

Experiences of Coastal Management in the Pacific Islands

Author: James Aston (Coastal Management Adviser), South Pacific Regional Environment Programme (SPREP), P.O. Box 240, Apia, Samoa. Tel: 685 21929 Fax: 685 20231 Email: jaston@samoa.net

Paper prepared for the Journal *Ocean & Coastal Management*.

Abstract

Integrated Coastal Management (ICM) is accepted world-wide as a comprehensive, multi sectoral integrated approach to the planning and management of coastal areas. ICM is particularly suited to the island member countries of the South Pacific Regional Environment Programme (SPREP) because of their size, the interconnectedness of the coast and terrestrial areas and the high degree of association and community involvement with the management of coastal systems. With the exception of the highly migratory pelagic fish stocks, the narrow natural resource base of many Pacific islands make them particularly vulnerable to inappropriate development and mismanagement. Unfortunately, the capacity to initiate integrated coastal management is lacking in most Pacific Island countries (PIC) and several obstacles and constraints need to be overcome before it can become an established practice.

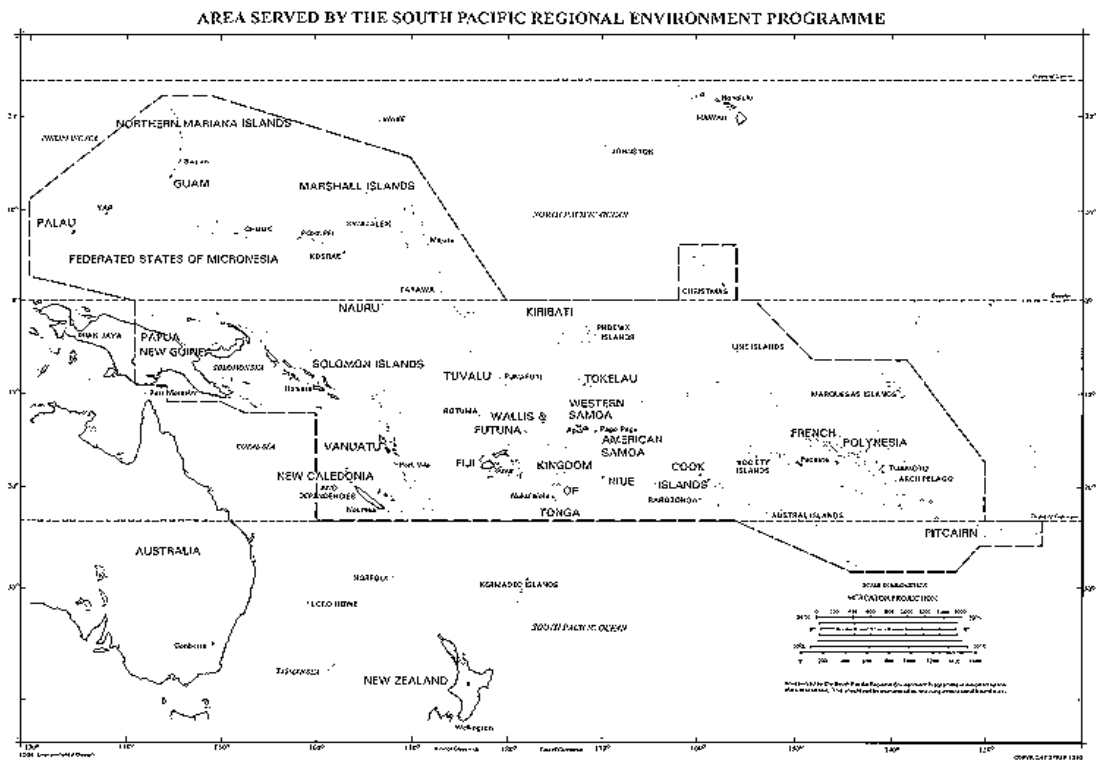
This paper uses the framework of ICM to illustrate some of the author's experience of coastal management with the South Pacific region. Within the ICM framework, a range of tools and techniques are available to manage coastal problems. Unfortunately many of these tools and approaches, borrowed from larger developed countries, have been shown to be of limited usefulness. The success of any approach depends on the scale and magnitude of the problems to be addressed and the availability of information, institutional support and commitment from all stakeholders. The way in which programmes are conducted and implemented is particularly important. Top down initiatives may work at the regional level but tend to fail at the national and community level unless there are other incentives to support them. On the other hand, bottom up, process driven initiatives have enjoyed more success at the community level. Demand based approaches have tended to be very successful at all levels, whether it be at the community, country or regional levels, particularly where the stakeholders as well as the legislators have had similar concerns for the marine environment and were prepared to participate and contribute to finding solutions to their problems.

The views expressed in this paper are not necessarily those of the South Pacific Regional Environment Programme.

The Setting

SPREP, the South Pacific Regional Environment Programme, has twenty-two island member countries and territories located throughout the central and western Pacific (see figure 1). In this vast region, there are globally important fisheries, coral reefs and rain forests, and more rare, endangered, threatened and endemic plant and animal species per unit land area than anywhere else on earth (SPREP, 1998).

Figure 1: Area served by the South Pacific Regional Environment Programme



The islands, which support nearly 6 million people, are being developed at a rapid pace. With the exception of the highly migratory pelagic fish stocks, the small size and narrow natural resource base of many Pacific islands make them particularly vulnerable to inappropriate development and mismanagement. Poor natural resource management and poorly planned or executed development activities are depleting and compromising the natural resource base. Many living coastal resources (mangroves, coral reefs, sea grasses, etc.) are facing severe ecological threats from urbanisation, land and marine based sources of pollution, inappropriate coastal and port development, inappropriate land use practices, and over-exploitation of coastal resources (both biological and physical) (Smith, 1996).

Island residents are also faced with large scale coastal erosion; water supply shortages and quality degradation, solid waste disposal problems as well as a range of issues associated with resettlement to other islands. There is little understanding of the cumulative impacts of resource management

decisions. Rampant development and population growth, coupled with small land areas, have effectively magnified the impacts on the islands.

As in other areas of the world, the underlying causes of natural resource exploitation and coastal environment degradation in the Pacific stem from a unique blend of social, cultural, economic, institutional and political origins (see Pomeroy, 1996). Top down 'command and control' models of coastal management have consistently failed to produce sustainable results. Conversely, there are many examples of successful solutions that have typically begun as bottom up strategies employing principles of co-management.

Principles Related to the Special Character of Oceans and Coasts in the Pacific Region

In developing integrated coastal management programs appropriate to the members of SPREP, certain principles should be considered. Cincin-Sain et al. (1997) identified two broad categories of principles: principles based on agreed international norms on environment and development that have emanated from UNCED (Rio, 1992) and Action Plans such as United Nations Framework for the Convention on Climate Change (UNFCCC), Convention on Biodiversity (CBD), The Washington Global Program of Action, International Coral Reef Initiative (ICRI), Law of the Sea Convention (LOS). Pulea (pers. comm. 1998) points out however, that the principles contained in these Action plans and Conventions can be summarised in five edicts:

1. Consult widely;
2. Combine national action with regional and global cooperation;
3. Provide technology and financing;
4. Integrate into realistic steps and;
5. Adopt a precautionary approach.

At the regional level, international conventions, agreements, instruments and action programmes play a role in providing a framework for coastal management, mainly through their links to funds and information, but their effectiveness is dependent inter alia on the area to be managed, availability of resources and the scale of the issues to be addressed. For example, at the community or village level, participatory based resource management practises and other tools have proved to be highly effective (see King and Faasili, 1997).

Although, many PIC have drafted legislation for dealing with environmental problems, most PIC need help to investigate and ratify relevant treaties and conventions, including the full extent of the resources required to implement them. Therefore, international conventions may have more of a role to play at the regional and global level in providing management principles and protecting the rights

of countries, than they do in providing an operational management framework for Small Island Developing States (SIDS).

Integrated Coastal Management

Resource management tends to stress the negative aspects of human population pressure within a biological model of thresholds and non renewable resources rather than as a dynamic system of linked responses which can be negative or positive based on the social behaviour of the resident population (Dyer, 1997).

A widely accepted framework for dealing with coastal management problems including those that arise from climate change is Integrated Coastal Management (IPCC, 1994). Integrated Coastal Management (ICM) is particularly suited to PIC because of their small size, the interconnectedness of the coast and terrestrial areas and the high degree of association and community involvement with the management of coastal systems (Fuavao, 1995).

Nevertheless, ICM is not always appropriate in every management situation. According to Cesar (1997), responses to coastal and marine problems should be determined by the size of the economic stakes, type of threat and location of the individual causing the threat (see figure 2). In cases where the immediate stakeholders are outsiders and the stakes are big, such as large scale poison fishing and logging, a national threat based approach is needed (Cesar, 1997). National threat based approaches involve initiatives at the highest national levels since local officials would be powerless in these situations. In cases where the area is confronted by an array of threats that cannot be dealt with separately and which are caused by stakeholders from within that area, an integrated coastal management approach may be warranted (Cesar, 1997). When the stakes are small, (e.g. coral mining, overfishing) a local threat based approach in the form of community based coastal resource management, would give the best results (Cesar, 1997).

Figure 2: Management Responses to Coastal and Marine Problems

Location of the individual causing threat	Size of Economic Stakes	
	Small	Big
Insider	Coral mining, Blasting, Overfishing	Sediment
	Local threat based approach	Integrated Coastal Management
Outsider	Overfishing	Cyanide, Logging
	Local threat based approach	National Threat based approach

Source: Cesar, H. 1997.

Through experience at the local and regional levels, 'island appropriate' capacity building approaches to ICM have now been embodied in such publications as *'The Pacific Way'* (SPC, 1992) and the *'Action Plan for Managing the Environment of the South Pacific Region, 1997 - 2000'* (SPREP, 1996a). Unfortunately, the capacity to initiate integrated coastal management is lacking in many PIC and several obstacles and constraints need to be overcome before it can become an established practice, requiring supporting legislation, education, scientific information and alternative income generating opportunities.

For other PIC, the process of ICM is initiated but not fully implemented. A few countries have a full inventory of their coastal problems and have developed plans of management to deal with those problems. However, where aspects of those plans are implemented, there is little evaluation of the effectiveness of strategies used to address the key issues and consequently little feedback of information into the management loop.

While there is agreement to the general direction, the approach to coastal management and its application to small island developing states, is still evolving. However, at the *International Workshop: Planning for Climate Change Through Integrated Coastal Management* (Cicin-Sain et al., 1997), five broad needs were identified to put ICM into practice. These are 1) Improving the Scientific and Information Base for ICM; 2) Improving Institutional Capabilities, 3) Participation and Consensus Building, 4) Education, Training and Outreach and 5) Financing and Implementing Management Strategies.

Case Study: The Arnavon Marine Conservation Area: A case study of best practises sustainable coastal and marine protected area in Solomon Islands

The Arnavon Marine Conservation Area (AMCA), located approximately 2.88 kilometres north of Solomon Islands, is regarded as the first successfully established marine protected area in the Solomon Islands. Traditional ownership of the Arnavon region is claimed by two tribal groups although legally it is

owned by the government of Solomon Islands. The region is the nesting grounds for the Hawksbill turtle and green turtles. However, the AMCA has not always worked well.

Attempts to designate the Arnavon islands as a marine protected area started in 1975 when the island was declared 'off limits' by the national government. However, it was not until 1980 that the Solomon Islands government, prompted by an international conservation organisation, created a wildlife sanctuary in the island group. Although supported by foreign experts, this also failed due to the lack of involvement and participation of the resource users and owners. There existed no formal control over the sanctuary for a further decade.

Eventually, a turtle survey, commissioned through the South Pacific Regional Environment Programme (SPREP) by the Solomon's islands government showed a decline in the turtle population. The Nature Conservancy was invited to develop and implement the AMCA in 1993. The project was revived through numerous consultative workshops and household surveys involving the resource users and adjacent communities. Two years later it received the support of the local village communities within its vicinity.

Today rapid ecological assessment is carried out regularly to monitor the turtle populations, corals, terrestrial fauna, commercially important marine invertebrates such as trochus, beche de mer, and giant clams. The AMCA is being managed by a management committee comprising representatives from the three adjacent communities, the Environment and Conservation Division, Ministry of Forests, Environment and Conservation and the Fisheries Division of the Ministry of Agriculture and Fisheries. Assisting the management committee are six Conservation Area Support Officers through the South Pacific Biodiversity Conservation Programme with SPREP. The operating costs for the AMCA are shared between SPREP while the capital costs are supported by the TNC.

A plan for enterprise development to create alternative income sources for the three communities has recently been initiated. It is hoped that this activity will divert community attention from use of the resources in the conservation area.

Source: Horokou, J & Ramohia P. In prep.

Broad Areas of Need for Initiating Integrated Coastal Management in the Pacific

1. Improving the Scientific and Information base

Resource management often involves making trade-offs and choices. The challenge for marine and coastal resource managers is to set clear and meaningful goals for the conservation and sustainable use of our resources. However, it is difficult to make choices where there is little information to guide the decision making process. Therefore, an ICM approach should include the development of an appropriate information and scientific base.

In PIC, however, there is generally a non strategic and uncoordinated approach to information acquisition, management, analysis, interpretation, dissemination and application at the local and national levels (Crawley and Aston, 1997). For example, at the Republic of Marshall Islands Environmental Protection Authority (RMI EPA), there is a lack of capacity for analysing, interpreting and disseminating data. The data that is collected is rarely properly processed or analysed in a way that can be used effectively in the decision making process. As a consequence, many decisions impinging on the coast are not grounded on established policy or the best available information (Waterman et al. In press).

Despite all of the efforts of the scientific community, the dynamics of marine systems and the checks and balances that sustain them will never be completely understood. Having said that however, it is possible to assess the state of the resources to determine what is valuable and what is not and how they are changing over time in response to identifiable pressures. This requires systematic and standardised data collection and observing systems.

In the Pacific, there exists a significant level of community knowledge of coastal resources as much of the subsistence economic activity is centred around their use. However, this is not often readily available in an appropriate form as the collection of statistics on subsistence coastal resource activities is difficult due to the number and wide distribution of those communities.

Thaman (In prep) suggests recording, analysis and application of ethnobiological knowledge by local people is an effective way of promoting biodiversity conservation for the benefit of local communities. Community based participatory surveys and workshops can facilitate ethnobiological inventories, identify rare and endangered plants and animals important to those communities and actions required to address them (Thaman, In prep). These same communities can be involved in creel surveys and censuses and use of simple log books.

Rather than relying on existing knowledge and understanding, expert consultants have typically been brought into the region to write reports on the state of the natural resources. Unfortunately, the short time frame is generally insufficient to establish the degree of ownership and cross sectoral trust necessary to make meaningful recommendations and lasting interventions and follow up monitoring. Many consultants are contracted to meet specific Terms of Reference (TOR) which are often defined by non experts. They are therefore often obliged to make extensive and comprehensive recommendations based on their expertise and the problems encountered, most of which fail to take account of all of the constraints, such as institutional constraints, that the small environmental units are faced with. This approach fails to really appreciate contemporary management experience and knowledge inherent locally. Reports are also not the main medium of communication in the PIC and may either remain unconsulted on book shelves or expropriated by other consultants to write similar reports. Those consultants with a longer association with the region, often undertake additional activities outside the TOR to address this issue.

In the longer term, the decision makers of PIC need information to identify and document the key issues, values associated with the area of concern, existing patterns of use of coastal resources and likely future use patterns and legitimate needs of people. The bringing together of environmental scientists and policy makers in a workshop is recommended to break down communication barriers and help pinpoint the linkages and key associations amongst natural resources under consideration. This also helps to clarify mandates and available services and capabilities of each other.

Evaluation of projects should also be carried out to allow periodic adjustments to the management plans and processes. The process will involve the collection of data to evaluate results as they apply to the hypotheses, testing of assumptions and carefully monitoring the risks to be addressed. However, this process is not foolproof because of the time lags in evaluating the results of the periodic assessment and difficulties in establishing cause-effect relationships.

Case Study: Training in Coral Reef Survey and Monitoring

Training in this area, conducted through workshops at the subregional and national levels since 1994, has been highly successful. Although the methods taught during these workshops are aimed at the middle levels of government resource management agencies, village based assessment and monitoring methods are currently being trialled as a pilot project in Samoa. If successful, the methods will be applied in other Pacific communities which in turn should have the effect of reducing the workload for government employees.

During the training, participants are taught some key, simple but internationally scientifically validated techniques for assessing and monitoring coral reefs. Participants are also taught by people from the region who understand first hand the problems and opportunities of working in these environments. After the training, but dependent on the availability of funds, there are follow up national workshops and follow up one-on-one training to address problems that trainees may have encountered in setting up and running their own monitoring programmes.

The methods taught at these workshops come from the suite of Global Coral Reef Monitoring Network (GCRMN) techniques. The monitoring protocols of the GCRMN were adopted at the Pacific Region International Coral Reef Initiative meeting in December 1995 and endorsed at the 1997 Year of the Coral Reef Evaluation meeting in April this year. The GCRMN is a bottom up network which functions through sub nodes in the Pacific region. It aims to improve management and sustainable conservation of coral reefs for people by assessing status and trends in coral reefs and making that information available in a readily understandable format.

ARMDES, developed by the Australian Institute of Marine Science, is currently used to analyse and present transect and visual census data collected through monitoring programmes. Once the data is analysed it will be incorporated into *Reefbase*, a global database on coral reefs developed by the International Center for Living Aquatic Resources Management (ICLARM). Reefbase has provision for storing information on the physical and biological conditions of coral reefs as well as indicators of socio cultural aspects of human populations associated with the reefs (Pollinac, 1997).

There are many aspects to monitoring of coral reefs that have benefited the region. Firstly, the results of monitoring are ideal for awareness raising of the plight of reefs, especially if that knowledge is generated from within the country gathered and presented to the decision makers and custodians of that country. Secondly, monitoring data is a prerequisite to the development of plans of management for coral reefs. Thirdly, monitoring can highlight those areas that need to be carefully managed. Fourthly, the monitoring can be done with one or two trained staff and some basic equipment and does not require the mobilisation of whole Departments.

2. Improving Institutional Arrangements

In PIC, environmental activities are typically regulated by environment units such as the Environmental Protection Agencies within larger ministries (SPREP, In press). Staffing levels range from 1 to 15 people and operating budgets are generally small, in the order of US\$10 to 100,000.

The institutional framework in which many of these units operate is poorly developed. There are few consultative mechanisms for dealing with coastal and climate change problems in an integrated way and little incentive for the community to participate in the decision making process. The operating

budgets are generally inadequate to enable these units to administer and manage complex programmes because of their small size and the ex-colonial nature of the bureaucracy they operate within.

As in other countries of the world, Environment and Commerce are often separate entities and, in some countries, there is evidence of a disjunction between these units and other areas of the bureaucracy. Consequently, conservation and development are still seen as conflicting ideals. Decisions are made on a reactive, ad hoc and piecemeal basis, without the benefit of an informed community at large.

Overlapping mandates have created complex situations and conflicts of competence, bureaucratic procedures and confusion over who has the authority to make the final decision. The division of responsibilities among the various government departments is not embodied in national agreements or legislation. Although these are national bodies, they are often obliged to deal with local level issues. Consequently, these units have been required to assume many functions that would normally be delegated to local government.

The lack of an overarching governmental institutional framework affects the governance ability of the environment units. Basic building blocks for an integrative environmental management system have yet to be put in place. There are few government arrangements, goals or policy to guide decision making in the environmental units. The enforcement of legislation is rarely carried out. Some of the components of the EIA process are carried out, but not within a holistic framework. In that context, there does not appear to be an understanding of the pathways and outputs of environmental management.

Environment units often have a poor image and tend not to be seen by the community and private sector as an integral and positive part of the process of the development of the islands. There are some reports of permits for development projects having been approved as a result of political pressure. In other cases, the environment units have not been consulted at any stage of the governmental project approval process and have had to rely on external sources such as the media to acquire information on development projects.

Integrating coastal projects into PICs is best accomplished in collaboration with local management measures and institutional initiatives. Yet, the institutional capacity to consider and link whole ecosystem processes within islands is lacking. The resources required for coastal management projects far outweigh the means. Donors tend to establish preferential links with sectors of government within their field of interest which tends to reinforce the sectoral approach. The donors also tend to support central themes and fail to take into account the local issues.

Initial approaches have centred on increasing the skills and knowledge base of middle level government line ministries (including but not limited to fisheries, agriculture, environment, public works), NGOs and the private sector. In future, more consideration should be given to the nature of the problems, level of in-country skill available and required, role of line ministries, role of the public sector, role of regional organisations, role of donor agencies, information and neighbouring countries.

Case Study : Australia/SPREP Coastal Vulnerability Initiative For Atoll States

In October 1997, Environment Australia and the South Pacific Regional Environment Programme (SPREP) sponsored a phase III project in the Republic of Marshall Islands Environmental Protection Authority (RMI EPA) as part of the Australia/SPREP Vulnerability Initiative for Atoll States.

The Phase III project was originally conceived to assist staff from the RMI EPA in the development and application of an integrated coastal environment management system based on the International Standards Organisations (ISO) 14000 Series Standards. The ISO14000 is currently an appropriate framework for integrating environmental impact assessment, planning and monitoring as it can be tailored to local needs, resources and capabilities of the nation where it is being implemented. The project was also designed to build on the confidence and skills of RMI EPA staff whilst encouraging the development of a network of resource people from other atoll countries in order to maximise the possibility of exchange of experiences and expertise in those countries.

The focus of the training on direct face to face contact with Pacific Island environmental management staff within their home country provided the means to clearly identify and encourage ownership of a range of localised coastal problems and their respective solutions. It provided a starting point and platform from which to address the institutional constraints holding up the development and implementation of tools and techniques for assessment and response to climate change impacts in an integrated coastal management context.

In developing the solutions to the problems, a consensus based participatory determined and driven process was followed. Meetings and workshops were convened and the RMI EPA staff were asked to define to their own processes for achieving certain objectives. Through that process, the participants developed, at their own pace, a solution that they could 'live with'. Such decision making processes are particularly critical in countries like the Marshall Islands where it is important to have many meetings both to provide information as well as arrive at a consensus decision.

As part of the project, expertise from other atoll nations (identified during phase 1 and II of the Vulnerability Initiative) were utilised because of the commonality of environmental issues. This was very successful and resulted in an exchange of views and experiences and use of examples and solutions similar to those of other atolls. This is seen as an important and integral step to the development of a network of expertise of Pacific islanders. It also encourages a form of camaraderie and competition among the islands.

Initial indications and feedback from the RMI EPA staff indicate that the main goal of building confidence and improving the skills and knowledge of RMI EPA staff in the assessment of, and response to, coastal impacts of climate change and sea level rise has been achieved. However, the team only managed to initiate the process. There is much work to be done to give the RMI EPA the capacity to completely to develop and apply techniques for the preparation and evaluation of environmental impact assessment (EIA) in an overall integrated coastal management framework.

Source: Waterman et al. In press.

3. Participation and Consensus Building

In many PIC, the top down planning processes have alienated communities and given them little opportunity to be heard and express their needs. At the same time, traditional natural resource management systems have typically evolved, weakened or disappeared as a consequence of adjusting to the demands of a contemporary administrations.

An example of an indigenous based management system is the ‘Fono’ representing a council of elders, in Samoa. Such bodies often have the knowledge and experience of traditional or informal management systems but the resources required to mobilise these communities is very limited.

Communities have to be convinced it is in their benefit to proceed with a course of action to protect their coastal resources. The first step in the process is to identify and work with the most influential stakeholders to secure political support for the project and evaluate all of the assumptions, risk and likelihood of the project meeting their needs.

Influential stakeholders typically include community groups, family, donors, regional agencies, private sector interests, women’s groups. It is important to understand the stakeholder group and the environment they operate within (figure 3).

Figure 3: Key Stakeholder Groups in the Pacific

Stakeholder	Role
Environmental Issue Driven Groups	<p>Local, regional and international NGOs or environmental issue driven groups, although relatively small in number, are taking an increasingly larger role in managing local resources. These groups can play a major role in questioning the power bases and decision making processes of government. They have a strong tendency to support participatory based approaches to natural resource management.</p> <p>Such groups will need nurturing in order to enable them to effectively influence the decision making processes. Success of these groups is often dependent on a range of factors including style of leadership, composition of the group, funding mechanisms, involvement of women etc. The knowledge base of such groups can be limited and it may be the responsibility of regional organisations and government officers to provide supporting scientific and professional advice.</p>
Customary Leaders	<p>On many islands, the resource management arrangements fall under customary tenure systems. In some cases, a few ‘big men’ hold the balance of power. For example, in American Samoa, leadership qualities which are inherent in the village elders and ‘talking chiefs’ are utilised in the development of plans of management by the government.</p> <p>Conservation tends to be undervalued because it yields future, diffuse often intangible benefits, many of which have no direct economic value and may conflict with community aspirations (McCallum and Sekhran, In prep). Communities tend to protect and support that which they see, respect and value. They tend to focus on their immediate needs and may ignore the longer term needs. It is often the job of traditional leaders to make decisions which balance these competing needs.</p>
Private Sector	<p>The private sector is not well developed in PIC. The majority of coastal activities of the private sector are small scale local developments such as jetties and retail stores. More substantial developments such as resorts and marinas are in the minority. Potential conflicts may arise between the communities and expatriates of the private sector, who may not be sympathetic to the culture and practises unique to each island or community group.</p>

Regional organisations	There are several regional agencies in the Pacific who have a role to play in providing services to PIC to help them manage their coastal and marine sectors. These include the South Pacific Regional Environment Programme, South Pacific Applied Geo-science Commission, Forum Fisheries Agency, University of the South Pacific, Secretariat of the Pacific Community, Tourism Council of the South Pacific and the Pacific Islands Development Programme. All of these organisations have a capacity building role for their members. They have specialist skills which are not necessarily available in country. These include technical skills and process skills for developing government policy. Regional agencies tend to organise their work on the basis of regions or groups of countries. This approach may not take account of political, cultural and societal differences and other ethnic variations.
Government	Governments have responsibility for providing adequate safeguards, compensation and alternatives in mitigation of their adverse impacts upon nature and people (Panwar, 1997). The national PIC governments usually have a strong foreign affairs ministry to vet foreign projects. A key concern is the lack of knowledge of impacts of developments and incentives to take on those projects to raise revenue for the country. Usually the best way of achieving this is through, strategic planning, environmental impact assessment and compliance monitoring.
Donors	On some islands, donors use the Pacific as a 'testing ground' for technologies and projects. Countries that are uncertain about the costs and benefits of a new coastal technology wait for other countries to test and prove its value before investing in it. The ability to challenge the appropriateness of the development is limited and national management structures and resource controls may be ignored or left until the project commences. Donors tend to support an expert dominated approach although, increasingly some are opting for a local counterpart from the host country.

The smallness of the islands and strong family networks tend to enhance communication between projects. Nevertheless, it is a good idea to hold early meetings and workshops to identify culturally and economically important coastal resources, activities that threaten those resources and strategies or actions that could be used to address them. When working at the local level, educational materials may need to be translated into the local language.

Motivation and technical advice is needed to supplement local environmental knowledge since communities rarely appreciate the value of the resources 'within their own backyard'. Negotiation and facilitation skills need to be honed to make decisions to reconcile the differences that each party places on the values of the resource. Local government line ministries and regional organisations are sometimes called upon to provide technical advice to help governments or other stakeholders through this process.

It is very important to identify and prioritise problems and propose solutions through a range of techniques. One such technique is the 'problem/solution tree' which can be used to increase the conceptual understanding of stakeholders of the project as well as their intentions and actions. This process can also help to design the project and construct hypotheses upon which goals and strategies are based (see Pollnac, 1997).

A responsible use of the participatory approach is needed to ensure that the process is a means to an end, not an end in itself. Therefore, following the process of consensus building and conflict resolution, some form of document such as a 'plan' or, at the very least, minutes of meetings should be developed and made available to the groups involved.

Case Study: Community-based management of fisheries and marine environment in Samoa

The high level of awareness and knowledge of the marine environment by communities provide an ideal platform on which communities can be encouraged and motivated to manage their own marine resources. Through an AusAID initiative in partnership with the Fisheries Division of Samoa, community fisheries development management plans have been developed for nearly 45 villages. As a result of this initiative, the numbers of rural people visiting the offices of the Fisheries Division increased dramatically, media publicity became positive and the Fisheries Department is now regarded as one of the most active of Samoa's government agencies.

The project strategy, based on a) maximum community participation, b) motivation rather than education, c) a demand based extension process and d) the development of alternative sources of seafood involved in setting up a culturally acceptable fisheries extension program. The steps of this extension process were:

- 1) Initial contact with community to accept or reject the extension process.
- 2) Village Group meetings and participatory survey of marine environment and resources to identify problems and propose solutions.
- 3) Formation of a Fisheries Management Advisory Committee to prepare a plan with undertakings necessary to solve identified problems.
- 4) Development of a Village Fisheries Management Plan with community undertakings (e.g. local by laws, bans on destructive fishing practises, fish size limits, establishment of fish reserves, other environmental protection measures) and fisheries division undertakings (e.g. outer reef fishing support, species introductions, aquaculture, training workshops, technical advice).
- 5) Formation of a Fisheries Management Committee to oversee the undertakings agreed to in the management plan.

Source: King, M. & Faasili, U. 1997.

Case Study: Lessons Learned Through ICAD Experimentation in Papua New Guinea

The Lak Integrated Conservation and Development (ICAD) project in New Ireland, Papua New Guinea represented an attempt to establish a linkage between the private interests of customary landowners seeking immediate development and broader public interest in biodiversity conservation. The approach taken by the PNG Biodiversity Conservation and Resource Management Program was to provide development support to communities in areas of high conservation value in return for a formal commitment to conservation. Development support was mainly in the form of technical assistance, information dissemination and training.

The Lak project was downscaled and later terminated principally because the local communities viewed the linkages between conservation and development as conflicting or competing components. Although the decision to establish an ICAD project was led by a local group of resource owners, the motivations of those owners was not clarified. That group did not appreciate the conflicts between the impacts of an industrial logging operation and the conservation needs of an ICAD project. Efforts to attract an ICAD project to the area appeared to be based on the desire to obtain an economic backstop by a community that envisaged obtaining development benefits simultaneously from both conservation proponents and the logging industry. In essence, the Lak community were not committed to establishing an ICAD project.

It was clear that the Lak ICAD project seriously misjudged the complexities of the task at hand and entered into a complex social and political arena it did not fully understand. The community was reluctant to assume responsibilities for conservation.

The lessons learned and approaches to address these problems include:

- Attitudinal change is required at the local level that challenges communities to reassess their development strategies.
- Conservation must be driven from within the community to ensure that the sacrifices and discipline needed to achieve its objectives in the longer term are sustainable.
- Development of a supportive policy environment with appropriate political support
- Mechanisms must be developed to compensate communities for the short term opportunity costs lost through conservation mechanisms. This could include conservation rental arrangements
- Development is a long term capacity building process. This needs to be understood by community stakeholders and requires indirect support aimed at information dissemination, literacy outreach and other forms of technical assistance.

Source: McCallum, R. & Sekhran, N. In prep.

4. Capacity Building through training and education

Capacity building is difficult to define in practise as it covers a broad spectrum of levels (personal, local, national and institutional). Eade (1997:3) characterises capacity building as an approach to development which aims to 'strengthen peoples capacity to determine their own values and priorities, and to act on these'. Eade (1997) makes five key points about capacity building:

1. Capacity building is deeply embedded in the social, economic and political environment and cannot be taken in isolation.
2. People always have capacities which may not be obvious but should be built upon. It is disrespectful not to seek this capacity out.
3. An individuals capacity and needs and the opportunities to act on them depend upon the make up of the individual and social group (e.g. social identity, life experiences, age, gender, socio-economic status etc).
4. Projects should be flexible because capacity building takes place in the context of wider processes of social and economic transformation.
5. Capacity building requires a long term investment in people and organisations.

Capacity building for PIC is a particularly complex and timely process, affected by what is available and what has been inherited (i.e. the legislative base, cultural and family beliefs, levels of funding, staff, information and the institutional settings we work within). Land ownership, central and island government priorities, education, awareness and development and project evaluation have been identified through SPREPs work as some of the constraints that need to be taken into account in improving environmental management and planning.

The resources and tools and environmental policy and planning are currently inadequate to deal with these issues, effectively reducing the options for managing the uncertainties of environmental change

into the future. The effective capacity of regional agencies and government, understaffed and under funded, to manage resources across a wide area is also severely restricted. However, some PIC governments have started to address this by devolving some of their resource management responsibilities to their communities.

The issues and problems facing the small island developing states in the management of their coastal areas have been prioritised over the last ten years through ad hoc needs analyses and priority setting exercises (figure 4). Follow up training, although critical to the success of such initiatives, does not always eventuate because of the difficulty of ongoing contact, communication, competing projects and funding limitations.

Figure 4: Coastal Management Needs Analyses and Priority Setting Initiatives

Initiative	Description
National Environmental Management Strategies	In 1991, National Environmental Management Strategies (NEMS) were developed in 15 of SPREPs' member countries through a process of extensive in-country consultation and gathering of relevant background information. The NEMS lay out a blueprint for environmental priorities to the end of the decade and outlines the major environmental issues faced by each country including the steps required to address them.
Coastal Protection Meetings	In 1994, a series of <i>Coastal Protection Meetings</i> assessed the key needs and actions of the region required to provide effective coastal protection (SPREP/SOPAC, 1994). During two of these meetings, eight general areas of needs were identified mapping and data collection to better understand physical and biological processes in coastal zones; integrated management of coastal zones; education and public awareness; regulatory regimes; consideration of social and cultural practices; assessment of coastal sand and gravel resources; consideration of economic issues; and coastal engineering.
International Coral Reef Initiative (ICRI)	In 1995, the International Coral Reef Initiative (ICRI) Pacific Regional Strategy identified regional priorities to address pressing coastal management issues including capacity building; research and monitoring; and management (SPREP, 1996b & c).
The Pacific Environmental Natural Resource Information Centre	The Pacific Environmental Natural Resource Information Centre (PENRIC), is part of a network for environment assessment in the Asian and Pacific Region. It was initiated through collaboration of SPREP/PENRIC and other sub-regional institutions: the Association of Southeast Asian Nations (ASEAN); the International Center for Integrated Mountain Development (ICIMOD); the Interim Committee for Co-ordination of Investigations of the Lower Mekong Basin (MEKONG); and the South Asia Co-operative Environment Program (SACEP).
Training Needs Assessment Workshops	Common issues and needs for capacity building in coastal management have been identified as 1) the general lack of coordination between government agencies involved in different aspects of coastal management and need for high level in country ICM workshops; 2) need for extension and enforcement training; 3) incountry training with small groups 4) staff exchanges between countries and; 5) need for further EIA and GIS training (SPREP, 1995)

5. Financing and Implementing Management Strategies

An empowered community has a far better chance of addressing the need for economic development and the conservation of natural resources (Pomeroy, 1996). Yet, the resources of government to raise awareness in the community of the need to properly manage natural resources are very limited. Donor agencies, whether multilateral or bilateral, as well as expatriate advisers and consultants, are in many instances the primary source for coastal development projects and capacity building initiatives to conserve coastal resources. Some PIC governments are struggling to even maintain the staffing levels and operational budgets of their environment units and have initiated more sustainable reform processes. Others (e.g. the Republic of Marshall Islands and Fiji) have started to investigate economic resource management arrangements to address these problems.

Use of the private sector in the Pacific to generate the resources to manage coastal resources and environments in the medium term remains largely untried. Most enterprises are usually not large enough to generate substantial returns. This is because of the scarcity of skilled peoples, the vast distances that need to be managed and the paucity of capital and technology. In remote areas production and marketing costs of industries can be high and unprofitable. The provision of in-country legislation to have a proportion of the total cost of development projects be used for EIA activities has not yet been put in practice. Project developers have always claimed that they cannot meet this cost and have sought to have the fee waived at the highest political levels.

As in other parts of the world, the economic value of the coral reefs and other coastal resources in the Pacific is largely unrecognised. There is a distinct lack of data and quantitative models developed for PIC to facilitate a comprehensive economic and ecological analysis of the effects of economic activity on coral reefs and coastal areas. Scientific information is lacking for estimating ultimate values of coral reef ecosystems, rather than estimates of prices and economic returns from different uses. The values associated with direct uses of coral reefs tend to focus on consumptive uses (such as collection of corals, shells and fish) rather than non consumptive uses such as recreational activity. Other values (see Dixon, 1997) including option, indirect, existence and bequest values associated with healthy reefs have not been quantified. In any case these values are anthropocentric and are determined by how people perceive the various benefits and costs (Dixon, 1997).

Communities must be encouraged to view biodiversity as capital inheritance, not income that should be spent or destroyed (Thaman, In prep). Attributes describing coastal resources commonly used in developed countries such as uniqueness, scientific importance, medicinal discoveries may not be as important in the Pacific (Done, 1995) where the conservation of biodiversity for survival of the communities themselves and where up to 90% of the income from outer island communities is derived from local terrestrial and marine plant and animal resources (Thaman, In prep). The fauna and flora of these islands may be more vulnerable to overexploitation, cyclones and other natural events.

Except for some of the American and French territories, there is currently very few economic based management methods, such as concessions, taxes, resource rents and competitive bidding systems governing resource use. Yet community based management systems and tenure systems may be an ideal way to extract and distribute resource rents equitably. To avoid repeats of the 'tragedy of the commons', the first step will be to clearly define property rights. The second step requires delegation of management and allocation of decisions to appropriate levels.

The choice and type of allocation system and associated assessment criteria depend on whether there is a plan driven approach or a reactive approach to the management of that area. At one end of the spectrum, activities would be left to run their own course. At the other end of the spectrum, the resource managers would specify the type of development they want at a particular site. A proactive approach to the management of sites in the Pacific would largely prevent incremental impacts from site developments and the various problems associated with non discretionary mechanisms of site allocation.

The integration of environmental management and planning of coastal and marine resources and must occur at macroeconomic, sectoral and community levels medium to long term economic growth of the islands. Priorities need to be set through the use of various economic analysis and stakeholder analysis techniques that seek to measure individuals preference for environmental improvement, or loss of well being due to environmental degradation or an environmental asset or biodiversity loss. The solutions lie in creating an economic environment in which problems will be solved by people acting in what they perceive to be in their own best interest (Fallon and Chua, 1990). The challenge is to balance rights and responsibilities and work in a cooperative, rather than antagonistic, mode with government managers (Pomeroy, 1996).

References

Cesar, H. 1997. Indonesian Coral Reefs: A Precious but Threatened Resource. *Coral Reefs - Challenges and Opportunities for Sustainable Management*. Proceedings of an Associated Event of the Fifth Annual World Bank Conference on Environmentally and Socially Sustainable Development held at the World Bank, Washington D.C, October 9 -11 1997, pp. 163-170.

Cincin-Sain, B. Ehler, C. Knecht, R. South, R. and R. Weiher. 1997. *Guidelines for Integrating Coastal Management Programs and National Climate Change Action Plans*. Developed at the International Workshop: Planning for Climate Change Through Integrated Coastal Management, February 24 -28, 1997, Chinese Taipei.

Crawley B. & Aston J. 1997. "GIS for Sustainable Coastal Zone Management in the Pacific - A Strategy." *Coast GIS '97 - The Next Millennium*. Second International Symposium on GIS and Computer Mapping for Coastal Zone Management, 29 to 31 August, 1997, University of Aberdeen Scotland, United Kingdom.

Dixon, J.A. 1997. Economic Values of Coral Reefs: What are the Issues? *Coral Reefs - Challenges and Opportunities for Sustainable Management*. Proceedings of an Associated Event of the Fifth Annual World Bank Conference on Environmentally and Socially Sustainable Development held at the World Bank, Washington D.C, October 9 -11 1997.

Done, T.J. 1995. Ecological criteria for evaluating coral reefs and their implications for managers and researchers. *Coral Reefs* 14: 183-192.

Eade, D. 1997. *Capacity Building: An Approach to People Centred Development*. Oxfam. Oxford, United Kingdom 226pp.

Fallon, L.A. & Chua, T.E. 1990. Towards strengthening policy and strategies orientation for fisheries resource management: the role of coastal area management. *Tropical Coastal Area Management*, 5(3), pp. 1-5.

Fuavao, V. 1995. *Coastal Management in Small Island Developing States*. Paper presented at the Global Conference on the Sustainable Development of Small Island Developing States, Barbados, May 1994

Horokou, J & Ramohia P. In prep. *The Arnavon Marine Conservation Area: A case study of best practises sustainable coastal and marine protected area in Solomon Islands*. Paper presented at the Economic Development Institute of the World Bank and South Pacific Regional Environment Programme "Seminar on Marine Biodiversity and Sustainable Coastal and Marine Uses in the Pacific", Fiji, 15-19 June, 1998.

King, M. & Faasili, U. 1997. *Community-based management of fisheries and the marine environment*. Paper presented to the Pacific Science Association Inter Congress, July 1997, Fiji.

McCallum, R. & Sekhran, N. In prep. *Lessons Learned Through ICAD Experimentation in Papua New Guinea: The Lak Experience*. Paper presented at the 6th South Pacific Conference on Nature Conservation and Protected Areas, 29th September to 3rd October, 1997, Federated States of Micronesia.

Panwar, H.S. 1997. *Protected Areas: Enhancing Capacity to Manage. Protected Areas in the 21st Century: From Islands to Networks*, High Level Symposium, 23 -25 November 1997, Western Australia. Unpublished report.

Pollnac, R. B. 1997. "Monitoring and Evaluating Coral Reef Management". *Intercoast Network*, Number 29, Fall 1997. Rhode Island, USA.

Pomeroy, R.S. 1996. Community-based and co-management institutions for sustainable coastal fisheries management in Southeast Asia. *Ocean and Coastal Management*, Vol 27, No. 3, pp. 143-162.

Smith, A. 1996. *Pacific Regional Report on the Issues and activities associated with coral reefs and related ecosystems*. Apia, Western Samoa: SPREP.

SPC, 1992. *The Pacific Way*. Pacific Island Developing Countries' report to the United Nations Conference on Environment and Development. PIDC report to UNCED. Prepared by the South Pacific Regional Environment Programme.

SPREP/SOPAC, 1994. *Coastal Protection in the Pacific Islands: Current Trends and Future Prospects*. Proceedings of the First and Second Regional Coastal Protection Meetings held on 21 to 23 February 1994 in Apia, Western Samoa. SOPAC Miscellaneous Report 177, Suva, Fiji.

SPREP. In press. *Directory Of Coastal Zone Management In Pacific Island Countries*. South Pacific Regional Environment Programme, Apia, Western Samoa.

SPREP. 1995. *Report on the Subregional Meetings to Identify Coastal Management Training Needs*. Pago Pago from 18-19 July 1994, Saipan from 25-26 July 1994 and Honiara 1-2 August 1994. Apia, Western Samoa.

SPREP, 1996a. *Action Plan for Managing the Environment of the South Pacific Region 1997 - 2000*. South Pacific Regional Environment Programme. Apia, Western Samoa.

SPREP, 1996b. *International Coral Reef Initiative Pacific Region Strategy*, March 1996. Paper prepared for ICRI Workshop held in Suva, Fiji 27 November - 1 December, 1995, Apia, Western Samoa. 30 p.

SPREP, 1996c. *International Coral Reef Initiative Pacific Regional Workshop*, Suva, Fiji, 1996 27 November - 1 December, 1995, Apia, Western Samoa. 240 p.

SPREP, 1998. *Action Strategy for Nature Conservation in the Pacific Islands Region, 1999 - 2002*. South Pacific Regional Environment Programme, Apia, Samoa. 40pp.

, R. In prep. *Community-based biodiversity surveys and conservation action plans as a foundation for integrated coastal zone management and marine biodiversity conservation in the Pacific Islands*. Paper presented at the Economic Development Institute of the World Bank and South Pacific Regional Environment Programme "Seminar on Marine Biodiversity and Sustainable Coastal and Marine Uses in the Pacific", Fiji, 15-19 June, 1998.

Waterman, P., Aston, J & Seluka. S. In Press. *The Australian / SPREP Coastal Vulnerability Initiative for Atoll States - Confidence Building in Management, Planning and Assessment in the Republic of the Marshall Islands*. Environment Australia, Canberra.