised and controlled decision-making process controlled by the government;
- Adopting a holistic whole of country approach, and cross-sectoral level planning and management;
- A shift from a focus on outputs (projects, legislation and plans) to a focus on systems and outcomes (impacts) on people and/or the quality of the participation and management process; and
- Adopting an adaptive process that is continuously reviewed and improved, rather than developing and implementing fixed 'blue print' development plans.

Source: Adapted from Dalal-Clayton and Bass, 2002

Countries such as Samoa, Fiji Islands, Papua New Guinea and Tuvalu have taken the first steps towards this by adopting a participatory approach to developing their national

sustainable development strategies. Key stakeholder groups at all levels were involved in the consultation process that led to the identification of vision, goal and broad strategies and priorities that became part of the national plan. In countries such as Fiji Islands and Samoa, NSDS -linked sectoral plans and priorities were also developed for some key sectors, although these did not involve coastal and marine resources.

While it is too early to assess the effectiveness of such an approach, some tangible benefits can be discerned. The Fiji Government, for example, has called for sector level corporate plans to be developed in such a way that they closely reflect the priorities agreed to in the national strategic plan, and development projects and activities that focus on community-level outcomes. Samoa is using priorities identified during the development process and its national development strategy to achieve sector-wide donor round table agreements that harness and co-ordinate development partner support.

Recently, Tuvalu adopted a similar approach in relation to its education and health sectors in its annual donor round table discussion. As a result of this initiative, during the July 2007 donor round table talks, the Tuvalu Government was able to get a commitment from Australia and New Zealand to support its key education priorities for the first time in three years. Australia also provided indicative support for key priorities in the health sector, even though the sector was not listed as a priority area for Australia's bilateral support. By developing a prioritised list of activities for the health sector, together with a justification of the priorities, it was possible for the Tuvalu Government to argue for, and the donors to understand, the relevance of financial support under its fiscal management category of bilateral support.

At the donor round table, Australia and New Zealand, in particular, supported the priorities identified by the Government and asked for concept notes on each of the initiatives, with an indicative cost. During a follow-up meeting with AusAID and NZAID, the programme of priorities identified for 2008 has been given 'in principle' support, with at least three initiatives identified as 'early wins'.

Ecosystem-based management

A similar NSDS approach could also be adopted for the marine sector, together with an ecosystem-based approach. For the marine and coastal sectoral planning process, the use of an ecosystem-based approach could help address the issue of institutional misfit between ecological connectivity and government institutional arrangements. Pacific island countries have endorsed in principle the ecosystem-based management approach to coastal and offshore fisheries management. Ecosystem management is a process that integrates biological, social and economic factors into a comprehensive strategy aimed at protecting and enhancing sustainability, diversity and productivity of natural resources. The Ecological Society of America has identified eight key elements of EBM, guided by four key principles (Box 4.5).

Box 4.5. Core elements and guiding principles of ecosystem-based management

Core elements

- 1. Sustainability:** Ecosystem-based management does not focus primarily on deliverables, but rather regards intergenerational sustainability as a precondition.
- 2. Goals:** EBM establishes measurable goals that specify future processes and outcomes necessary for sustainability.
- 3. Sound ecological models and understanding:** EBM relies on research performed at all levels of ecological organisation.
- 4. Complexity and connectedness:** EBM recognises that biological diversity and structural complexity strengthen ecosystems against disturbance and supply the genetic resources necessary to adapt to long-term change.
- 5. The dynamic character of ecosystems:** Recognising that change and evolution are inherent in ecosystem sustainability, EBM avoids attempts to freeze ecosystems in a particular configuration.
- 6. Context and scale:** Ecosystem processes operate over a wide range of spatial and temporal scales, and their behaviour at any given location is influenced by surrounding systems. Thus, there is no single appropriate scale for management.
- 7. Human beings as ecosystem components:** EBS values the active role of humans in achieving sustainable management goals.
- 8. Adaptability and accountability:** EBM acknowledges that current knowledge and paradigms of ecosystem functions are provisional, incomplete and subject to change. Management approaches must be viewed as hypotheses to be tested by research and monitoring programmes.

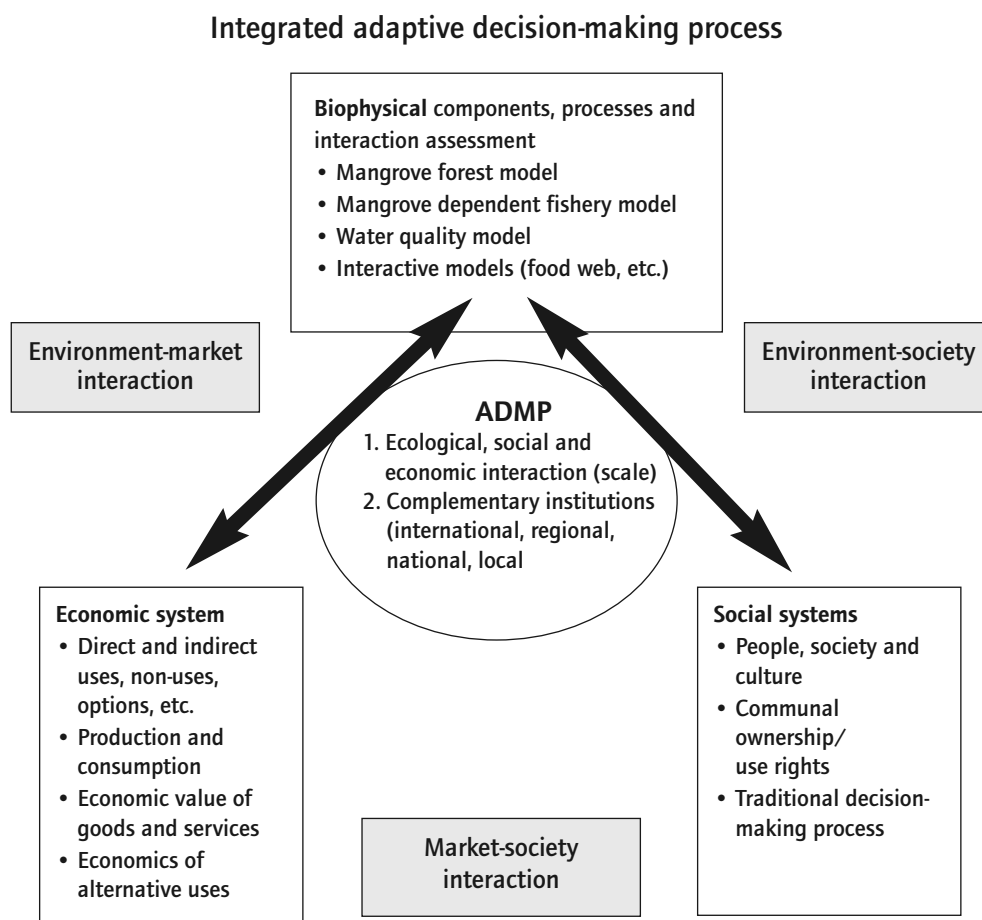
Guiding principles

- **Partnerships and citizen participation:** Work together with citizens, landowners, businesses, local governments, interested organisations and other agencies to address issues, identify opportunities and find common solutions.
- **Science-based approach:** Use the best available scientific knowledge (ecological, social and economic) as a foundation for decision-making and understanding natural resource relationships; focus on the sustainability of ecological systems.
- **Long-term view:** Establish long-term targets for desired ecosystem conditions that maintain the capacity of the land to sustain public benefits and opportunities.
- **Comprehensive perspective:** Find solutions that support economic prosperity, lasting livelihoods, and ecological health and sustainability.

Source: Ecological Society of America, 2005, 'Principles of Ecosystem Based Management' and 'Overview of Ecosystem Based Management', <http://www.michigan.gov/dnr>, accessed on 30 October 2005

The principles articulated in EBM are in many respects similar to the core guiding principles identified in the various regional policies, frameworks of action and plans already endorsed by the region. For example, when adopting the EBM approach under the Pacific Islands Regional Ocean Policy (Table 4.2), in the management of coastal mangroves, one would explicitly address each of the elements of the three pillars (biophysical, economic and social) and the interactions among them, as well as the underlying institution such as communal resource ownership, use and management rights as summarised in Figure 4.1). One would also identify management strategies that include organisational co-operation and economic instruments, complemented by formal rules and regulations supported by appropriate legislation and by-laws ((Lal, 2002).

Figure 4.1: Ecosystem-based management framework for making integrated adaptive decisions



Source: Lal, 2002

Such an approach will help systematically identify and analyse:

- Relevant government stakeholders, community stakeholders, including resource owners, and users who need to be involved in decision-making processes; and
- The dynamics of and interactions between the environment and society and between the market and society, as well as market forces and the environment, to identify the root causes of observed resources and environment status and to identify appropriate management strategies at national, regional and local levels.

It will also help managers take into account scientific and economic policy analysis and appropriate management approaches, from incentive-based management to command and control.

Several agencies in the region have explicitly embraced EBM, including the Forum Fisheries Agency and the World Wildlife Fund-Fiji. FFA, as part of its 2004 corporate plan, explicitly identified ecosystem-based tuna fisheries management and is working on developing specific country-focused work programmes. The World Wildlife Fund-Fiji is currently working with one of the local communities in the north of the island to develop a community-based network of marine protected areas, adopting an EBM framework.

National sustainable development strategy ecosystem-based management approach

Although EBM is in its early days, it shows promise in bringing together a number of apparently disparate strands – participatory, whole-of-country, intersectoral and integrated interdisciplinary and programmatic approaches that reflect the local and national social, economic and institutional context, as well as the international commitments made by member countries.

With the adoption of NSDS-linked sectoral plans and priorities and guided by EBM approaches, member countries hope to be in a strong position to mainstream the three pillars of sustainable development more systematically at all levels. This could also help to:

- Increase the effectiveness of limited national resources by directly linking national priorities to sector and community-level priorities;
- Increase the transparency and accountability of the government's budgetary decisions and development efforts;
- Guide a country in accessing development partner assistance that is consistent with its national priorities and complements its own efforts;
- Minimise the transaction costs of dealing with development partner assistance by serving as a platform for confidently negotiating with development partners and encouraging more joint, or at least co-ordinated and complementary, activities.

In effect, the use of the NSDS-EBM approach can help Pacific island countries in directly taking ownership of their own national development. Such an approach is expected to help countries better co-ordinate and complement their own development efforts with those provided by development partners, in addressing high priority projects and programmes.

Regional co-ordination and the Pacific Plan

The Pacific island states have endorsed the Pacific Islands Regional Oceans Policy, prepared with the assistance of regional organisations and development partners, to 'promote the Pacific region as an ocean environment in support of sustainable development'. The policy is based on the region's collective awareness of the transboundary and dynamic nature of the Pacific Ocean, the increasing number and severity of threats to its long-term integrity and the reality that sustainable economic and social development will be dependent on wise use of the ocean and its resources. It is also based on an awareness of the potential for fragmentation of programmes and for conflicting commitments in different sectors as ocean-related activities increase. This requires increased regional collaborative arrangements among Pacific island communities.

It highlights, as mentioned above, key principles and strategies: improving our understanding of the ocean; sustainably developing and managing the use of ocean resources; maintaining the health of the ocean; promoting its peaceful use; and creating partnerships and promoting co-operation. The PIROP is intended to guide member countries towards realising the vision of a healthy ocean that sustains the livelihoods and aspirations of Pacific island communities.

Although the PRIOP was endorsed in 2004, its implementation at national level has been limited to *ad hoc* individual projects, which usually depend on external resources. The Plan needs to be operationalised at national level, with countries systematically developing their own marine and ocean policies in a way that reflects its guiding principles. These national action plans should be linked to national development plans, NSDS and national budgetary processes.

The Pacific Plan

Building on regional activities over the last four or five decades, the Pacific region entered into a new era of regionalism in 2004. The 2004 Forum Leaders Meeting endorsed the development and implementation of the Pacific Plan. The Pacific Plan articulates the philosophy of creating stronger and deeper links among sovereign countries through regional co-operation and integration where they add value to national efforts, without compromising sovereign rights, responsibilities and obligations.

The main goal of the Pacific Plan is to enhance and stimulate economic growth, sustainable development, good governance and security through regionalism. Regionalism is defined as countries working together for their joint and individual benefit, and regional organisations' and development partners' support is aimed at complementing national development efforts.

The Pacific Plan identifies a number of regional activities, such as regional trade agreements, that will encourage expanded access to markets for Pacific goods, easier access to international financing, and greater co-ordination and harmonisation of development partner support. In the light of limited financial and human resources and technical capacity in the use of tools and models for addressing complex environmental and resource problems, increased co-ordination and harmonisation of services provided by the CROP agencies is also expected under the Plan.

This is a real challenge since much of the expertise is scattered across several regional agencies, located on seven campuses and resides in four different countries. In an effort to bring about co-ordination, the CROP agencies have recently agreed to undertake joint programming, an approach that was endorsed at the Forum Leaders Meeting in 2005 and reaffirmed in 2007. The challenge now is to put this into practice and collectively identify and implement technical assistance to member countries that is holistic, interdisciplinary and reflects the links between science, economics, policy and human activity.

Conclusion

The Pacific member countries are in a strong position to systematically address their national development goals using their own resources and development partner support, as recognised in their vision statement. With the strengthening of their national sustainable development strategies and the NSDS-linked ocean and marine sector action plan, they will be able to address the needs and aspirations of their peoples, using their limited domestic resources and co-ordinating and more effectively managing development partner assistance.

Sustainable development is a national responsibility, but due to limited financial and human resources, the Pacific island countries acknowledge that they cannot achieve it without support from development partners, regional institutions and NGOs. This is particularly relevant in relation to ocean and marine resources, because of the ecological connectivity that links the region.

In realising the vision of a peaceful region, the sustainable development of its natural resources and environment, including marine and coastal resources, is central. Through sustainable development, countries can expect in the long run to achieve their national development goals of poverty alleviation, equitable distribution of economic wealth, and minimising local conflict and threats to national security. It is also realised that in a globalised system, and because of the connections between the environment, economy and social systems, challenges in natural resource and environment management are multifaceted and multidimensional, involving issues at local, national, regional and international levels.

There is a growing awareness that one of the key obstacles to sustainable development in the Pacific is institutional and governance structures, and decision-making processes at all levels. At the national level, key constraints relate to institutional issues,

such as the lack of co-ordinated policies, strategies and lack of an integrated planning system that encourages the mainstreaming of environmental and social considerations in economic decision-making, as well as mainstreaming economic and social issues in environmental protection decisions. The mandate for action on the three pillars often rests with different organisations. Organisational arrangements are fragmented, with different government agencies focusing on different sectors, issues and policy aspects – a legacy of their colonial heritage.

Over the last decade and half in particular, the Pacific island countries have also acknowledged that social and economic development is inextricably linked to the sustainability of land and marine resources and the environment. Long-term sustainability is dependent on conservation (i.e. wise use and management) of marine and land-based resources and environment. The countries also recognise that human health, particularly in atoll island states, is directly also influenced by environmental pollution resulting from poor management of solid and liquid wastes of human and animal origin. In the long run, the resilience of local economies and communities in the face of external natural and market forces will rely on the health of the environment and the economy and their capacity to respond to and recover from the effects of these influences.

Realising the interdependence of social and economic well-being and environmental health, the Pacific island states have embraced the principles of sustainable development and good governance, and adopted ecosystem-based management. They acknowledge that the overarching objectives and essential requirements for sustainable development are poverty eradication, changing unsustainable patterns of production and consumption, and protecting the natural resource base of economic and social development. Bringing about such changes requires broad stakeholder consultation and participation in decision-making processes. At the regional and international level, also, there is a growing awareness of the need for increased co-ordination and collaboration among donors and service providers. A number of declarations, regional policies and strategies have been developed to identify what needs to be done.

The time has come to focus on the 'how' aspects of operationalising sustainable development, regional policies and frameworks, together with internationally agreed guiding principles for donor harmonisation at the national level.

To ensure that countries can achieve their desired national development goals in a cost-effective manner, a change is needed in the mindset of decision-makers at all levels. A shift towards a programmatic approach to development and the adoption of ecosystem-based adaptive management is also required. Such a shift in mindset and approach is needed within countries, as well in regional and international organisations.

A beginning has been made. The Pacific island countries have taken the first few steps towards adopting a two-pronged approach to national development – participatory NSDS-based planning and resource allocation at all levels, and participatory community-based economic development and environment conservation in an ecosystem management context. These can be further built on with the assistance of regional organisations and the support of development partners under the Pacific Plan.

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