

Issues for Community-based Sustainable Resource Management and Conservation: Considerations for the Strategic Action Programme for the International Waters of the Pacific Small Island Developing States

Volume 5: Economic Considerations in Community-based Project Planning and Implementation

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Participating Countries in the International Waters Programme

Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

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FOREWORD

The South Pacific Regional Environment Programme (SPREP) has been involved in many large regional initiatives since it was established in 1982. Among the more notable are the National Environmental Management Strategies, State of Environment Reports, regional preparations for the United Nations Conference on Environment and Development in Rio de Janeiro in 1992; the South Pacific Biodiversity Conservation Programme which also started in 1992 and concluded in 2001; preparations leading up to the World Summit on Sustainable Development scheduled for Johannesburg, South Africa in 2002 and this programme, the Strategic Action Programme for the International Waters of the Pacific Small Island Developing States (IWP).

The IWP is novel in many respects. It is the first large programme in which several Pacific regional organisations, united under the umbrella of the Council of Regional Organisations in the Pacific (CROP), are formally collaborating. While SPREP is the executing agency, responsibilities for the execution of the oceanic component of the Programme rest with the Secretariat of the Pacific Community (SPC), based in New Caledonia, and the South Pacific Forum Fisheries Agency (FFA), which is based in Solomon Islands. These two organisations are providing the science and the management advice respectively to assist the 14 countries participating in the Programme develop comprehensive conservation and management arrangements for the region's major renewable resource, tuna.

The Project Coordination Unit (PCU) of IWP is based at the SPREP Secretariat in Samoa. It is responsible for the implementation of the coastal component of the Programme. The objective of this component is to design and implement a project in each of the 14 participating countries that seeks to address priority environmental concerns in respect of coastal fisheries, marine protected areas, waste management or the preservation and conservation of freshwater resources. The focus of the projects, termed pilot projects in the Project Document, is to promote increased community involvement and responsibility for local resource management and conservation initiatives.

The Programme is an ambitious one. Involving 14 countries stretching over 30 million square kilometers of the western central Pacific, and working principally in isolated rural communities, there are bound to be many challenges encountered as the Programme is implemented over the next four years. Nevertheless, if in that short time frame we can learn more about processes that will motivate and support local communities to take a more proactive role in the sustainable utilisation and conservation of their renewable resources, we will have made a significant contribution to the future well-being of the Pacific region and the ecosystems it supports.

This report is one of six reports produced at the start of the Programme and, as such represents the first major output for the Programme. This series of reports seek to synthesize all the available information for each of the priority areas of interest to the IWP - coastal fisheries, marine protected areas, waste and freshwater as they relate to tropical island ecosystems, particularly in the western and central Pacific. The reviews of these four technical areas are supplemented with complementary reviews, in separate volumes, of economic issues to be considered in planning and implementing community-based sustainable resource management and conservation initiatives in island ecosystems, and of lessons learned from previous national and regional projects and activities related to the future areas of work for the IWP. Not only do these documents provide a useful reference for practitioners working on the priority environmental concerns of the region in relation to each of these four areas of interest but they also provide a comprehensive snapshot of our understanding of these critical issues in the region in early 2002.

As a result, these reports will provide a useful reference for understanding the baseline situation that existed in the region at the start of the IWP. They provide a valuable reference against which the situation in 2005 may be assessed. This will be a measure of whether progress was made in addressing these pressing issues during the Programme or if we continue to threaten the future of our fragile environment through poor management of the natural systems and resources with which we are blessed.

SPREP looks forward to working with participating countries on the successful execution of this Programme.

Tamari'i Tutangata
Director
SPREP

INTRODUCTION

Background

The member countries and territories¹ of the South Pacific Regional Environment Programme (SPREP), at their 8th Annual Meeting in October 1995, endorsed a project to prepare the Strategic Action Programme (SAP), under the International Waters focal area of the Global Environment Facility (GEF).

The GEF was created in 1994 to fulfill a unique niche – that of providing financing for programmes and projects to achieve global environment benefits in four focal areas: biodiversity, climate change, international waters, and ozone layer depletion - and in land degradation as it relates to these focal areas.

According to the GEF definition, international waters include oceans, large marine ecosystems, enclosed or semi-enclosed seas and estuaries as well as rivers, lakes, groundwater systems, and wetlands with trans-boundary drainage basins or common borders involving two or more countries. The ecosystems and habitats associated with these waters are essential parts of the system. Because the global hydrological cycle links watersheds, the atmosphere, estuaries, and coastal and marine waters through transboundary movement of water, pollutants and living resources, international waters extend far inland and far out to sea.

The Pacific region's premier political body, the Pacific Islands Forum, at its Annual Session in September 1996, requested SPREP to coordinate development of the project. Formulation of the SAP, funded by GEF through project development funds (PDF Block-B), began in April 1997. The SAP was to combine the following activity areas:

- Integrated conservation and sustainable management of coastal resources, including freshwater resources;
- Integrated conservation and sustainable management of oceanic resources;
- Prevention of pollution through the integrated management of land- or marine-based wastes; and
- Monitoring and analysis of shore and near-shore environments to determine vulnerability to environmental degradation.

The basis for developing a Programme focus in these areas is found in the joint regional position prepared by Pacific island countries for the 1992 United Nations Conference on Environment and Development (UNCED), the simultaneous preparation of National Environmental Management Strategies (NEMS) by Pacific island countries between 1990 and 1996, as well as the Action Plan for Managing the Environment of the South Pacific Region (1997-2000).²

A Regional Task Force (RTF) was established to oversee preparation of the SAP. It was composed of one representative from the Governments of Fiji, Marshall Islands, Samoa, Tonga, and Vanuatu, with additional members from the Pacific Islands Forum; SPC, SPREP, the three GEF Implementing Agencies (the United Nations Development Programme (UNDP), the United Nations Environment Programme (UNEP), and The World Bank (TWB)), two international non-governmental organisations (the World Conservation Union (IUCN) and The Nature Conservancy (TNC)), and one private sector representative (Fiji Dive Operators Association, recommended by the Tourism Council of the South Pacific (TCSP)). The Asian Development Bank (ADB) and the Economic and Social Commission for Asia and the Pacific (ESCAP) also participated.

Work undertaken during the SAP formulation process resulted in the identification of three priority transboundary concerns related to International Waters:

- degradation of their quality;
- degradation of their associated critical habitats; and
- unsustainable use of their living and non-living resources.

The SAP was reviewed and subsequently endorsed by the Heads of Government of the Pacific Islands Forum at its Session in Rarotonga in 1997. Refinement over a period of almost two years resulted in GEF Council approval of the SAP in August 1999. Execution by SPREP commenced in early 2000.

¹ American Samoa, Australia, Cook Islands, Federated States of Micronesia, Fiji, France, French Polynesia, Guam, Kiribati, Marshall Islands, Nauru, New Caledonia, New Zealand, Niue, Northern Mariana Islands, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu, United States of America, Vanuatu and Wallis and Futuna.

² Revised in late 2000 as the Action Plan for Managing the Environment of the Pacific Islands Region (2001-2004) adopted by the 11th SPREP Meeting, Guam, USA, 9-12 October 2000.

The International Waters Programme (IWP), or Strategic Action Programme (SAP) in GEF parlance, is designed to assist Pacific island countries³ improve regional capacity for management of transboundary water resources and create improved management structures to address environmental degradation and ensure the long-term sustainability of ocean fisheries in the Western and Central Pacific ecosystem. The IWP also intends to promote improved integration of environmental concerns into local, national and regional policy, and improved water quality and the conservation of key coastal and ocean ecological areas.

The GEF and UNDP view the “pilot” or “demonstration” nature of the 14 projects to be implemented under the national components of the IWP as providing the basis for future funding opportunities from GEF facilities for participating countries. The IWP, as a Strategic Action Programme, is considered an initial step leading to the development of Medium-Sized (up to US\$1 million) or Full Projects (in excess of US\$1 million) for technical assistance, capacity building or investment. Such projects may be regional or national in scale. As a result, the later stages of the IWP are likely to devote considerable effort to analyzing the results of the IWP to assist countries with the formulation of follow-up activities supported through the GEF and alternative sources of financing assistance.

Key Elements and Assumptions

The Project Document is formulated on the basis that the International Waters in the Pacific region are subject to threats that give rise to transboundary concerns. During the formulation of the IWP, threats were examined from the perspective of critical species and their habitats and living and non-living marine resources. Identified threats include:

- pollution of marine and freshwater (including groundwater) from land-based activities;
- the long term sustainable use of marine and freshwater resources;
- physical, ecological and hydrological modification of critical habitats; and
- unsustainable exploitation of living and non-living resources, particularly, although not exclusively, the unsustainable and/or inefficient exploitation of coastal and ocean fishery resources.

The IWP formulation process examined each threat in a legal, institutional, socio-economic and environmental context. The ultimate root cause underlying imminent threats was identified as deficiencies in management. Factors contributing to the management root cause were grouped into two linked subsets: a) governance, and b) understanding.

The governance subset was characterised by the need for mechanisms to integrate environmental concerns, development planning, and decision-making. The understanding subset was characterised by the need to achieve island-wide ecosystem awareness through improved education and participation. Island-wide awareness and participation will facilitate the development and implementation of measures to protect International Waters.

The IWP analysis revealed a set of information gaps required by decision-makers to responsibly address ultimate root causes and respond to imminent threats. Particularly important is the lack of strategic information presented in an appropriate manner to decision-makers, resource users, managers and communities to evaluate costs and benefits of, and to decide among, alternative activities. Improving information input and exchange at the regional, national, and community levels is an objective of the Programme.

The IWP provides for targeted actions to address the root causes of degradation of International Waters. The actions are to be carried out in two complementary, linked consultative contexts: Integrated Coastal and Watershed Management (ICWM) and Oceanic Fisheries Management (OFM). Through the ICWM and OFM approaches, the IWP suggests a path for the transition of Pacific islands from sectoral to integrated management of International Waters as a whole, the evolution of which is essential for their protection over the long term.

The IWP will place priority on liaising with donors who are active in the region to plan and coordinate regional and national development assistance for International Waters to address imminent threats and their root causes more effectively. The IWP is designed to provide a framework for overall national and regional planning and assistance for the management of International Waters and provide a catalyst for leveraging the participation of other donors in the project.

³ The 14 countries participating in the IWP are: Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

The Project Document acknowledges that all sustainable development issues related to International Waters cannot be addressed at once. Therefore, four high priority areas have been identified for immediate intervention:

- improved waste management;
- better water quality;
- sustainable fisheries; and
- effective marine protected areas.

Targeted action within these activity areas is proposed in five categories:

- management;
- capacity building;
- awareness/education;
- research/information for decision-making; and
- investment.

Institutional strengthening is included under management and capacity building.

The principal components of the IWP, as described in the PD, are summarised in Table 1.

Table 1. A summary of the principal components of the IWP including the broad Programme objectives and activity areas designed to address priority environmental concerns of participating countries.

Goal	To achieve global benefit by developing and implementing measures to conserve, sustainably manage and restore coastal and oceanic resources in the Pacific Region [Integrated sustainable development and management of International Waters]
Priority Concerns	Degradation of water quality <ul style="list-style-type: none"> • Degradation of associated critical habitats • Unsustainable use of resources
Imminent Threats	Pollution from land-based activities <ul style="list-style-type: none"> • Modification of critical habitats • Unsustainable exploitation of resources
Ultimate Root	Management deficiencies <ul style="list-style-type: none"> • Governance • Understanding
Solutions	<ul style="list-style-type: none"> • Integrated Coastal and Watershed Management, and • Oceanic Fisheries Management. (ICWM), (OFM)
ICWM Activity Areas	<ul style="list-style-type: none"> • Improved waste management • Better water quality • Sustainable fisheries • Effective marine protected areas
OFM Activity Areas	<ul style="list-style-type: none"> • Sustainable ocean fisheries • Improved national and regional management capability • Stock and by-catch monitoring and research • Enhanced national and regional management links
Targeted actions	<ul style="list-style-type: none"> • Management/institutional strengthening • Capacity-building/institutional strengthening • Awareness/education • Research/information for decision-making • Investment

UNDP is the GEF Implementing Agency and SPREP is the Executing Agency, on behalf of other CROP agencies associated with the Programme, the SPC and FFA.

This Review

This review is one of six reviews that were compiled during the early stages of IWP implementation for two reasons. The first is to provide a source of current information for practitioners – principally those practitioners associated with the implementation of the pilot projects in each of the participating countries as it relates to the areas of primary interest to the IWP (waste, freshwater, marine protected areas and coastal fisheries). To provide as much practical benefit as possible, these reviews are supplemented with additional synopses of information concerning economic issues and lessons learnt in the design and implementation of community-based sustainable resource management and conservation initiatives.

The second reason for these reviews is to provide a snapshot of what is known about each of the four areas of primary interest to the IWP in 2001 and early 2002. This is done to provide a baseline overview of available information in the areas of primary interest at the commencement of the Programme. As a result, any review of these areas of interest towards the end of the Programme in 2005 will have a useful reference for assessing change in relation to the management and conservation of these resources in the Pacific region.

The first of the six reviews was prepared by Mike Huber and Kerry McGregor who comprehensively reviewed activities and current thinking in relation to marine protected areas (MPAs) and their application to the management and conservation of coastal resources. While the focus of the review is the Pacific islands region, their presentation is supplemented with examples from other ocean regions. The review examines resource conservation and related habitat issues, management approaches, governance, and past and current priorities in respect of marine protected areas at the national level within the 14 countries participating in the Programme and regional initiatives relating to marine protected areas.

The second volume in the series addresses issues relating to the conservation and management of freshwater resources in the Pacific islands region. It was prepared by Tony Falkland who provides a review of published and other information relating to freshwater quality, supply, management and conservation. The review places emphasis on community-based issues associated with the conservation and sustainable management of freshwater resources, reflecting the planned focus of subsequent pilot projects that may be instigated under the International Waters Programme.

The third volume in the series provides an examination of issues relating to waste reduction, pollution prevention and improved sanitation in the Pacific islands region, and elsewhere, as it relates to the objectives of the International Waters Programme in terms of promoting management for improved waste reduction initiatives in communities. It was prepared by Leonie Crennan and Greg Berry who summarise activities in the region that have attempted to address low cost/no cost alternatives to reduce loadings of solid and liquid wastes, particularly in coastal and watershed communities where quality of drinking water resources is at risk. Information includes a review of priority waste concerns in Pacific island communities, management and governance issues, and options for increased community responsibility for managing waste problems.

The fourth volume, prepared by Paul Dalzell and Don Schug, presents a review of current information relating to sustainable coastal fisheries in the Pacific islands region and elsewhere as it relates to the objectives of the Programme in terms of promoting capacity building for improved coastal resource management responsibility in communities. Information presented includes a review of coastal fisheries in the Pacific region, discussion of resource management and governance issues including customary marine tenure (CMT), the role of MPAs and past and current priorities in respect of the sustainable management of coastal fisheries at local, provincial, national and regional scales. Their review includes consideration of gender issues and women's activities in the coastal zone including the role of women in subsistence and artisanal fisheries in the 14 countries participating in the Programme. They also discuss cases that illustrate particular issues in community-based management of subsistence and artisanal fisheries; including government support for community actions.

Padma Lal and Meg Keen present a review of economic issues that should be considered in the design, implementation, monitoring and evaluation of community-based resource management and environment conservation projects in island ecosystems in this, the fifth volume. They describe economic issues that require detailed consultation with community members during the design, implementation and monitoring of projects such as those to be supported under the Programme. This includes the identification of institutional issues, socio-economic implications for communities (benefit/cost analysis and cost effective analysis), and suggested strategies for promoting broad community participation and support in conservation and sustainable resource use initiatives (incentives and transaction costs).

In the sixth and final volume in this series, Jenny Whyte and her colleagues at the Foundation of the Peoples of the South Pacific International and affiliated organisations provide a review of information relating to lessons learned and best practices for resource and habitat conservation and sustainable management initiatives in the Pacific islands region. The review focuses on community-based (participatory) issues associated with the conservation and sustainable management of resources and habitats in island ecosystems with emphasis on the four focal areas for the International Waters Programme (sustainable coastal fisheries, marine protected areas, community-based waste reduction and preservation of freshwater resources). Issues are considered in context of the entire project cycle - from project planning and design; selection of sites; method of community entry; community baseline assessments; participation of communities; the role and participation of governments and, if they are involved, external agencies, NGOs and development assistance agencies; education and

awareness activities, completion and exit considerations such as alternative income generation, and monitoring and evaluation. The review considers social, cultural, economic, environmental, administrative, managerial, legal and political dimensions of such projects.

As a supplement, each author was asked to consider examples of what a pilot project might look like. As a result, at the conclusion of each review, three examples of community-based initiatives that may serve as a model or a template for a pilot project are presented.

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1 Introduction

The concept of sustainable development has been one which has largely defied precise definition since its inception and popularisation through global conferences, most notably the World Commission on Environment and Development (WCED 1987) and the United Nations Conference on Environment and Development (UNCED 1992). The simplified WCED definition, “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”, hardly provides strong guidance (WCED 1987: 43). However, there are a few clearly emerging themes of particular relevance to this consultancy, which aims to give an overview of the economic issues that affect community-based conservation and development projects in the Pacific. These themes are outlined in Box 1 and provide a foundation on which to base our analyses of economic issues pertinent to community-based conservation and development projects.

Box 1. Themes relevant to sustainable development and its application to economic issues for community-based development

- The idea of limitations, and the need for social and economic arrangements that constrain present resource use to levels that are within the carrying capacity of relevant ecosystems;
- The need to conserve and enhance resource bases, i.e. our natural capital and life support systems;
- The importance of meeting human needs and aspirations as a major objective of development;
- The need to continually assess the intragenerational and intergenerational issues of equity (within and between generations respectively) associated with development;
- The need to recognise that economic development and environmental conservation are inextricably linked, interdependent and mutually reinforcing;
- The need to recognise that some trade-offs may be necessary between economic development goals and some aspects of environmental conservation;
- The necessity to merge environmental, social and economic considerations in decision-making;
- The emerging international consensus that local-level solutions, derived from community-based initiatives, are of primary importance. This gives rise to the principle of “subsidiarity”, which gives preference to managing human activities and environmental issues at the lowest level at which they can be effectively dealt with.

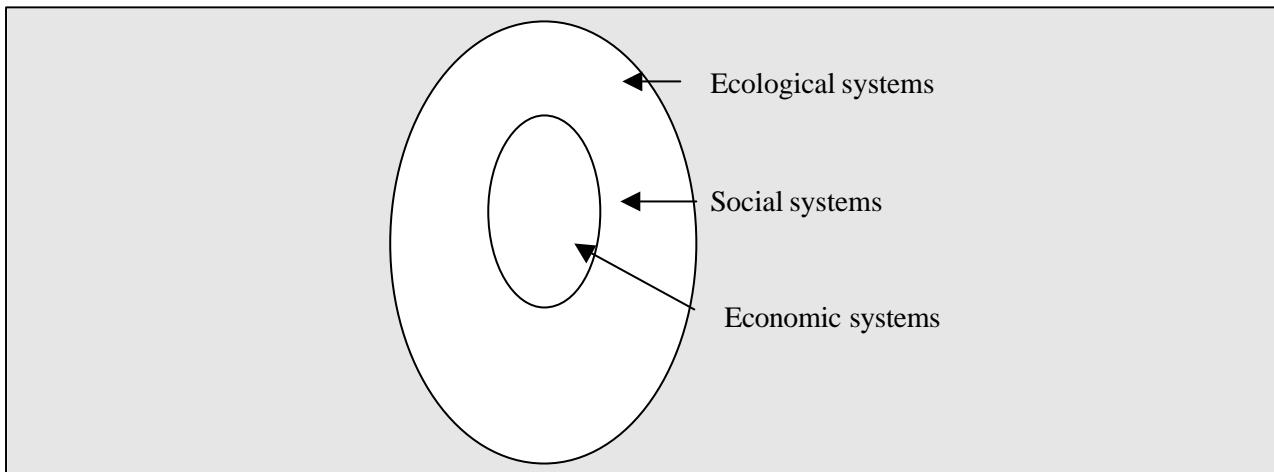
Sources: Gardiner (2001); Keating (1993); Leach et al. (1999); UNCED (1992); WCED (1987).

In the South Pacific, these general themes have been reflected in key documents and programmes of activities, for example:

- *The Pacific Way*, PIDC report to UNCED (1992) highlighted the need to minimise the adverse environmental impacts of economic development through integrating environmental considerations with economic and sectoral planning and policies.
- The *Capacity 21 Programme* in the Pacific (1994–1997) aimed to build capacity to promote sustainable development in part through identifying economic incentives to encourage sustainable development (component 2).
- The *South Pacific Biodiversity Conservation Programme* (SPBCP), 1995–2000, aimed to establish conservation areas, using, as one of its key components, assistance to local communities for the development of sustainable, income generating activities. (For an overview of the integration of environmental and economic planning in the South Pacific, see Keen 1997).

Maintaining livelihood is fundamental to community-level activities in the Pacific, as is the case elsewhere in the world. Livelihoods comprise “the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with, and recover from, stresses and shocks, and maintain or enhance its capabilities and assets, both now and in the future, while not undermining the natural resource base” (Carney 1998: 4). To translate this concept into action, we need to recognise that there are no hard boundaries between ecological, social and economic systems. Instead one can conceive of the ecological, social and economic subsystems as nested within each other and forming a complex human-environment system (Figure 1.). Economic systems are part of our larger social system and merely reflect social valuations of natural resources, goods and services. If they are to be sustained, economic activities must occur within the limitations of the natural ecosystems, and be acceptable socially.

Figure 1. Ecological and human systems



This view of our living systems is consistent with the broad definition of economics found in most first-year college texts:

Economics is concerned with the institutional arrangements and aspects of human behaviour associated with the allocation and use of scarce resources for the production, distribution and “consumption” of goods and services to maximise social [economic] well-being.

Thus, at the community level, it becomes apparent that any development project or initiative must take into consideration economic issues that affect resource allocation decisions. These may relate to: market demand and supply, relative economic values, resource tenure arrangements, community members’ needs and aspirations, other external institutional arrangements, and so on. Improvements in human and community well-being are thus directly linked to resource allocation decisions. These decisions may involve monetary valuations or transactions, or they may not – as in the case of subsistence economies. Regardless of whether or not money is involved in resource allocation decisions, the issues are still economic (resource allocation) ones, and as such, economic theory and practice can inform our understanding of the community development process.

Economics gives us insights into: “how people reach decisions in situations where more than one course of action is possible, and choice is constrained ... Explaining how people reach this decision, and how their behaviour will be affected by changing circumstances [for example changes in markets, resource tenure or pricing arrangements]” (Sisto 1997 : 63).

As this report will illustrate, a neglect of core economic concepts and issues is one of the factors that can adversely affect the sustainability and development outcomes of community-based conservation and development projects.

1.1 Background: the International Waters Programme

This report was commissioned by the International Waters Programme (IWP), a project funded by the Global Environment Facility (GEF), implemented by the United Nations Development Programme (UNDP), and executed by the South Pacific Regional Environment Programme (SPREP). The long-term objective of this IWP is “to conserve and sustainably manage the coastal and ocean resources in the Pacific Region”. (SPREP 2001). In part, this goal will be achieved through the implementation of community-based conservation and development projects in four theme areas: freshwater management, marine protected areas (MPAs) development and enhancement, sustainable coastal fisheries and waste management.

The main objective of this report is to draw on past experiences in the Pacific in order to provide an outline of key economic issues for consideration when identifying, designing and implementing community-based conservation and development projects.

1.2 Outline of the report

This report briefly introduces the issues associated with community-based projects that aim to concurrently achieve conservation and development goals (Chapter 2). Chapter 3 provides an overview of the key economic concepts that affect community-based development projects in the Pacific islands, with examples drawn from the region. Chapter 4 discusses issues that need to be addressed when undertaking benefit cost analysis. Chapter 5 outlines how these issues can be efficiently integrated into the project cycle.

1.3 Limitations of the report

We, the authors, based the report on our considerable experience working in the Pacific and developing countries. We also used reports of community-based conservation and environment projects, academic studies and development literature, and the generous input given to us during informal consultations with practitioners. As such, the report is a “desk-top” study, largely based on secondary material. No site visits were made, which could have added additional insights.

2 Community-based conservation and development projects

“Projects are the ‘cutting edge of development’ and proper planning and design are the cornerstone of projects; these projects in turn underpin development plans”, wrote Gittinger (1978: 3). The same can be said about efforts to conserve the environment. Effective conservation efforts require proper planning and well-designed projects, including careful consideration of the needs and aspirations of individuals and detailed analyses of ecological, economic and social issues.

Economic development and environmental conservation activities in communities occur within the context of existing infrastructure, government policies, social norms and culture, natural and financial endowments and human capacity. When identifying, developing and implementing projects aimed at improving the economic well-being of individuals and communities, while at the same time conserving natural resources, careful consideration must be given to these contextual factors. They can directly or indirectly influence the viability and sustainability of development and conservation efforts. In order to properly assess these factors, stakeholders need to be directly and permanently involved. Thus the term “community based” becomes more than a geographic description of the location of the project, but instead implies a participatory approach, which significantly affects the project cycle and the underlying philosophy of project management (see Section 2.2). Throughout this report, when we use the term “community”, we note that in most cases a community comprises a number of sub-groupings, and is not a single, homogenous entity.

Community-based conservation and development occurs within higher-level national and regional social and institutional settings. In most countries, projects are designed and implemented within the broader context of national development plans that outline economic development goals and, more recently, also address resource and environmental management objectives. These plans are in turn influenced by international obligations, and, in the case of the Pacific, the availability of external, as well as internal, funding. Without proper project planning that is linked to national and regional institutional frameworks, development and conservation efforts often result in valuable and scarce resources being wasted on activities without achieving the desired improvements in social welfare. From the economic perspective, an understanding of institutional linkages should include knowledge of relevant markets for inputs and outputs, financial institutions and their rules, external funding agencies and their priorities, national and regional governance, and local property rights regimes. In addition, well maintained relationships with the key players associated with these institutions are vital.

Partially successful projects and unsuccessful projects are very common phenomena in the Pacific and elsewhere, regardless of whether they address the goal of income generation or environmental conservation. The reasons for the poor performance of development and conservation projects are many, and include the lack of adequate consideration of many economic issues that underpin individual decisions and choices (SPREP 2001).

In this chapter, we briefly discuss the role of projects in economic development and resource conservation, and then consider the implications of the IWP project’s emphasis on community-based projects in the South Pacific.

2.1 Development and conservation projects

The term “project” means many different things to different people. To some, a project is a single activity addressing one or more objectives. To others, a project may comprise a set of activities addressing a particular goal. There are development projects, conservation projects, management projects, or any combination of these. Development projects generally aim to improve the economic well-being of individuals and communities within the broader context of rural, regional and or national development. Each project may produce monetary and/or non-monetary benefits. Projects can involve an actual income generating activity, such as the mariculture of giant clams or harvesting of wild coral for aquarium trade. Alternatively a development project may primarily aim to minimise costs, and thus indirectly increase outputs, by allowing individuals to not only meet their subsistence needs but also sell the surplus, for example, projects that subsidise offshore fishing boats.

At the other extreme are “conservation” projects that often aim to preserve unique ecosystems, biological diversity or environmental values of an area. In projects aimed at enhancing the environment, non-monetary benefits of goods and services, for which there are no readily identifiable market values, are predominant. Non-monetary benefits may include the enhancement of the biological diversity of a reef system through a marine protected area (MPA) project, or improvement in ecological goods and services for which there are no markets and therefore no easily identifiable market values. Similarly, a project to control pollution may involve composting human waste to improve the water quality, for which there are no directly measurable economic benefits. (The monetary benefits of pollution control could be determined with some effort

by using indirect benefits such as savings in health care or the value of increases in fish catches due to cleaner waters. But these valuations only partially capture the total value of the environmental good.)

In between these two extremes are projects that address both the goals of promoting economic development and the conservation of the natural resource stock and the environment. These dual objectives have been explicitly recognised in many recent conservation and development (CAD) projects, particularly since the World Conservation Strategy was implemented in 1980 (IUCN 1980) and since the Brundtland Report in 1987. It is within this context that many of the CAD projects in the Pacific have been designed. For example, the primary goal of the Utwe-Walung Conservation Area (CA) Project, herewith referred to as the Kosrae CAP, was to “maintain the diversity and abundance of living things within the area as a basis of long-term sustainable development” (Kosrae CAP 1996). On the other hand, for an income generating project such as the AusAID funded Samoan fishery project, the long-term goal was “an improved standard of living [measured in terms of household income] for Samoan fishers and their families” and a medium-term goal “to prevent a further decline in the near-shore fisheries resources” (International Development Support Services 1998: 6). Which objective receives greater emphasis or takes precedence depends on the origin of the project idea, but in the end, development/economic and environment objectives are inseparable in the context of sustainable development.

Regardless of the origin of the project, and the implied balance between development and conservation goals, each project will have a clearly identified set of inputs, activities and outputs required to address clearly specified objectives (Sesega 2000).

Traditionally, a project would also include a mechanism for delivering the benefits to the identified target groups. With community-based projects, instead of identifying delivery mechanisms, it is more important to work with stakeholders, both within the community and in the broader social and institutional setting, to define appropriate project goals, given specific needs and aspirations. This process will in turn clarify the nature of the stakeholder engagement with the project over time and the performance criteria by which the project will be judged, given stakeholder and funding agency preferences.

2.2 Community participation and project planning

Many different kinds of development and conservation projects in the South Pacific have been called “community based”, generally implying a degree of community participation in aspects of the project. Participatory approaches have gained favour internationally, because of the belief that they can empower local communities to articulate their own agendas, as well as improve project design and sustainability. In practice, projects vary widely in their objectives, the degree and nature of community participation, and in the target groups involved.

Within any one community there will be diverse groups that will be affected differently by the project. The heterogeneity of the community (i.e. its degree of diversity) is affected by a number of factors, including gender, access to resource, age, kinship relationships, and education. Power relationships between these groups within a community change according to the issue under consideration and the internal dynamics of the community. Thus, in this report and the literature, we often refer to “community stakeholders”, rather than “the community” as communities comprise diverse groups. “Community participation” refers to the involvement of the different stakeholders within the community.

This issue of diversity within a community becomes important for economic analyses because projects may affect community members differently and equity considerations will have to be taken into account. To understand the complexity of the relationships between community members and how a project or intervention will affect the different groups within the community, participatory methods such as Participatory Rural Appraisal (PRA) techniques, social mapping, community observations, and focus group discussions can be used.

Rather than defining an ideal mode and degree of participation for all projects, it is more helpful in project design to consider how the question of community participation might be approached in a given situation. Some key questions that people designing a project might ask in thinking about participation in development and conservation projects are provided in Box 2.

Box 2. Key questions concerning community participation

What is the purpose of community participation?

In most of the cases considered, community participation was sought as a means to a specific end, such as improving livelihoods, standards of living or conservation. It can also be considered as part of a development process that contributes to human and social capital development (see Section 3.3 and Table 2).

Who should participate and how?

Communities are diverse, and peoples' influence and capacity to participate might be shaped by factors such as gender, age, clan affiliation, status and ethnicity. An equitable approach requires looking within communities to consider who the key stakeholders are, and finding appropriate methods to engage them in project discussions. It is important to note also that there are other stakeholders outside of the community who also need to be involved in the process.

What degree of participation is appropriate and feasible?

In the cases we studied, communities had different degrees of control over project design, implementation, and administration. The nature of participation might also change during a project cycle. Considering the different types of participation described in Box 3 can help to distinguish between different degrees of community control, so that stakeholders work with a shared understanding of their roles at different stages in the project.

What are the costs and benefits of participation?

There is often an implicit assumption that project participation is free, but participation always has opportunity or real costs that must be considered if community engagement is to be sustained. For example, time spent in meetings and project activities can result in loss of wages or subsistence productivity; the participation of certain groups or individuals in project management can affect community power structures; and individual participation in project activities may result in benefits for the community but not for the individual concerned. People will not participate if they perceive that the costs outweigh the benefits.

Further reading: Pretty (1995); Nelson & Wright (1995); Guijt & Kaul-Shah (1998).

Traditionally, community participation has not been a major issue in the Pacific, particularly since many activities were carried out within the local social context and involved communal cooperation. This, however, has changed since the introduction of the monetary economy, and individuals are now more likely to be concerned about losing benefits from other activities they would otherwise be engaged in—the so called “opportunity cost” of their participation. Although traditional cultural ties and institutional arrangements remain as excellent building blocks (Govan 1997: 186), those designing community-based projects need to consider the real costs and benefits (monetary or otherwise) of participation. In some cases, certain regular and demanding forms of individual participation in a project may need to be compensated, either through wages or some other benefits, as there are opportunity costs. In other cases, the returns for participation, in terms of community assets, community income or even social status, might be sufficient reward. Only community consultation will clarify these types of issues.

The explicit use of participatory planning processes may increase opportunities for rent seeking behaviour on the part of some individuals or subsections of the communities. “Rent seeking” refers to the activities of individuals or groups of individuals who try to influence final decisions for their own benefits. However, the participatory process could also force such rent seeking behaviour more out in the open, rather than behind the scenes, which may have been happening previously.

The lack of enthusiasm for participating in a project planning can arise from perceptions of a lack of personal or communal benefit from engagement. This relates back to basic economic decisions about the allocation of scarce resources. To a community or an individual, time is scarce and labour precious; they need to be used efficiently. The costs and benefits of participation are continually being assessed at the individual and community level; project managers need to ensure that a similar reflective process on participation occurs as part of project management. Assessments of the costs and benefits of participation can affect the success of projects, as noted in the Kosrae CA project: “The continuing abstaining of the Walung members from CACC meetings is said to be indicative of a certain resentment over the lack of project activities in Walung and the perceived dominant influence of Utwe landowners in project affairs. According to a number of sources, Walung resents the fact that while it is the ‘more pristine’ part of the CAP, most of the benefits from tourism are reaped by the Utwe community.” (Kosrae CAP 2001: 3).

Not all stages of a project require the target community to be actively involved. Box 3 describes different types of participation that serve different purposes. Recent research has shown that when consulted, many stakeholders in communities prefer to incorporate a range of different types of participation at different stages of the project cycle (Kelly 2000). There are times when providing simple information or basic community consultation are sufficient, given the costs and benefits associated with higher levels of community engagement. However, there are certain stages of project planning that do demand the full engagement of community stakeholders, such as the project design phase.

The economic goals and issues affecting community-based projects may not be obvious until community input has been successfully sought. As noted by Veitayaki (2000) in his study of Fijian fisheries projects over the eighties and nineties, the type of costs and benefits assessed by the relevant authority do not always include those that are integral to community life: “Demands and expectations (usually premised on non-monetary compensation basis) placed on rural development projects by relatives and the communities at large have meant extra costs to the ventures” (Veitayaki 2000: 125).

The project referred to by Veitayaki was designed on the assumption that fishers would only use the boats for commercial purposes. However, the fishers who took out loans to buy offshore fishing boats had to bear the additional operating and maintenance costs of ferrying people around. There were also problems with sharing resources. These related to the community members’ expectations about what their “fair share” of any catch was, given community obligations and/or communal resources being harvested. Until the community and relevant stakeholders have been consulted, the nature of economic issues affecting such CAD projects may not be readily apparent to the outsider.

Box 3. Types of participation

Passive participation

People are told what is going to happen or has happened. Information is simply provided to the community.

Participation in information giving

People provide information that is used for project development or management.

Participation by consultation

Project development or management is defined externally, or possibly by a Project Officer, but is modified if necessary, after consultation with the community.

Participation for material incentives

People provide resources, such as labour or access to resources, in return for material incentives. People are not directly involved in project management.

Functional participation

People form groups to meet pre-determined objectives related to the project; thus they are involved after the early stages of planning or setting project objectives.

Interactive participation

Community members participate in joint planning and analyses that lead to action plans.

Self-mobilisation

People take initiatives independent of external people or institutions to change existing systems.

Modified from Pretty (1995: 173).

2.3 Project management and economic issues

Many different forms of project management involving communities can be found in the Pacific, depending on whether the project is driven from the top or a more flexible, “process” approach is used. Table 1 compares the “blue-print” approach to project development and management with the “process” approach. The “blue-print” approach, with its roots in engineering and construction, is based on experts leading the design and control activities, with limited or no community involvement. On the other hand, the “process” approach recognises the presence of “wicked problems”. These are limited information and baseline data, and uncertainty about the outcomes of interventions. Under these circumstances, actively involving community stakeholders in project design, implementation and monitoring ensures that the project remains responsive to changing circumstances as they affect project participants (Bond and Hulme 1999). In this process approach, learning from experience is an integral component, as is flexibility in scope, scale and methods.

Table 1. Comparison of the “blue-print” and “process” approach to project development

Defining features*		Key characteristics: blue-print approach	Key characteristics: Process approach	Relevant environmental management considerations
Aim		Design project with clear and reasonably fixed objectives; quantify inputs and outputs.	Flexible and adaptive project design with key objectives defined.	Root causes of problems are sometimes difficult to identify in advance.
Needs		Good baseline data; understanding of system; responsiveness to project activities.	Understanding of community needs and aspirations; network of people able to monitor and assess project stages frequently; as well as good baseline data.	Env. baseline data is often scarce; complex systems are difficult to predict; env. expertise at local level is often poor, thus monitoring based locally can be difficult; solutions too are difficult to identify because of the presence of “wicked problems”.
Approach		Structured; rigid; centralised.	Exploratory, learning from experience, flexible, decentralised, with experts playing key but facilitating role; done in stages.	There are high levels of uncertainty and unpredictability in economic, social and ecological systems.
Time frame		Fixed; short to medium term.	Flexible; medium to long term.	Env. degradation problems can be pressing; relevant systems can take time to respond.
Project stages		Defined in early planning phase.	Phased approach, with later stages planned after outcomes of initial interventions.	System is unpredictable.
Human resources		Project dependent; expertise based.	Extensive, as requires multi-disciplinary expertise and staff to facilitate ongoing project planning and assessment; high use of locals.	Multi-disciplinary approach is required; input is integrated at different ecological, organisational/political levels, and from diverse sectors.
Local community involvement		Low to moderate (as most of project determined in early stages). Local ownership often limited.	Highly participatory (as involves ongoing input from potential beneficiaries into project design, monitoring and evaluation). High local ownership.	Local and traditional knowledge, as well as expert knowledge needed.
Examples		Engineering projects such as: building bridges and roads; projects responding to well-defined community/national concerns.	Agricultural technology transfer; social forestry; local resource management.	N/A

* Key characteristics described in this table are after ODC (1992).

Adapted from Keen (1996).

In the Pacific, there are many examples of projects designed using one of these approaches, and many cases where some variations of the two approaches have been used, together with variations in participatory models used to involve the local communities. Even in the SPBCP projects, different countries have used different approaches. Although all the projects are community based, in their actual development and implementation, some hybrids of the two approaches can be seen. Most projects lie nearer one model or the other. In the case of the Ngaremeduu CA project, the approach taken is closer to the process approach, with interactive community participation (Box 4).

Box 4. A process approach to project planning in Palau

The SPBCP assisted the Ngaremeduu Conservation Area Project in Palau to establish a conservation area and eco-tourism enterprise to protect the terrestrial and marine environments of Ngaremeduu Bay. The area is a patchwork of government and privately owned lands; it contains three hamlets, and crosses the boundaries of three states (Ngaremlengui, Ngatpang and Aimeliik). In order to lay a strong foundation for the proposed project, facilitators sought the early involvement of these stakeholders in project planning using a process approach. Specific project activities, such as the eco-tourism venture and management plans for the CA, were developed as an outcome of these early consultative processes.

The initial project proposal, therefore, did not specify enterprise and resource management strategies, but instead focused on the use of participatory planning methods and the development of appropriate structures and institutions to develop detailed project activities. These early consultations aimed to build a shared understanding of the status of natural resources, the needs and priorities of local communities, and discuss the role of traditional resource management institutions in the conservation area. As in other SPBCP projects, a Conservation Area Coordinating Committee (CACC) was established involving traditional leaders.

A recent assessment viewed consultation and participation as a major strength of the project. However, it also found that community support for the conservation area was not secure. Some landowners perceived the CA as a threat to their “personal development plans” because they understood (rightly or wrongly) that once declared as a conservation area, other development activities would be prevented. An important issue for facilitators adopting such a process approach is that involving traditional leaders in project decision-making, while important, will not necessarily mean that they will give broad-scale support, unless their individual needs, and aspirations in the wider community are attended to.

Source: Bureau of Natural Resources Development (1996); Ngaremeduu CAP 2000.

On the other hand, the approach used in the Sa’anapu–Sataoa CA project seems to be closer to the “blueprint” approach. The AusAID-funded Samoan fisheries project started off as a top-down (blueprint) extension project but at the project implementation stage, the project was revised using the process approach, with an emphasis on interactive participation and self-mobilisation of local communities and their members (Box 5).

Regardless of the process used to identify, develop and design a project, the importance of economic considerations cannot be overemphasised. It will be apparent from Table 1 that the process approach allows for the diversity of economic issues relevant to community-based development to be more fully explored and it is more compatible with participatory and community-based approaches to development. CAD projects rarely correspond to the type of projects that suit the blue-print approach (see examples in Table 1), nor do essential community-based economic issues, discussed below (in Chapter 3 and 4 and earlier), easily respond to the blue-print approach. The issue of project management and the integration of economic issues into the project management cycle will be elaborated on in Chapter 5 after we have discussed the type of economic issues that are relevant to CAD projects.

Box 5. Accommodating change through a phased process: the Samoan fisheries project

The Samoan fisheries project, an AusAID-funded project, was designed to be implemented in two phases. Monitoring and several reviews later led to a shift in the project process.

The development of phase 1 appears to be an example of an externally driven, “blue-print” project, with the long-term goal of “an improved standard of living for Samoan fishers and their families, and increased supplies of local seafood”. This goal was modified in the Project Implementation Document to include a more immediate medium-term goal – “to prevent a further decline in the nearshore fisheries resources, because of evidence of over-exploitation, the use of destructive fishing methods and environmental disturbances”. Realising that many of the conservation strategies required to address these symptoms could not be sustained without active community acceptance, the original design of the project was modified to include a more community-focused extension plan and the development of alternative sources of seafood.

The community extension process involved contacting villages to assess their level of commitment to the process; holding village meetings to identify problems and propose solutions; preparing a fisheries management plan with undertakings necessary to solve problems; and presenting the plan to village leaders so it could be rejected or accepted. At several stages of the project, mechanisms were put in place to revise the project details and provide solutions to identified problems. Such a process resulted in the development of Village Fisheries Management Plans and the declaration of community-owned fish reserves.

Although the project is generally viewed as a success, some concerns have been identified. Surprisingly, partly because of the overall success of the initial activities, communities in other parts of the country have shown increased interest. As a result the Fisheries Department staff have found themselves overworked and limited by a lack of suitably qualified staff, office accommodation and equipment. To address these difficulties, phase 2 attempts specifically to increase the capacity of the extension section to support the community by providing technical advice and assistance.

The overall success of the Samoan fisheries project was its flexible approach to design that accommodated new information. Moreover, although the community-based approach was initially time-consuming, results so far suggest that the outcomes are likely to be sustainable because the communities have a direct interest in, and ownership of, the process and project.

Sources: International Development Support Services (1998); AusAID (1998).

2.4 Summary

This chapter has briefly explored the nature of CAD projects and has highlighted key issues for good project management. As will be seen in the chapter to follow, these same issues are relevant to the definition and integration of economic issues into community-based CAD projects as they significantly affect individual motivation, resource allocation decisions and project sustainability.

CAD projects need to:

- Identify all relevant stakeholders in the community who are likely to be affected by the proposed project.
- Identify community and stakeholder needs and aspirations at an early stage of project development.
- Take into account the influence of different contexts including that of local communities, local institutional rules and regulations, existing infrastructure, government policies, social norms and culture, natural and financial resources and human capacity.
- Recognise the interrelationships between development (economic) and conservation (environmental) goals and treat these as inextricably linked, thus jointly planning for both.
- Consider the role and nature of community participation in project development and management, particularly in relation to drawing out economic issues in the community and ensuring project sustainability.
- Assess project management approaches, as some are better suited to community-based projects and can more easily address community-based economic issues (for example the process approach).

3 Key economic issues of relevance to projects

Economics is essentially about allocating scarce resources between competing uses in a way that maximises social well-being. Economic concepts can be used to help explain, analyse and understand how people reach decisions about allocating scarce resources to achieve their desired goal. In the context of this report, economics provides insights into the economic factors that influence individual and community decisions that in turn affect CAD projects. There is a common set of economic issues, concepts and analytical frameworks that can be used to make appropriate decisions at various stages in a CAD project planning cycle. The issues covered below relate to the early to late stages of the project

cycle. They are not organised in any order of importance because priority ranking will change, depending on the project, the country and the local socio-economic context.

3.1 Clarifying needs and aspirations

There are likely to be many different stakeholders in a community who may have an interest in the proposed activity, or who may be affected by the project. Knowing who these people are and their needs and aspirations will help to clarify what drives their decisions and actions. It will also help define what economists call the ‘objective function’ of an activity for an individual and for the project. This refers to the goal of the activity, for example whether it aims to generate income or preserve the resources for future generations or both. This goal will determine which project activities are appropriate, desirable and feasible. For example, if proponents of a conservation area ask resource owners to stop harvesting resources in that area, they are not likely to gain much support when the community perceives that this would prevent people from using the area for other activities they wish to carry out. The following quote from Palau is a good illustration of this.

“While support and commitment to the objectives of the NCA is [sic] strong ... many people are concerned and feel threatened that the Project will deprive many of a range of preferred development options.”

[The] “...perceived loss of other cash-based development opportunities that are inconsistent with the conservation objectives of the [Ngaremeduu Conservation Area Project] is the only area of contention that may undermine community support for the project” (Ngaremeduu CAP 2000: 9).

In some cases, community stakeholders may desire a totally different approach to resource use than the one proposed, in order to meet their needs and aspirations, as was evident in Solomon Islands (see Box 6).

Box 6. Initial idea for a project based on the live reef fish trade (LRFT) in the Solomon Islands

The Department of Fisheries and The Nature Conservancy identified the need for the management of the fishery based on the live reef fish trade (LRFT) in Solomon Islands. This occurred after the government had allowed foreign fishing vessels to operate in the coastal waters, targeting fish spawning aggregations (ACIAR 1999). The Nature Conservancy expressed concerns about the potentially unsustainable fishing practices that target long-lived fish species such as groupers for live reef fish markets in Hong Kong and other Asian markets. The original notion behind the project was to stop fishing of spawning aggregations. However this objective changed to sustainable harvest and management after local communities were consulted and their priorities for sustainable income generation were taken into account.

It should not be assumed that community members are fully aware of the range of alternative options for income generation when they “agree” that eco-tourism, or other income-generating options, are the most appropriate. There is often a tendency in the Pacific (and elsewhere in developing countries) to declare an area as a conservation area and assume that eco-tourism, an activity generally regarded as being compatible with the conservation objective, will be sufficient to meet community members’ income needs. While in some countries eco-tourism could be a viable option, in most remote islands it may not be a feasible objective, particularly where the current number of tourists into the country is small, the area lacks appropriate infrastructure and the tourists that do come are predominately business people, who generally do not have much time (see for example Funafuti CAP 2000). In such circumstances, the expectations of community members are not likely to be met and conservation efforts can be undermined and threatened, as noted in the Sa’anapu-Sataoa CAP 2000: 12.

The best solution is to jointly assess with community members several different income generation options given their needs and aspirations, and the resources available to them, *before they become committed to any one activity*. This procedure, called “community-based comparative analysis” clearly has not occurred on a number of occasions, before small-scale eco-tourism operations have begun as part of conservation projects in remote areas. “To date there have been no pre-feasibility studies on alternative IGA [income generating activities] performed within the CA [conservation area]. There has however been a diversity of potential activities suggested by SPBCP including, *Pandanus* fruit juice, black pearl harvesting, *beche-de-mer*, coral farming and coconut oil.” (North Tarawa CAP 2001: 8)

If the community members decide that small returns on effort are acceptable for eco-tourism or another venture, having been provided with as complete information as possible, then this can be considered a rational decision. However, the issue of the long-term sustainability of the project will still need to be addressed.

Proposition 1: Identify relevant communities and their needs and aspirations

At the outset of any development and/or conservation project, identify all relevant community stakeholders who may be interested in, or affected by, the proposed project. Clarify their needs and aspirations, specify project objectives, and identify a desirable and feasible set of project/activity ideas. Assess these project ideas from the perspective of the project as a whole, as well as from the point of view of the stakeholders.

3.2 Rational behaviour

One of the most important aspects of economics is the concept of rational behaviour. It is assumed that individuals make their choices rationally to achieve a particular goal by carefully and explicitly, or implicitly, considering the costs and benefits of doing so. The costs could be out-of-pocket monetary expenses, or the opportunity costs of one's time or labour, i.e. the benefits that are lost by engaging in another activity as compared with the expected benefits that could be derived from the current activity. Costs could also be intangible. Similarly the benefits could be monetary or non-monetary. Although, in conventional economic theory, rational behaviour is discussed in terms of monetary benefits and costs of acquiring only consumer goods, the same concept can be extended to explain choices made by subsistence Pacific islanders with regard to their contributions to community well-being and income generation. For community-based CAD projects, this "extended" approach to considering costs and benefits of the project should be used with the community.

In the village setting, economically rational behaviour can lead to communally owned fishing boats being used for social obligations such as ferrying people to ceremonies, school and medical services, rather than going fishing. Why? Because the medium-term gains of maintaining social and cultural ties and obligations are judged to be of more benefit than the cash return of fishing. This behaviour may not pay the interest on the boat loan taken out by a community, but it does ensure the ongoing integrity of social and cultural 'safety nets' and maintains cultural capital, something very important in subsistence cultures (see Veitayaki 2000 and Box 7).

Box 7. Why rural development fails: lessons from the Fiji Islands boat-building project

Failure in the Pacific to realise the promise of rural development is often related to a failure to appreciate different socio-cultural and institutional contexts. In particular, an Asian Development Bank (ADB) study (Schoeffel 1996: xi) noted that the limited success of rural development projects in the region is attributed to:

- lack of attention to smallholder behaviour and motivation;
- lack of adequate, detailed sociological data for project design;
- insufficient attention given to cultural and land tenure problems;
- insufficient attention given to technological change;
- lack of socio-cultural advice during the implementation phase;
- insufficient understanding of the social impacts of the projects; and
- the need for more local participation in project identification.

The economic implications of failures such as those listed above were evident in the detailed case studies presented in Veitayaki's thesis. The Fiji Islands boat-building project aimed to boost fisheries production and improve the local fishing capacity over the 1981–1990 development period by providing subsidised fishing boats and training to communities. From this project, the following lessons relevant to economic analyses at the project level were learnt:

- Community members' needs and the factors that motivate them must be clearly understood at the project design phase.
- Geographic variations in costs to extend the project to different areas should be carefully considered when assessing alternative community development schemes.
- Social capital and efforts to build human capacity should be considered early in the project development and reviewed regularly, i.e. the ability of people to work together and understand basic business management concepts. In the boat-building case, more training in accounting and good business management was needed.
- Careful, community-based assessments of the appropriate scale of economic activities should be carried out—community-owned ventures proved stressful and more prone to failure than family ventures.
- Investment in social capital should be based on a good understanding of existing social capital; in this case there was a failure to take advantage of pre-existing social capital (e.g. some of those trained were inappropriate for the job and lacked relevant experience and/or motivation, whereas experienced Indo-Fijian fishers were excluded from the programme and the training).
- The impacts of social obligations on income generating activities should be given greater consideration in socio-economic feasibility studies. In this case "Fijians eroded the commercial profitability of their ventures by subordinating commercial considerations to those of traditional obligations".
- Risk assessments need to be carried out early in the design phase and regularly reviewed, e.g. market stability, return on investment, community commitment, traditional obligations, and so on.

Source: Veitayaki (2000).

Similarly, in Solomon Islands, villagers rationally continued to fish spawning aggregations, even though they knew that the long-term effects of doing so could jeopardise the sustainability of the resource. Despite the Government ban, each villager continued to fish for the live reef fish trade as long as his private benefits were greater than the costs of fishing. Since the individual costs of not fishing the spawning aggregations were very high, and realistically villagers had few other choices in terms of income-generating activities, they continued fishing (Donnelly et al. 2000). The villagers were making a rational choice to continue fishing knowing the long-term effect could be significant.

The concept of rational economic behaviour can also help explain why communally based canoe tours of the mangroves in Samoa could not be sustained (Sa'anapu–Sataoa CAP 2000: 12). Each individual appeared to decide that the return on their individual labour, compared to the costs, was not sufficient to warrant their continued involvement, particularly when benefits were shared among community members without reference to relative inputs/efforts. Despite initial enthusiasm of the communities of Sa'anapu and Sataoa, the activity declined when expectations were not fulfilled (Sa'anapu–Sataoa CAP 2000).

The above discussion on rational behaviour emphasises that, when careful consideration of what motivates individual behaviours is taken into account, that is incentive structures and community obligations, better predictions of economically rationale choices can be made. Projects

Proposition 2: Rational behaviour

Identify what motivates individuals and communities before developing and implementing community-based projects.

Cultural capital

In addition to financial or market-based incentives, individuals may also be influenced by other factors, such as social obligations and values, which form the basis of cultural capital.

Cultural capital, which has been defined in many ways, is an asset comprised of [sic]“a set of attitudes, practices and beliefs that are fundamental to the functioning of a particular society’s values and customs...” (Throsby 1999: 202).

Culture in this sense is expressed in a society’s values and customs, environmental philosophy and ethics, beliefs and concepts of the world and the universe, or cosmology (Skolimowski 1981, quoted in Throsby 1995). Examples of this can be found embodied in traditional values associated with notions of, for example, vanua (Fiji Islands), fenua (Tuvalu) and enua (Cook Islands). Vanua, in Fiji Islands, for example, defines, amongst other things, the duty of care that people have towards each other, the future generations and the environment (Tuvuki 1995). Similar traditional notions of culture can be found in most of the traditional Pacific societies. Many of these cultural beliefs significantly affect resource allocations and can be invaluable when developing socially appropriate mechanisms to strengthen property rights or management structures to ensure the transparent and efficient management of projects.

In most Pacific island nations where traditional systems are strong, individuals spend a part of their work time on activities (or the generation of “cultural goods”) that contribute to the maintenance of cultural capital. Individuals can be engaged in activities that generate income as well as “cultural goods” (see Annex II). By dividing their time and labour between the two, the level of income generated will be less than when the primary goal is to maximise profits (see Lal & Young 2001). This is clearly evident in the Pacific. Where an individual’s well-being depends not only on consuming economic goods but also producing (and “consuming”) cultural goods, ignoring either need will result in unsuccessful projects. The Fiji Islands boat-building project is one such activity, where due consideration was not paid to meeting social obligations and maintaining the social fabric of traditional lifestyle (i.e. cultural capital maintenance), causing many of the individual activities to fail (Veitayaki 2000 and Box 7, above).

One of the strongest expressions of the importance of cultural capital in the Pacific is the concept of the “Pacific Way”, which was popularised in the 1970s as an approach to development that focused on “the needs of the rural majorities and on the value of self-reliance founded on local culture” (Burt & Clerk 1997:7). In 1992, the Pacific Island Developing Countries’ report to the United Nations Conference on Environment and Development was entitled “The Pacific Way”. It highlighted the Pacific tradition of co-operation and the consensus approach to problem resolution, in addition to the importance of maintaining traditional knowledge and customary land tenure (SPREP 1992).

When planning conservation activities and IGAs, due consideration should be given to the contribution of the project to cultural capital, the effects (costs and benefits) that the commitment of community members to maintenance of cultural capital will have on project activities, and the effect of meeting financial obligations on social harmony.

Proposition 3: Cultural capital

When designing community-based projects, adequately consider the need for the members of the communities to spend time on activities or goods that contribute towards maintaining cultural capital, as well as on activities that would help provide material or economic goods.

3.3. Social and other capitals

In the development of community-based projects, the availability of many other types of capital needs to be considered. Access to financial capital is one of the critical constraints, as is human skills. These, together with cultural capital, are summarised in Table 2 below and their implications for project management elaborated in Chapter 5.

Table 2. Types of capital relevant to community-based projects

Type of capital	Definition and comments
Financial capital	The financial resources available to people (whether savings, supplies of credit, or regular remittances)
Man-made/ Physical capital	The man-made production equipment, e.g. machinery, and basic infrastructure (e.g. transport, energy, communications) and means that enable people to pursue their livelihoods
Cultural capital	Attitudes, practices and beliefs fundamental to the functioning of a society's values and customs
Social capital	Linkages and supportive networks between local, regional and national institutions and stakeholders, including membership in social networks
Human capital	The skills, knowledge, good health and ability to pursue different livelihood strategies
Natural capital	The natural resource stocks and environment from which resources flows useful for livelihoods are derived, and ecological integrity is maintained

Adapted from Carney (1998) and Throsby (1999: 202).

While the importance of having funds (financial capital), equipment (human-made capital), human skills (human capital) and natural endowments (resources) is intuitively clear when considering the viability of projects, the concept of social capital is a more recent consideration for development projects. Putnam (1993), in his seminal work and subsequent work thereafter, established the fundamental importance of institutional arrangements and social networks for sustaining development. A number of projects illustrate the important role of institutional linkages within the Pacific context. In the Samoan fisheries project, King and Faasili (1997) outlined the importance of an extension process that links the institutional arrangements of local villages (e.g. local by-laws, size limits on fish, MPAs) to the duties of the national Fisheries Division (e.g. technical advice/assistance, workshops, outer reef fishing support). Under the project, the final Village Fisheries Management Plan was an “agreement between the village and the government in that it lists the resource management and conservation undertakings of the community, and the servicing and technical support undertakings required from the Fisheries Divisions” (King & Fa’asili 1997:121).

The need for such supportive arrangements was reinforced by Doulman (1993) in his overview article on South Pacific fisheries. After strongly supporting the case for decentralised, community-based fishery management, he acknowledges the need to have strongly linked institutional arrangements between local and national bodies. This, he argues, will ensure the efficient functioning of local management structures by providing national support for mediating inter-group disputes, extension inputs to communities, and setting and enforcing rules in urban and other areas where there have been high rates of in-migration followed by a deterioration in customary resource tenure arrangements. For CAD projects with limited funding, institutional linkages to national governments can also provide the support needed to seek and access external sources of funds to sustain conservation activities. Local projects should never be developed in isolation from the larger social and institutional environment.

By thus strengthening social capital, that is formal rules and regulations, institutions can become particularly important, since traditional forms of social control are breaking down due to changes in economic relationships, land tenure relationships, and/or social relationships. In instances where cultural capital (i.e. traditional attitudes, practices and beliefs) is still strong, strengthening social capital can reinforce these attributes as it provides linkages to legislative and institutional frameworks at the regional and/or national level. Typical factors relevant to building social capital that project managers can consider include:

- building trusting relationships between communities and institutions such as government agencies (usually through encouraging greater accountability among different stakeholders);
- ensuring strong relationships between local, regional and national organisations relevant to the project (“vertical relationships”);
- strengthening relationships across sectors and cultural groups (“horizontal relationships”) to facilitate the exchange of information and sharing of skills even among diverse heterogeneous stakeholders;
- empowering local-level institutions by strengthening social controls (often through linkages to more formal control mechanisms if necessary, e.g. local by-laws, and by reinforcing community solidarity via participatory decision making);
- facilitating political engagement so that local and project concerns are expressed to appropriate agencies, and the priorities of key agencies are understood; and
- monitoring subjective well-being, e.g. perceptions of social cohesiveness, satisfaction with life and development pathways, maintenance of socially important norms and behavioural patterns

Adapted from Narayan & Cassidy (2001).

Proposition 4: Social capital

To ensure that community-based CAD projects are sustainable, social capital needs to be strengthened by building supportive vertical and horizontal networks between local and national institutions and different stakeholders to ensure the efficient transfer of information, skills and resources, and the timely enforcement of property rights.

3.4 Community participation and education

Human, social and cultural capital are continually evolving and changing. Educational activities associated with CAD projects are part of this process.

Invariably, many of the CAP Transition Strategies, other community-based projects (see Miller & Sim 2001) and even the reviews of United Nations Integrated Conservation And Development (ICAD) projects have noted the need for increased education of the community stakeholders about the merits of conservation, and the ways in which conservation and development can be mutually supportive (McCallum & Sekhwan 1997).

Education alone, however, may not increase community support, unless it is accompanied by explicitly taking into account what the community members need and want, what motivates them, and the existing skills, institutions and belief systems. Thus, what is often required is a process of mutual learning and interactive information sharing about conservation and development issues. This needs to be conducted together with assessments of alternative IGAs and their costs and benefits over time. The advantage of this approach is that conservation, education and economic development are progressed together. Progressing each consecutively (e.g. conservation or economic development first) often leads to community discontent. There may be also not enough time and funds to adequately address the secondary issue, given the time frames of donor-funded programmes. This can also lead to CAD projects being planned in isolation from the social and human context.

Proposition 5: Education, motivation and projects

Establish a process of sharing information about conservation and development issues while identifying project options that are compatible with the social context and the needs and aspirations of community members.

There are a number of techniques that can be used to find out the needs and aspirations of community members. Most commonly used at present are Participatory Rural Appraisal (PRA) techniques. A brief overview of PRA and some relevant techniques are given in Annex I. The use of benefit cost analysis (BCA) in selecting desirable projects is discussed below in Chapter 4.

3.5 Resource tenure

Economic theory tells us that the presence of clearly defined property rights influences the way in which resources are used and managed. Rights can relate to ownership or use. The manner in which these rights are defined will determine who receives which benefits and how the costs are borne. Four key characteristics are associated with property rights (Box 8).

Box 8. Key characteristics of property rights

1. The resource or the asset to which the rights are attached is clearly defined, and the identities of the holders of the rights are specified.
2. The rights are enforceable and strictly enforced.
3. The rights are exclusive, that is all benefits and costs from using the resource accrue to the individual holder of the rights. Non-owners are excluded from acquiring any benefits from the use of the resource.
4. The rights are transferable.

Source: Bromley (1989).

Individual or communal property rights

Property rights can be held by individuals or by communities, as is common in the South Pacific. Traditional ownership of resources comes with its own set of rules about the use of the communal resources and expected sharing of the returns from such resources. The options for enforcing communal property rights in the South Pacific are many and varied, including those outlined by Pulea (1993) and others:

- Recognising communal property rights in the Constitutions (e.g. Marshall Islands);
- formalising customary marine titles through legislation to recognise what has always been practised (Fiji Islands);
- recognising customary rights in ordinances or legislation (Tuvalu and Kiribati);
- setting up local by-laws to recognise and reinforce the legitimacy of communal property rights (Samoa);
- using provincial government Act to recognise traditional rights and privileges (Solomon Islands);
- making verbal agreements by respected individuals (Cook Islands) (Tiraa & Wilmot 2001).

Whatever the means used, it must be socially acceptable if support for the project is to be sustained, as the quote below illustrates: “At first, the landowners were suspicious of a government body approaching them to discuss this idea [of a Conservation Area for Takitumu in Cook Islands]. For the landowners, the concept evoked the notion that their land would be removed from them. It was their belief that if they declared their land a CA it would be legislated and ownership of the land would be forfeited. However, after further reassurance to the landowners that the concept did not entail legal proceedings, but rather a verbal agreement, and that they would still have control over their lands, the landowners agreed.” (Tiraa & Wilmott 2001:2)

While verbal agreements may have been acceptable in the Cook Islands, potential problems may arise in the long run unless such informal agreements are supported by legally enforceable rules and regulations. For example, in Fiji Islands, the indigenous “owners” of the fishing rights did not obtain appropriate compensation for the loss of mangroves largely because of poorly defined marine tenure (Lal 1990).

When a development project involves resources for which clear property rights exist, the owners are not only able to obtain appropriate returns but are also willing to make necessary investments, as they are assured of obtaining the benefits of doing so. This secures the investment in, and sustainability of, IGAs. Conversely, where the ownership is in dispute, a community-based project is not likely to succeed, as was the experience in Samoa.

“Sa’anapu village...created obstacles for initiatives in Sataoa...because they believe the mangroves (including the river branches in Sataoa) belong to Sa’anapu village landowners. This will ensure that Sataoa does not benefit from the [Sa’anapu–Sataoa] CA ...” (Sa’anapu–Sataoa CAP 2000: 10).

Proposition 6: Resource tenure

Clarify who owns the resources or who has use rights over the resources and involve all the relevant stakeholders in the project process.

Free-rider problem

Where individuals are not assured of receiving full returns to their investment or effort, as is often the case in community-based projects, the incentive to invest is diminished because of what economists call the “free-rider problem”.

The “free-rider problem” occurs when an individual obtains benefits without contributing or paying a corresponding share of the costs of obtaining those benefits.

This problem can undermine IGAs and conservation efforts of community-based projects. The free-rider phenomenon is common where individuals are expected to contribute their time towards a community-based income generating activity or management of a conservation area and the benefits derived are shared equally with others, but not the costs. With the rise of consumerism, even in the traditional Pacific societies, individuals have little or no incentive to

be involved in community-based projects particularly when the benefits of doing so are not greater than their opportunity costs. Consequently, a general lack of commitment is often observed towards community projects. Recently, individual or family-run ventures are replacing communal projects.

“SSCA has not progressed as was anticipated... largely it is a result of ...[a] lack of community ownership and responsibility for the CA” (p. 5).

“The initial enthusiasm of the communities of Sa’anapu and Sataoa declined rapidly as high expectations were not fulfilled...” (p. 9).

“The mangrove canoe tours were initially successful but did not survive as a community-based business. Visitor infrastructure is now in the hands of families dissociated from SSCA...” (p. 12). *Source: Sa’anapu-Sataoa CAP (2000).*

Similarly, many conservation and development projects assume that because the society was traditionally guided by communal property rights and marine tenure, communal projects are the most appropriate for generating income or for managing conservation areas. Such projects were developed with the belief that the resource belongs to the whole community and therefore all should benefit equally. A number of authors familiar with development efforts in the South Pacific have consistently concluded that income generating projects based on households, not communities are most likely to succeed (Schoeffel 1996; Veitayaki 2000). Ward (1995: 45) noted that having communal tenure and working in gardens, helping with the communal cooking, or conducting ceremonies at the time of deaths, births or marriages does not necessarily mean that the products of such activities are communal property. While much of the work is done on a reciprocal communal basis, such products often remain in the control of individual family units.

Community-based activities, as compared with individually managed projects, are more susceptible to the free-rider problem. They also involve higher transaction costs (i.e. the negotiation of work inputs, the division of benefits, the joint management meetings, and more), causing inadequate allocation of inputs and poor management of projects.

Proposition 7: Free-rider problem

Individuals will tend to “free ride” on other people’s effort, when those who contribute towards an activity may not necessarily benefit according to the level of their inputs.

Externalities

Where property rights for some goods and services are not defined, or where they are clearly defined for a resource but there are no mechanisms in place for individuals using the resource to fully take into account the impacts of their resource use, individuals tend to overuse resources, causing what economists call “externalities”. Externality costs are borne by a third person. Externalities also occur when the property rights are absent or poorly defined. Thus, when individuals dump solid wastes in mangrove areas causing pollution and killing fish, an externality cost is inflicted on those relying on mangroves for their fish, the costs of which are not borne in full by the polluter.

Externalities occur when actions of an individual result in costs that affect others and which the person generating them does not pay for. Such externality costs may result in excessive pollution and degradation of public resources.

Proposition 8: Externalities

To minimise externality effects, property rights need to be clearly defined where possible and/or supportive institutional arrangements established to encourage users to adequately take into account all the externality costs (i.e. internalise externality costs).

Tragedy of the Commons

In the absence of clear use and management rules and regulations, natural environmental resources are also open to what economists call the ‘Tragedy of the Commons’.

The expression “Tragedy of the Commons” refers to the situation where resources, for which no one has exclusive property or use rights, are over-exploited because no one has the incentive to reduce their own activity for fear that others may benefit from this action (“If I don’t take it, someone else will”).

Originally identified by Hardin (1968), degradation of many common property resources has been attributed to this phenomenon, largely because of the institutional failure to control access to resources. Even where resources are communally owned, over-exploitation can still occur in the absence of clear rules and regulations that constrain individuals’ behaviour and that provide appropriate incentives to sustain the resources (Berkes & Folke 1998:7). This is particularly the case when pressures on resource use come from sources external to the community, or where migration into an area has weakened the respect for, and application of, communal property rights. Examples of over-fishing and over-exploitation of coastal resources throughout the Pacific are many, and can be attributed to such lack of institutional arrangements.

Proposition 9: Tragedy of the Commons

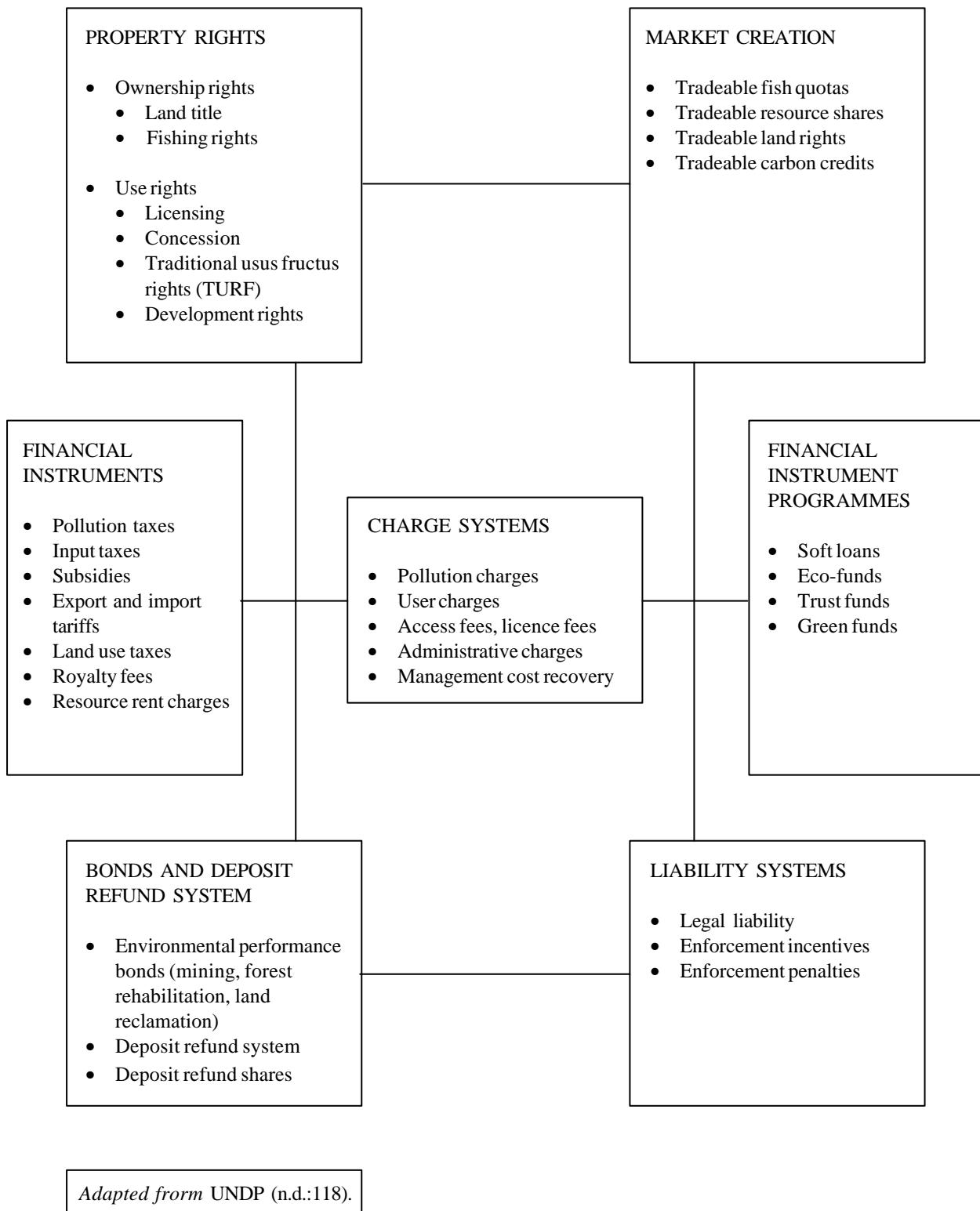
“Tragedy of the Commons” can be avoided even in the presence of communal property rights by ensuring the rules of access and use of resources are clearly identified and enforced.

3.6 Economic instruments

Throughout the world, there is now general recognition that the traditional command and control approach to resource and environmental management, i.e. licensing, prohibiting use of natural resources or putting restrictions on the use of certain types of inputs, has been ineffective. The command and control strategies require regular monitoring on the part of the government, which is often costly. Moreover, they are highly ineffective because most governments are often constrained by limited resources. Thus enforcement is often weak, resulting in continued degradation of the environment (see Panayatou 1998). Consequently, greater use of incentive-based (more generally known as “economic” or “market-based”) instruments, such as user charges, performance bonds, and property rights, has also been advocated. Since most of the Pacific islands have communal property rights systems in place, much of the interest has been in the use of financial instruments.

Economic instruments are used to appeal to the monetary interests that motivate individuals. The study of economics tells us that, for example, free-rider problems and the “Tragedy of the Commons” can be minimised if individuals get a fair return for their effort, e.g. a wage or fee is paid to those who put in the effort. Excessive pollution or resource degradation can be minimised, in the absence of clear property rights, if individuals using these resources are made to pay for their use (e.g. refundable deposits on containers that are commonly littered, or fees for diving). Efficiency in resource use, too, can be encouraged and overuse of any resources minimised by ensuring all inputs are paid for (elaborated below). Where inputs are sourced through markets, market costs may reflect the true economic costs. However, where non-market inputs, such as environmental resources, are used, economic instruments, such as taxes, royalty fees and performance bonds can also encourage people to use them efficiently and minimise their abuse (see Figure 2.)

Figure 2. Economic instruments for environmental conservation and sustainable development



In most countries throughout the world, such user charges levied have not been high enough to encourage efficiency in use. However, they have been instrumental in reducing environmental degradation caused by air or water pollution. International experiences in developed and developing countries suggest that people respond better to financial incentives than when governments are prescriptive about what can or cannot be done. Not only that, the use of economic instruments also helps raise funds for better environmental management, particularly if the charges are hypothecated (Panayotou 1998). In the Pacific islands, too, many of these economic instruments have been used to some extent (see Keen 1997; Keen et al. 1997) and their use can be further encouraged.

In addition to the use of economic instruments, other forms of incentive based instruments have also been recently used, including moral suasion, where commercial firms are “shamed” into changing their practices and improving their environmental performance through the public provision of information. For such a system to operate, it is vital that the government or some other independent body provides an appropriate environmental score card for each firm, and then encourages consumers and civil society to put pressure on the companies to change. For example, such a system has been used in Indonesia and elsewhere in developing countries (see World Bank 2000).

Proposition 10: Economic and other instruments

When designing management strategies, consider using a combination of command and control instruments, market or incentive based instruments and moral suasion as appropriate.

3.7 Fair returns to inputs

Economics tells us that the free-rider problem can be minimised and resources used efficiently if individuals get a fair return for their effort. For a community-owned resource, a rent for the use of natural resources may accrue to community members. Resource rent is equal to gross revenue minus all costs, including the cost of management. Economists consider the resource rent as the return to the resource, and it is often extracted by the government as a royalty tax as a percentage of gross returns. However, for appropriate resource rents to be extracted by resource owners, clear property rights are a necessary condition, as was learned in Fiji Islands (Lal 1990).

Proposition 11: Fair returns to all inputs

Ensure that each input, including the community-owned resource and labour, is paid fair returns. This will ensure that all costs are adequately taken into account, and that externality costs are internalised and the economic value of community-owned resources accrues to the resource owners.

Relevant community members can determine the nature of payments; however consideration must be given to matching monetary costs with monetary payments and individual effort. Three principles can be used to guide this (Young 1992) and are described below.

1. The “user-pays principle” suggests that whoever uses the input, whether a communal enterprise or an individual, must pay for it. Inputs might include an individual’s or a household’s effort, or a common resource. Where inputs are appropriately paid for, for example as wages for an individual’s time, or a resource rent paid in the form of a licence, they will be efficiently used.
2. The “beneficiary-pays principle”, on the other hand, suggests that anyone who benefits from an activity pay for it. Thus, if the Government provides an input, such as the marketing of fisheries products for the communal project, then that service ought to be paid for.
3. Under the “impacter-pays principle” or “polluter-pays principle”, those causing pollution of, for example, the coastal areas or the waterways, will pay for the impact. By bearing the externality costs, individuals will have the incentive to minimise damage to the environment. Keen and Hunt (1997) give many examples of the application of these principles, however, in most cases throughout the world the charges levied are too small to act as an adequate incentive to reduce the level of activities that cause externalities. Licence fees charged for fishing or land development too are small in relation to the resource rents generated.

Proposition 12: “User-pays Principle”, “Beneficiary-pays Principle” and “Impacter-pays Principle”

Where private property rights do not exist and markets for environmental goods and services are missing, use the “User-pays Principle”, “Beneficiary-pays Principle” and/or “Polluter-pays Principle” to levy charges on project proponents or resource users for all inputs, including the use of communally owned or public resources.

Apart from resource tenure, there are many other formal and informal institutions that affect the ways in which different community members are able to access, use and derive well-being from environmental resources and services, and that can also affect ecological change (Leach et al. 1999). Included in these are various government policies and programmes, and instruments such as taxes and subsidies, import and export tariffs and other trade barriers. All these

factors would need to be considered when assessing the existing incentives that may directly affect the viability of a community-based project.

3.8 Time preferences

Apart from considering how cultural values and preferences affect resource use decisions, it is also important to consider the notion of time preferences. Often when new project ideas are introduced in the Pacific, community expectations are raised, and they expect high financial returns within a short period. While some projects could have short-term planning horizons, such as the harvest or mariculture of coral for aquarium markets, others, such as the culture of giant clam for meat markets, would not provide significant returns for at least six years (Tacconi & Tisdell 1992: 238). Rural villagers in the Pacific, who are short of financial capital, often strongly prefer immediate rather than long-term returns. This suggests that projects with short planning horizons are more likely to sustain individual interest than projects that may produce high pay-offs over a long period of time. In order to ensure the long-term viability of a project, however, it may be necessary to invest in activities with both short and long planning horizons. To achieve this, the idea of phasing investments must be carefully considered. Generally, in areas that are poor in resources, activities with short-time horizons should be invested in first.

When assessing the relative merit of projects, economics can help explicitly take into account individual preferences concerning returns over time. This is done by using time preferences or discount rates (e.g. interest rates) when assessing the present value of a future stream of benefits and costs. The rate of time preference tells us what a dollar earned today is worth to a person in a year's time. Or alternatively, how much the person will expect to give back today if s/he was lent a dollar a year ago. Imagine this as putting your money in the bank. How much interest would you have earned in a year's time? Economists use the same principle to determine the present value of future earnings and costs. The social rate of time preference can be derived from the individual rate of time preference after adjustments are made for risk, inflation and taxes (see Sinden & Thampapillai 1995: 113–139). Then the basis of comparison becomes net present value, using the social rate of time preference or real discount rate.

In developing countries, with people starved of financial capital, a society is likely to express a high rate of time preference for access to cash today, and thus is likely to vote for a project that promises income in the short term over a conservation project that may give lower annual income but over a longer period of time. The choice of discount rate is thus very important, as the lower the discount rate, the higher the weighting given to future earnings and costs. In the situation where the society wants to conserve resources for future generations, its discount rate will be small. In some cases people have argued for even zero rates, particularly when the decisions are irreversible or when the expected costs of an activity, such as a nuclear power plant, are likely to be very high in the distant future. Alternatively, a higher discount rate will be used when an individual values consumption today.

Preferred rates of time preference could be identified during the early stages of a project cycle and used in the benefit cost analysis of project proposals before a project is selected and implemented. Even when an economic analysis using discount rates is not being undertaken, community time preferences still need to be explored to gain an understanding of acceptable returns over time (monetary or otherwise). This can be incorporated into the PRA, and done in very simple terms using time lines and resource mapping techniques to reveal the return on effort which people expect over given periods of time.

Proposition 13: Rate of time preference

Consult with community members in order to identify how much individuals are willing to discount their future earnings (i.e. the individual rate of time preference) and determine the social rate of time preference before identifying possible income generating activities and developing detailed project design.

3.9. Summary

Based on the discussion in this chapter it is evident that before developing a community-based project it is critical to:

- identify relevant community stakeholders who may be interested in or affected by the proposed activity;
- involve all the relevant stakeholders in the project process;
- clarify who owns the resources or who has use rights over the resources;
- identify what motivates individuals and communities;
- identify the needs and aspirations of all the relevant sections of the communities;
- identify desirable and feasible project/activity ideas;
- identify individual and community rates of time preference;
- increase community awareness about conservation and development issues and discuss alternative conservation and development project options before choosing a project; and
- clearly specify project objectives.

4 Project evaluation and economic valuations

Traditionally, many economists and government analysts have advocated economic benefit cost analysis as a decision-making tool to make choices, including:

- to accept or reject a single activity, project, programme or policy;
- to choose one of many different project options;
- to help choose an appropriate scale and timing of a project, programme or policy; and
- to prioritise activities and projects for funding or allocating scarce government resources.

Such decisions are based on value estimates of inputs and outputs, which have a very specific meaning in economics, as explained in Box 9.

Box 9. Economic values

When economists talk about value, they usually refer to the market value, or price, of an additional unit of a good. The economic price of a good is its opportunity cost, i.e. the value that would have been derived in the next best use. For example, the value of an individual's time in a community-based project would be the wage the person could have obtained while employed elsewhere, or the economic value of products, net of costs, which would have been produced elsewhere.

Economic analysis is based on marginal values, i.e. a change in benefits, net of costs, as a result of that project or activity. The economic value of mangroves will therefore include all market and non-market values of all the goods and services supported by the system and of direct or indirect 'use' values to humans, net of all costs, including the key ones noted below (see Annex III). Society's economic value is the sum of each individual value net of costs.

Note that this is very different from the use of the term in daily language, where one talks about spiritual values; cultural values, or gross values of something you bought. Economic values do not capture the value of ecological processes, which maintain the ecological integrity of an ecological system, nor does it include any cultural value that a society may place on the site. The economic value thus captures a limited component of what people call the set of values.

4.1 Benefit cost analysis

The basic assumption in benefit cost analysis (BCA) is that, if the benefits are greater than the costs, the society as a whole has a net gain. When benefits and costs are spread over time, project choice is made on the basis of net present value comparison. The net present value is calculated as follows:

$$\text{Net present value (NPV)} = \sum_t \left(\frac{\text{Benefits} - \text{Costs}}{(1 + r)^t} \right)$$

where r = rate of time preference or social discount rate; and t = time.

To illustrate the use of BCA, we can use the example of the Palau Government's financial analysis of an eco-tourism project in comparison to a golf course (see Table 3). The eco-tourism activity was chosen because the perceived total benefits of the project are greater than its costs, and its expected net benefits were estimated to be greater than the expected net returns from the development of the site for golf.

Table 3. Palau eco-tourism project versus golf project of the Ngaremeduu CAP site: financial benefit cost analysis

a. Eco-tourism	
Gross revenue	\$584,000
Costs:	
Interest on loan	\$ 30,000
Operating costs, such as fuel	\$100,000
Net revenue	\$454,000
b. Golf	
Gross revenue	\$4.6 million
Costs:	
Interest on loan	\$1.8 million
Operating costs, such as fuel	\$2.5 million
Net revenue	\$300,000

*Note: This table is used to illustrate the use of BCA in the Pacific. It should be noted that some inconsistencies were found in the actual BCA estimation, which would have made it difficult to justify the eco-tourism choice purely on the BCA estimations.

Source: Bell, quoted in Ridep-Morris (2000: 15).

Proposition 14: Benefit cost analysis

In ideal circumstances, before developing a community-based project, use BCA to assess whether the expected net benefits are greater than the costs. Then it is possible to choose the option for conservation and development that produces the highest net gain.

Depending on the availability of information, different criteria for decision-making based on BCA can be used to choose between alternative activities, as summarised in Table 4.

Table 4. Decision-making criteria: benefit cost analysis

Criteria*	Decision
1. Benefits > costs; i.e. net benefit (NB) > 0	Accept the project
2. $NB_1 > NB_2$	Accept project 1
3. Quantitative estimates of $NB_1 < NB_2$, but there are also substantive non-market benefits	Accept project 2 only if the intangibles are considered to outweigh the difference in quantitative estimates
4. Cost (C) effectiveness $C_1 > C_2$	Benefits unknown, but decision was made to maintain a predetermined environmental quality <ul style="list-style-type: none"> • Choose the project with minimum cost; therefore project 2 is chosen.
5. There are: four projects, each with $NB > 0$; and a limited government budget	<ul style="list-style-type: none"> • Prioritise projects according to their NB estimations, $NB_1 > NB_3 > NB_4 > NB_2$ • Select that number of projects for which the total costs can be met from the available budget

* Where benefits and costs are spread over time, the appropriate measure to be used is their present value

Usually a project is chosen that produces the highest social well-being as reflected by its net benefits or net present value. Where benefits of a project cannot be quantified but are considered to be large enough for a conservation or development idea to be implemented, the BCA framework can be used to choose that option that would produce the desired outcomes at minimal costs. That is, one can use cost effectiveness as a criterion for choosing between activities that will deliver the desired outcomes. For example, a government may decide that an island area has some unique ecosystems and species diversity, which should be conserved. Once such a decision has been made, the next step would be to choose that package of use and management strategies that will be most cost effective. In such a situation, all different options for use and management will be listed and costed. The package of strategies that has the minimum cost will be chosen.

In some cases, society may, however, wish to choose a project with lower net social benefits when there are compelling reasons. One of the compelling reasons could be that the project with lower net social benefit is more socially desirable because of equity reasons. To be able to make such decisions it is important that all tangible and intangible inputs and outputs are identified and are adequately considered within the benefit cost analytical framework. Techniques such as production and marketing process analysis (see Gittinger 1978) and life-cycle analysis (see Gilpin 1995) could be used to identify all relevant inputs and outputs of an activity.

4.2 Project evaluation and non-market values

In BCA, as far as possible, the costs and benefits are measured in monetary terms. Often, only those goods and services that have direct use values and are exchanged through market mechanisms have a readily identifiable market price. But there are often intangible goods and services produced by natural systems for which there are no market values (see Box 8). Where money values are not directly observed, many different techniques are available to derive monetary values (see Annex III).

Non-market valuations of goods and services are receiving growing attention in the Pacific. However it is important to note that while such estimates are useful, it is not absolutely critical that the economic values be estimated for all goods and services, particularly when the costs of obtaining such information are large. In any case, economic valuations may not always provide accurate information. This is particularly true in the Pacific, where markets are not mature, the economies are small and any small project can have significant effects on prices and costs. Furthermore, baseline information and the understanding of the underlying ecological processes and their interaction with market economics are almost non-existent. As discussed earlier, economic values are relevant when small (marginal) changes are being considered. But where an

activity may have significant impact on prices and costs, or where there is incomplete information, decisions based on purely economic grounds may not be appropriate.

Where it is not possible to determine a monetary value, it is still possible to use the BCA framework to make informed decisions. At the very least one can identify all the relevant benefits and costs associated with the project in a systematic manner, after taking into account ecological and institutional considerations. Decision-makers may thus be presented with as many as three bundles of information – quantitative and qualitative estimates of benefits and costs and distribution information, which can only be tied together by using individual or collective judgement involving all the stakeholders, including government and community members. This reinforces the fundamental point that BCA is an aid to decision-making, never a substitute for it. There is thus invariably a large role for judgement, based on a wider range of considerations including social, ethical and political ones, as well as those relating to some measurements of uncertainties (Australian Department of Finance 1991: 101).

Proposition 15: BCA as a decision-making aid

In the presence of non-market values and uncertainties, use BCA as an aid to decision-making. Systematically consider all information: quantitative estimates of benefits and costs, qualitative information, and information about distribution or equity issues.

4.3 Project evaluation and realistic estimates

When evaluating a project, it is critical to make realistic assessments of the attractiveness of a venture as well as the feasibility of realising those benefits. In the Pacific, for example, clam mariculture was widely promoted once the technical feasibility of seed production had been proven through ACIAR-funded projects carried out by ICLARM. It was also advocated because clam farming does not require sophisticated technology and thus is considered to be suitable for the Pacific. There is a strong perception amongst some researchers (and conservationists) that giant clam farming is a viable option, both for commercial reasons and for subsistence purposes to improve nutrition. It is thus widely promoted because of the belief that it can be highly profitable, despite objective analysis showing the contrary (Box 10).

Box 10. Financial viability of giant clam farming

Giant clam mariculture was estimated to only be profitable under the assumptions that the price for clam meat was high and the mortality in the first year of farming was low. If these assumptions were incorrect, sensitivity analysis suggested that the returns would be negative, even if the prices were assumed to be high. Tacconi and Tisdell (1992) also noted that although it was not a highly profitable commercial venture, it would be profitable only if subsidised seeds were made available and labour costs were close to zero. When one carefully takes into account the opportunity cost and the financial risks of clam farming, as well as the easy access to fresh or canned fish in the South Pacific, the financial viability of clam farming for subsistence or for commercial purposes is questionable. It is even more questionable if one considers the opportunity cost of the subsidy provided by the government.

Source: Tacconi & Tisdell (1992).

Despite past experiences with giant clam farming in the Pacific showing low or negative returns, it is still promoted in the Pacific or suggested as a viable income generating activity for various conservation areas (see, for example, Ha'apai CAP 2000: 5 and Arnavon CAP 2000: 5). More recently, giant clam farming has been promoted for the aquarium trade, without much assessment of the benefits and costs of doing so. We need to learn from past (economic) analyses, not ignore them when convenient or repeat the same mistakes several times and waste valuable resources.

Similar concerns are also relevant when one considers projects based on eco-tourism promoted in the context of conservation area projects. Potential for income generation based on eco-tourism is highlighted throughout the Pacific but without adequate consideration being given to the anticipated number of tourists that can be expected given the frequency of flights into the country, the number of tourists currently arriving, and the nature of visitors. Even in places such as Funafuti, where only about 600 visitors arrived per year, eco-tourism was identified as the main income generating activity (Funafuti CAP 2000: 4). The financial viability of such a venture is uncertain since most of these visitors were people on business with little spare time to enjoy the environment. If one were to further take into account the initial capital costs of the interpretive centre (AU\$15,000) plus another AU\$10,700 required for the purchase of a new boat to ferry tourists, the project was unlikely to be viable unless the tour fees were set very high. Even if one were to treat the AU\$25,700 provided by external donors as sunk costs, the eco-tourism venture could not be sustained without a sufficient turnover of visitors to meet the operating costs of running such a venture.

Proposition 16: Economic evaluation and realistic estimates

When undertaking an economic evaluation, use realistic estimates of the costs of all inputs needed in an activity and the economic values of all, market and non-market, outputs produced by the project, including externalities.

It is recognised that not all costs and benefits can be known with certainty. Where there are uncertainties, different approaches can be used, including sensitivity analysis (Sinden & Thampapillai 1995; Australian Department of Finance 1991) and stochastic BCA (Fairly & Jacoby 1975). In the case where uncertain outcomes may be irreversible, and the society is concerned about losing some unique ecological resources, the “precautionary principle” could be used to guide a decision.

The “precautionary principle” advises that, when the environmental impacts of a resource use and investment are uncertain and irreversible, it is best to err on the side of caution and choose the option that avoids irreversible action.

4.4 Feasibility and economic evaluation

Although an income generating activity may be technically feasible and could potentially produce large benefits, the financial viability of a project also depends on the feasibility of realising the expected benefits. The feasibility of a project is determined by basic issues such as the availability of inputs at the times needed, the regularity of outputs, and whether there is demand for them given production costs. Many income generating activities demand labour to be available at particular times during the production cycles. The timing of such demands may not be compatible with the demands on individuals in the society to meet social-cultural obligations. This has often led to the income generating activity lapsing, and has affected the person’s ability to meet credit payments or caused the person to lose status in the community, as in the case of the Fiji Island boat-building project (see Box 7).

A study of seaweed farming in the Pacific also found that a number of other economic factors could make a technically feasible activity unlikely to succeed. These included: high freight rates, low cost structures of competing suppliers already in the market, the village lifestyle, which was not compatible with regulated and consistent effort for an export-oriented market, and so on (McHugh & Philipson 1988; Veitayaki 2000). Despite such assessments, most Pacific island countries have invested, albeit rather unsuccessfully, in seaweed farming.

Similarly, giant clam farming continues to be promoted in many Pacific island nations, as discussed earlier, without paying much attention to the availability of markets for the clam meat, market access and the availability of regular transport services. The same was true of the deep-water fisheries targeting high-valued export markets for snapper and grouper. Deep-water fishing was trialled and encouraged in many Pacific islands by their respective fisheries departments and the South Pacific Commission (SPC, now called Secretariat of the Pacific Community), which provided training in deep-water snapper fishing, longlining, and so on. High catch rates were feasible but the largest constraint for many small operators with limited resources was the infrequent air links with export markets such as Honolulu. This meant that fresh fish had to be air freighted via Fiji or Australia, thus losing much of its quality (economic value) and significantly affecting profitability of the activity.

Proposition 17: Feasibility and economic evaluation

When assessing a project, ensure the economic and non-economic factors that determine the feasibility of achieving the desired benefits are also adequately addressed.

More recently, there is evidence to suggest that proponents are beginning to carefully consider the entire “production process” before an income generating activity or project is implemented. A good example of this is the Vanuatu project for the conservation of a rare palm (see Box 11). Similar financial and market assessments have also been carried out for eco-tourism-based projects under the SPBCP. Such an approach needs to be taken for all projects.

Box 11. The importance of feasibility studies for a rare palm enterprise in Vanuatu

An enterprise to promote conservation of the endangered *Carpoxylon* palm, facilitated by the Foundation of the Peoples of the South Pacific International (FSPI) and USAID in Vanuatu, illustrates the importance of early feasibility studies and trials in establishing a community-based conservation and development project. The project marketed palm seed internationally to create local economic incentives for conservation and to generate revenue to subsidise in-situ conservation activities. Project facilitators gave attention at an early stage to assessing the ecological implications of the enterprise as well its economic feasibility.

Since conservation and economic benefits were joint objectives, it was important to address both the objectives simultaneously and to ensure that the harvesting of seed from wild palms would not further threaten the viability or genetic variability of the *Carpoxylon* palm, and that the enterprise was economically viable and feasible. Detailed studies on the distribution of genetic varieties developed a strategy for seed collection that addressed these concerns, by targeting only the genetic variety that was most prevalent and occurred in cultivated stands. Confidence about the positive ecological impacts of the enterprise has enabled facilitators to turn the conservation aspects of the product into a marketing asset.

Establishing the economic value of the palm seed resource was a key requirement in designing the enterprise. Market research established that there was a demand for palm seed internationally, and that collectors were willing to pay a significant price for endemically sourced seed. Research into similar enterprises in Australia highlighted that it would be important to trial the growth of plants from seed, to establish that the palm could be grown successfully outside Vanuatu. Germination trials gave the enterprise managers a degree of confidence in the quality of the export seed. The feasibility of the enterprise also rested on the logistics of collecting, transporting and marketing seed so as to maintain its quality and to keep up-front costs low. Expert advice was sought on how best to collect, store, pack and export the seed to maintain the quality of seed stock.

The use of trials involving collection through to marketing of the palm seed established the viability of the project and enabled managers to refine the requirements for collection and transport. Enterprise managers were also responsive to market opportunities, for instance by adding other varieties of palms and horticulture products to its portfolio.

The project made a significant impact in raising awareness at the national and international level about the endangered species it set out to protect. Initial expectations that fifty per cent of enterprise profits would be directed to conservation activities have not been realised, reflecting the tensions in running an enterprise geared towards yielding public as well as private benefits. However, the adaptive approach used by facilitators, together with their early emphasis on feasibility analysis, provided a sound basis for enterprise development and management.

Source: Fry et al. (1997).

4.5 Project evaluation—whose perspective?

A financial benefit cost analysis needs to be carried out from the perspective of an individual, the project, and the government. All three are equally important if projects are to be successful (Box 12). Evaluation from the project's perspective can inform whether the project's benefits will outweigh costs. On the other hand, an individual will only be interested in being involved if his/her costs are less than the expected returns.

Box 12. Financial assessment from an individual, project and government perspective

- **Individual perspective:** only costs and benefits borne by an individual matter; externality costs and benefits, or social costs of inequitable distribution of benefits are thus ignored. Market prices for inputs and outputs are normally used.
- **Project perspective:** the cumulative effects of all individuals' activities are taken into account, together with the costs of running the communal project, such as marketing, administration and organisation. Equity issues are also important.
- **Government perspective:** the costs of government inputs are identified, including staff time, and other operational resources (such as vehicle, fuel, and so on). This assessment will help identify budgetary appropriation needed and additional staff required.

Community members will need to clarify which costs and benefits of different conservation and development options are of particular interest to them. This explicit process of community consideration and negotiation about the nature of different forms of development and their costs/benefits over time has become a foundation of the pre-feasibility studies now conducted before many ICADs commence (see Box 13).

Box 13. Integrated conservation and development (ICAD) projects: Papua New Guinea

Integrated conservation and development projects in Papua New Guinea aimed to enable conservation of unique areas of forest biodiversity while at the same time offering communities development opportunities. It was assumed that community members would need to be offered an alternative income source if they were to consider conserving their forest resources rather than allowing commercial forestry. The Lak ICAD in New Ireland province was a failure but those involved thoroughly evaluated the lessons to be learned and applied these later in the Bismarck Ramu ICAD in Western Highlands, Simbu and Madang Provinces.

Lessons learned concerning economic issues in conservation and development projects raised by the failed Lak ICAD include:

- Although biological criteria may be drawn upon to identify broad areas of interest for conservation, socio-economic criteria must dictate the actual choice of project site. Socio-economic criteria include community commitment, community-based inputs, desire to learn and build social capital, achievable financial expectations, institutional support and acceptable risks.
- Land tenure in the Pacific has an adverse impact on investment, and the ability of community members to enforce decisions on resource use because of the lack of regulatory, legal and institutional backing. This is a risk that must be assessed and explicitly addressed early in the project.
- Community-based cost benefit analyses need to be conducted early, as their valuations may be very different from the donor/project proponent.
- Dependency attitudes need to be confronted and self-help ones encouraged. The assumption that community-based projects will provide rents rather than opportunities for income earning may need to be challenged. The financial resources behind the project need to be clearly stated so that unreasonable expectations do not arise.
- Assessment of alternative income generating activities must take into account available infrastructure, access to markets, transport and storage costs, capital costs, communication facilities, financial services, and human skill requirements.
- Access to international markets requires quality control, consistent supply, service and delivery standards, understanding of market operations, and regular communications. Communities with little experience in international trade often cannot meet these requirements.
- Material (or economic) incentives may be inadequate to secure the conservation outcomes desired. Education is needed as well, to create a social environment that is supportive of conservation and the skills to underpin that support.
- Institutional partnerships (e.g. with government) in terms of building capacity, extension, and legal and institutional enforcement contribute significantly to project success and can create economies of scale in project servicing.
- Greater use of auditing techniques is needed to provide useful feedback.
- Fixed costs and capital expenditure should be kept to a minimum until a firm commitment from the community is established; they should not be used as enticements.
- Issues of compensation for conservation need to be carefully approached to be equitable, but care must be taken not to promote unsustainable dependencies nor disempower communities. Conservation preserves a continuous, productive resource base; it is not an opportunity cost.

In the Bismarck Ramu ICAD, the social feasibility study was carried out before the project commenced. It examined community motivation, collaborative potential, opportunities and capacity for income generation, and basic social characteristics (including community perception of past and present resource use and the costs and benefits to the community). Participatory rural appraisal (PRA) tools were used to help project proponents understand the community context. Community education programmes were coupled with income generating initiatives to ensure that the link between meeting welfare needs and conservation was clear. As the project progressed, community-based and external audits contributed to ongoing project evaluation.

Source: Ellis (1997); McCallum & Sekhran (1997).

It is also important that, if government inputs, such as technical or financial expertise, are required for a community-based project, the project evaluation should also be carried out from the perspective of the government, whether or not the project is externally funded. Although rarely done, this will help reduce stress on project staff, which is particularly critical when agencies have limited financial and human resources. In Samoa, although the community-based fishery project is generally regarded as a success, the Fisheries Department staff were over-stretched due to an unsustainably high workload—"it is doubtful if the community-based fisheries management can be sustained without ongoing technical support" (International Development Support Services 1998: 18). In the same Samoan fisheries project, despite the desire and the will to produce giant clam seeds, the Fisheries Department's investment in a low-technology hatchery was

unsuccessful because of a lack of funding for proper facilities and scientific staff (International Development Support Services 1998: 14–15).

If the objective is to maximise the well-being of the society, then economic analysis, as compared with financial analysis is appropriate. This is particularly important, since many of the costs and benefits may not be included in a financial analysis, even if it is performed from the perspective of the project. In economic benefit cost analysis, the benefits and costs are considered from the perspective of the society, and the relevant estimates are the social benefits and costs. Social benefits and costs are not necessarily the same as private benefits and costs. Some of the reasons include the presence of taxes and subsidies, and externalities. Where government provides a subsidy or there are externalities, the true cost of an activity is greater than the cost actually borne by an individual. Therefore in social benefit cost analysis, one would consider the social costs, whereas in the case of financial analysis one would only include the out-of-pocket expenses. The difference between financial and economic analysis is illustrated in Box 14.

Box 14. Comparing financial and economic project evaluation

The following example is based on a mangrove reclamation project supported by the Government of Fiji Islands following mainly financial analysis. In this case the government behaved as a private developer.

A 350 hectare mangrove forest is to be developed for sugarcane farming. This ecosystem is used by local communities for timber and non-timber products, as well as the harvest of fish products for subsistence and commercial sale. Therefore the direct and indirect use benefits are:

- forest and non-forest timber product (NPV forest);
- coastal fisheries product (NPV fisheries);
- other services, such as filtering nutrients and buffering storms (NPV non-market)

If the mangrove forests were to be reclaimed for the alternative use, the only benefit will be from sugarcane farming. Therefore, as a private developer, one would only consider the expected net returns from sugarcane farming, reclamation costs and the costs of the forest products lost. S/he will perform a financial analysis and will choose to reclaim only if:

$$\text{NPV sugar cane} - \text{cost of reclamation} - \text{NPV forest lost} > 0.$$

On the other hand, from a social point of view, the decision to reclaim would make economic sense only if:

$$\text{NPV sugar cane} - \text{NPV forest} - \text{NPV fisheries} - \text{NPV non-market value of}$$

$$\text{all goods and services} - \text{cost of reclamation} > 0.$$

Needless to say, economic BCA will give a lower net benefit estimate than a private financial analysis, and the society could be a net loser if the decision to develop is based on financial analysis. This was the case in Fiji Islands, where 350 hectares of mangroves were reclaimed on the basis of limited financial analysis. The society not only lost the ongoing benefits of forest and fisheries products, but also incurred additional capital costs. The result was a net loss of over \$236,000 because the cane production was limited. If property rights are clearly defined and the community's ownership is recognised, the financial analysis and economic analysis will give the same results, provided there are no market distortions due to taxes or subsidies and there are no externalities.

Source: Lal (1990).

Proposition 18: Evaluation perspective

Before developing a community-based project, undertake financial evaluation from the perspective of the individuals concerned, the project and the government, and undertake a social (economic) evaluation.

4.6 Equity and equitable distribution

Standard economic assessment of projects does not take into account considerations of income distribution, although some practitioners have suggested using weights to reflect the importance of benefits accruing to some groups of individuals (see Sugden & Williams 1978).

Equitable sharing of benefits and costs was identified as one of the eight necessary and sufficient conditions for sustaining conservation area projects under the SPBCP programme (Sesega 2000). Unless returns are shared in proportion to inputs, time and resources contributed by individuals, a level of resentment or disinterest can develop and undermine the project's success. In Solomon Islands (Arnavon CAP 2001: 5), for example, fisheries enterprise based on pelagic and demersal species and initiated by the TNC and Conservation International led to a flow of over \$89,000 into the Waghena community. However, the benefits were restricted to households with boats and skippers; others in the community felt left out. While the project addressed the government's goal of creating employment and income generation in rural areas, it also led to unfair distribution of benefits, causing some concern.

Equitable distribution does not mean equal sharing. If the rules about sharing of costs and benefits are not addressed at the outset of community-based development and conservation projects, frustration, bitterness, jealousy and conflict within the communities can result (Sesega 2000). This is particularly evident if there is a belief that the resources "belong to everyone; therefore the whole community should benefit" (Sa'anapu-Sataoa CAP 2001: 12).

Moreover, it is important to note also that dividing benefits thinly amongst the community members can have many disadvantages, as noted by Tira and Wilmott (2001). One option could be to establish a trust fund, which many countries and SPREP are currently considering. This would pool the resources and enable them to be used for activities that lead to greater communal welfare, for example education via scholarships for the landowners' families. Pacific island communities are becoming increasingly interested in trust funds, and SPREP is currently considering a proposal for a Pacific island trust fund for nature conservation. Since many of the projects discussed in this report have experienced difficulties in satisfying individual community members with the promise of community benefits, the question of where trust income is targeted is an important one to consider and discuss at the outset. Experiences in the Pacific islands also suggest that, if such issues are not adequately considered at the outset, conflict can develop within a community (see, e.g., Centre for International Economics 1998; Tacconi 1997; Whyte et al. 1998).

Many of the economic issues discussed in this report are also relevant to establishing a trust fund, including the issue of incentives, equitable sharing and having an agreed set of rules for the management of the trust fund (see Box 15). Thus, before funds are established, it is important to carefully consider the purpose of the fund and the development of appropriate management structures and processes.

Box 15. Using trust funds in community-based conservation and development projects

A trust fund is a financial instrument used to produce a guaranteed stream of income over time. A lump sum of money, known as “capital”, is invested through a finance company, to generate annual interest or income that can be used for various purposes.

Trust funds involve complex legal, administrative and financial issues, and it is important to seek expert advice in their establishment. Trusts can be established with a range of objectives in mind, and based on differing timeframes, sources and amounts of revenue, and management systems. Two main approaches have been used internationally for trust funds related to conservation:

1. Domestic environmental funds: These are often financed through environmental charges and fees, and have been used to fund pollution abatement, environmental education and research and institutional strengthening.
2. Conservation: these are the most common kind discussed in the South Pacific context. They are generally financed through donor contributions, together with limited contributions from conservation fees, royalties and eco-tourism revenues, for the conservation of biodiversity.

Management structure

A number of guiding principles can help establish and better manage the trust funds. These include:

- Clearly specify detailed objectives to guide decisions on how income from trust funds will be used, paying particular attention to what motivates people, and whether the proposed use of the fund is the most appropriate one at the community level.
- Make sure that appropriate stakeholders are involved and participate in the management of the trust fund, as they are critical to its success. Participation can contribute to shared understandings about the purpose of the fund and its objectives, and thus improve the efficiency of fund operations.
- Avoid bureaucracy. Management structures need to be independent of political influence and avoid excessive bureaucracy in order to assure donor confidence.
- Be fully aware of the importance of good financial management, accountability and transparency. Good financial management requires that the financial resources can fulfil the required objectives for the intended duration of the fund. Transparency is a key issue. The lack of transparency can lead to misuse of authority and misallocation of funds. This will in turn undermine the confidence of beneficiaries and contributors in the fund.
- Use the trust fund to support only those activities that cannot be adequately be paid for by the individual family or household. In the case of conservation trust funds, some common objectives include:
 - funding environmental education programmes,
 - training conservation personnel,
 - strengthening non-government conservation organisations,
 - funding scientific research and monitoring,
 - funding community development activities to support conservation, and
 - funding land-lease agreements for protected areas.

The trust fund should ideally be used to support community-level benefits and maintenance of cultural capital, and not what would be considered as private benefits. Ensure equitable distribution, particularly where revenues generated from community-based projects constituted part of the trust fund.

Flexibility is a key issue for trust fund management, so that objectives and procedures can be adapted based on experience with administering the fund.

In some countries, social equity, including gender equity, is also becoming part of the national development goals. How far this goal is pursued will determine the types of projects that are considered appropriate/desirable. Where gender equity is pursued, sound development projects need to consider the workload of women, particularly where role differentiation is socially sanctioned and changes in social values are unlikely. Alternatively, where women are the primary income earners from an activity, an alternative but more efficient project may be rejected if it is likely to displace the women. Women, who are the principle participants in the freshwater *kai* fishery in Fiji Islands, harvest the bivalve by diving, using nothing but swimming goggles. A proposal to use scuba diving gear was turned down in 1983 because of its impact on these women, whose income provided much-needed cash to send their children to school (Lal & Slatter 1983).

4.7 Summary

This chapter has highlighted key economic issues that affect community-based conservation and development projects. Essentially, before any conservation and development projects is developed in detail and implemented, it is important to:

- undertake project evaluation and choose a project only if expected net benefits are greater than costs. Choose a particular project option if it produces the highest net gain.
- when undertaking project evaluation, use realistic estimates of the costs of all inputs needed in the activity and the economic values of all outputs produced, including externalities
- where not all goods and services have monetary values and non-market valuation is too costly to undertake, and in the presence of uncertainties, undertake project evaluation using a BCA framework. This will enable you to systematically identify and consider all information: quantitative estimates of benefits and costs, qualitative information, and information about distribution or equity issues.
- for equity reasons, a project with lower net benefits may be chosen if it improves income distribution.
- undertake project evaluation from the perspective of individuals, the project and the government.
- when assessing the financial viability of a project, carefully identify key factors using production process analysis.
- simultaneously consider the need for cultural goods, together with the need for economic goods when designing project details.
- realise that individuals will tend to “free ride” on other people’s effort, when those who contribute towards an activity do not necessarily benefit according to the level of their inputs.
- ensure that the sharing of benefits from a community-based project reflects the relative contributions (individual effort as well as other costs) made by members of the community, as well as the return to the community for the communally owned resource.

5 Integrating economic issues into project planning

It is necessary to consider adequately the economic issues highlighted above when identifying suitable community-based conservation and development projects. At the start, a project should have well-defined boundaries, at least conceptually identifying the geographic location and the target individuals or communities whose well-being will be influenced. This will help in BCAs and production analyses and in deciding who the relevant stakeholders are.

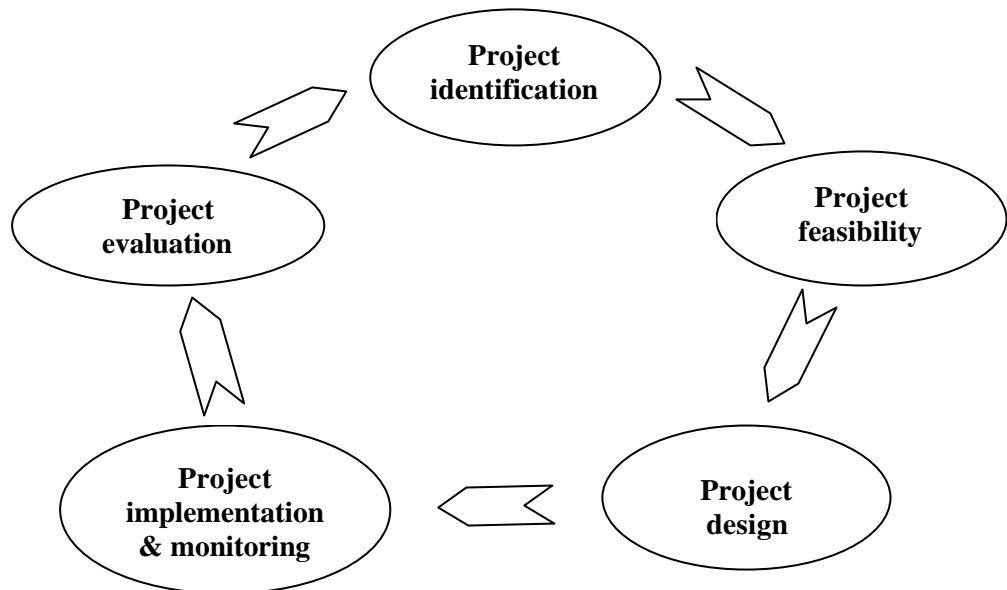
Sound planning is an essential first step in any development project in order to maximise net benefits and minimise waste of scarce resources. It allows project proponents—individuals, communities, government agencies, NGOs or external donors—to carefully:

- identify desired conservation–development opportunities;
- identify alternative conservation–development activities;
- assess the viability of alternative activities and select one or more feasible options;
- develop detailed project design and evaluation criteria; and
- implement, monitor, review and refine activities.

Projects are often planned and implemented in a natural sequence, called the project cycle. Traditionally the project cycle has been divided into different phases depending on the scale of the project and the level of detail desired. Regardless of whether the project is designed using a “top-down”/“blue-print” approach or “process” approach (see Chapter 2), the stages in project design are the same. The project planning process is discussed below, drawing on Gittinger (1978). Economic issues relevant at each of the following stages are highlighted (Figure 3):

- identification/pre-feasibility assessment,
- feasibility assessment,
- project design,
- implementation, and
- monitoring/evaluation.

Figure 3. The project cycle



The case studies and propositions highlighted in Chapters 3 and 4 are applied in the development of illustrative checklists for each stage. Where appropriate, examples from the Pacific islands are used to illustrate points. We have placed the most emphasis on the early stages of the project cycle, as these are likely to be most relevant to the programme start-up phase of the IWP. Furthermore, many of the later stages are an iteration of the earlier stages.

5.1 Identification and pre-feasibility assessment

This is the earliest stage, when the idea for a conservation or development opportunity is conceived. Ideally, project ideas come from the people themselves within the context of national, regional or sectoral development planning. In the Pacific, project development is often identified initially by government agencies, NGOs, and/or external donors who tend to target economic development of a particular sector or conservation of a particular type of environment. When the initial project objectives are set externally, a great deal of flexibility must be retained to ensure that the proposed participants share similar aspirations and objectives, and that there is the necessary social capital (e.g. resource tenure systems, community management structures, value sets, and so on). As noted in the lessons learned from the PNG ICAD Project in Lak, raised earlier in Box 13: “Though biological criteria may be drawn up to identify broad areas of interest for conservation, socio-economic criteria must dictate the actual choice of project site. Before a commitment is made to a given area, projects must collect information on local institutions, community history, social and political structures, and opportunities for, and constraints to, development.”

“... Social feasibility studies can be useful in designing activities to deal with specific local issues and may serve to alert conservation proponents to unmanageable local problems” (McCallum & Sekhran 1997: 51).

In the “identification” phase, proponents identify an investment concept at a broad level, together with tentative objectives. The project concept could be about income generation and/or “protection” of some area of high biodiversity value. As argued earlier, ideally the two are integrated. The focus of a project may change after some initial deliberations with stakeholders, as was experienced in Solomon Islands. Often a purely economic or conservation objective is likely to be unacceptable given limited resources available to the communities.

Once a project is identified, it becomes the starting point for the detailed preparation of the project document, starting with the pre-feasibility or scoping stage. From an economic perspective, at this stage it is important to:

- undertake a situational analysis;
- identify the current status of resource stocks and flows;
- conduct a community assessment identifying the socio-economic status of key actors and stakeholders, and their views, wants and needs; and
- assess the institutional rules comprising customary rules, laws and regulations that are likely to affect property rights and project returns.

Stakeholder assessments will help identify the relevant target groups, whose economic well-being will be affected throughout the project, and the incidence of project costs and benefits (which are likely to affect the diverse groups within a community differently). They will also identify the needs and aspirations of community members and seek to understand the incentives that influence their actions, allowing one to specify where in the development and conservation spectrum the desired project should aim.

Key questions that need to be considered include:

- What is the current socio-economic status of the individuals/communities?
- What are the needs and aspirations of community members?
- What is the desirable set of activities/ projects?
- What are the expected objectives of these projects?
- What motivates the individuals/community?
- What do the community members currently understand about the potential for conservation and development activities?
- What are the characteristics of the resource tenure system(s)?
- Is there a traditional cultural/social system? If so, how strong is it?

Once the tentative project objectives have been clarified, ideas for alternative activities need to be canvassed. Each potential activity should be “evaluated”, albeit somewhat crudely, using the same criteria as is discussed below under the feasibility stage. This helps narrow the options to a select few that appear to be more feasible and can then be assessed in greater detail. A series of discussions and iterations with the relevant community members and stakeholders may be required before the project objectives are clearly specified, and alternative project options are identified and refined.

5.2 Feasibility stage

During the feasibility stage, the initial concept is explored in depth to determine the viability of the project. This is a critical stage, assessing key factors that will determine the financial and economic viability of the activity. These factors can be grouped into technical, environmental, institutional/organisational, social and financial/economic. Each type of assessment is briefly defined below and relevant questions that reflect the key economic issues discussed in Chapters 2–4 are identified.

Technical assessment

Technical feasibility is an important determinant of a project’s viability. Issues covered in technical assessments include:

- the nature of the production process;
- the technical process information and technology to be used;
- the inputs required and outputs produced; and
- the human capacity and technical ‘know how’.

As noted earlier, projects in the Pacific are often based on activities that have been trialled elsewhere and found to be technically feasible. However, it is still important to establish whether the proposed technology, its scale and scope are best suited for the local conditions. Key questions that should be considered include:

- Is the proposed technology suitable for the Pacific context?
- What are the inputs required and can these be locally sourced? If not, from where will these inputs be obtained, and what are the associated costs?
- What outputs are expected, including pollution and other environmental impacts?
- Are there alternative technologies available that may generate lower levels of environmental impacts?

Technical feasibility alone is not sufficient to create a successful project. As discussed above, even if an activity is technically feasible, many of the income generating activities have been unsuccessful when adequate consideration has not been given to other factors, including human capacity to engage in market-oriented activities. Assessment of human capacity in terms of the requirement of regular inputs and managerial capabilities in the feasibility study is also crucial, regardless of whether the project is small or large, multi-staged and with multiple activities. The managerial skills of individuals are particularly important where managing one’s time and balancing a budget is a new concept. In rigorous feasibility analysis, it is not only important to assess what management skills will be required but also how fast they will be acquired. Both these factors will influence the expected returns of a development–conservation project. A lack of managerial skills and capabilities has been identified as one of the key constraints in achieving the desired goals of the various conservation area projects under the SPBCP (Sesega 2000).

Thus additional questions that need to be addressed at this stage include:

- What specific skills are required for the proposed project?
- Are the required skills and human capacity available in the local community? If not, can these be easily

- developed or sourced from elsewhere?
- If additional training and ongoing technical support is necessary for the success of the project how will these costs be covered?
- Have the social costs of capacity building been compared to the social benefits? Are the social benefits greater than the costs?
- Can the required capacity be developed during the life of the project?

Environmental assessment

Impacts of alternative options upon the environment need to be considered, particularly where large projects are proposed, as there may be significant impacts on natural capital and thus the productivity of the ecosystem. Moreover, if the proposed activity is likely to produce irreversible environmental outcomes, careful consideration of these impacts is critical before a project is implemented.

Many coastal projects produce environmental effects, the costs of which are not taken into account by private individuals or agencies. While such externality effects do not influence the decision of an individual, as seen above (Box 13) they can influence decisions about what is desirable from a social perspective and can adversely affect the sustainability of the project.

In some cases it may be decided that the social benefits outweigh the costs of environmental degradation. In this event some consideration may still have to be given to compensating the parties who will bear the costs. This may be achieved by user fees such as those imposed in the Pacific for access to dive sites and fishing areas, or deposit refund fees (e.g. where people purchasing a bottled drink pay a deposit for the bottle, and get a refund when they return the bottle). These fees are being used to help decrease waste and encourage recycling. The environmental assessment should also consider appropriate mitigation and compensation for environmental degradation that is unavoidable. Therefore key questions to be asked include:

- Are there any environmental impacts?
- Are these environmental impacts one-off, or on-going?
- Are there externality costs that are not borne by the proponent of the project?
- How large are the expected impacts?
- Are there any large-scale risks associated with the proposed project?
- Would the project result in the use of natural resources beyond their carrying capacity?
- If environmental impacts are to be incurred, how will those most affected be compensated? Can the environmental damage be mitigated by investment in protection or rehabilitation? Who will bear these costs? Can the community owners of the resource be adequately compensated?

Institutional/organisational assessment

A wide range of overlapping issues deal with institutional/organisational aspects of projects. We concentrate here on those related to economic issues. Institutional rules and regulations determine incentives individuals face, and these, together with individual values, needs and wants, will, as mentioned above, influence the manner in which choices are made about the optimal use of resources. Amongst the key institutional issues are traditional cultural norms and values, government policies and programmes, and the instruments and strategies used by governments to provide appropriate incentives to act in the desired manner. It is very clear then that the institutional and community linkages to higher levels of governance are fundamentally important to development and conservation initiatives, as is the investment in human/social capital that allows these institutions to work effectively.

Some of the key issues to be considered within the IWP context include:

- Which government policies and laws are likely to influence the manner in which decisions are made, including taxes and subsidies that might distort the costs borne by individuals, and thus their use of limited resources?
- Which national/local government policies and programmes are directly relevant to the proposed project, and what are the linkages between community members and/or their leaders and these policies, programmes and agencies?
- How aware are community members and their leaders of the relevant policies, programmes and government structures, as well as international/regional agencies that may be useful for the long-term sustainability of the project (e.g. through funding, capacity building or partnerships)?
- How effective are the community members in accessing resources (human, financial, technical and otherwise) or higher levels of government?
- Which customs and aspects of culture are likely to directly impact on the choice of alternative projects and specific project design?
- What type of tenure exists and how does this influence the use of resources and the project design? If necessary, what mechanisms could be used to strengthen resource tenure/property rights?
- Are there traditions or norms that are socially sanctioned and thus may make it difficult to achieve equitable

- outcomes and full participation among the different members of the community?
- Is there any form of traditional decision-making in the community? If so, and if appropriate, in what way can the project incorporate traditional decision-making processes?

Social/cultural assessment

As discussed above, social arrangements and practices in a community are important factors to be considered when designing projects. The impacts of income distribution from a project within a community, and impacts on gender relations, also need to be taken into account, particularly when projects are targeting specific groups. Such considerations are important in development projects and could be rationally used to override the economic efficiency goal. Key questions to be addressed include:

- What is the current social structure in the community?
- Which traditional values are strong and practised?
- What are the respective roles of the different community members in communal level decision-making?
- What decision-making process is used at the community level?
- What is the respective role of men and women members in a household, and in a community?

Financial and economic assessment

Since financial and economic viability assessments use a similar set of information, when making a decision about the desirability of a proposed activity, these are discussed together. The main difference, as noted in Chapter 4, is that an economic analysis takes a social perspective, whereas financial analysis takes an individual or project perspective, i.e. focusing on “out-of-pocket” expenses and benefits. Both types of assessment are important when considering the viability of a community-based conservation and development project. In the Pacific, since community-based projects are often funded from external sources and/or government funds, it is important to assess the viability of the project from the point of view of the availability of ongoing government support.

When considering the financial/economic viability of projects, key questions to be addressed include:

- What fixed and variable inputs are required, including individual time and labour, and where will they be sourced? What are the opportunity costs of labour and other inputs?
- What government-staff time and other resource inputs are required and when?
- What fixed capital investment is required?
- What operating or working funds are needed?
- What are the input prices?
- What outputs are expected? What are the values of the outputs?
- Have all the main potential benefits and costs been identified?
- What externalities are expected, and what is their economic value?
- What are the expected non-market goods and services, and what is their economic value?
- Have all the market and non-market benefits and costs been estimated?
- Which goods and services are intangible, i.e. cannot be quantified?
- Have all the subsidies and taxes been taken into account?
- What is the individual/social rate of time preference?
- How will time preferences affect the individual and community assessments of benefit flows?
- What uncertainties/risks are there? How can these be minimised?
- Will the nature of the activity include high transaction costs?
- What are the impacts of property rights on the costs and benefits of the project?
- Have community discussions elicited the full range of monetary and non-monetary costs and benefits, and have all the relevant groups had the opportunity to express their views on these costs and benefits? Have major concerns about community valuations been taken into account?
- Has economic compensation or mitigation been considered?

Projects cannot be judged to be financially viable without carefully considering the feasibility of realising expected incomes. Factors that may influence the feasibility are many, including those mentioned above and in Chapter 4. The key questions that need to be addressed when assessing financial feasibility include:

- What markets are available for the outputs (or inputs, e.g. the number of tourists in the case of eco-tourism) and where will the product be sold—domestically, or on the international market?
- How will the product be transported? Is there a regular air or shipping service that can ensure products reach the markets on time?
- Can the quality demanded and a regular supply be maintained?
- Are there any expected volatilities in input and product markets that may affect the long-term sustainability of the income generating activity?
- Are there other relevant factors, such as institutional arrangements (e.g. marketing boards, available expertise, export legislation, taxation) and infrastructure (e.g. quality and cost of transport, energy supply and communication networks) and economic costs (e.g. wage rates)?

- Do the locals have the business and management skills required at different stages along the production and marketing chain?
- Is there adequate infrastructure, such as road and air links, or local transportation to support the project?

In community-based projects, other additional issues may need to be considered relating to the availability of funds and other resources. Funds may be required to pay for administrative costs, cash operating expenses, salary and capital costs. Without adequate planning and prioritisation of activities, project staff are often stretched beyond their means or not able to respond to community requests. This can cause much dissatisfaction and lead to loss of community interest.

Another fundamental issue for projects is achieving financial accountability, while still allowing financial resources to flow smoothly to communities to meet project objectives. This may require such approaches as incorporating landholder groups so that they can have bank accounts and/or trust funds that can be used to manage project funds and financial contributions from outside sources. In addition, project accounts of expenditures and revenues need to be easily available for the community members and other stakeholders to scrutinise.

Key questions to consider with respect to project financial accountability include:

- Are project funds easily accessible to the project officer so community commitments can be delivered on time?
- Are project accounts of expenditures and revenues openly available for community members to scrutinise?
- Are mechanisms in place to ensure the financial accountability of project funds, and are these mechanisms adequate?
- Can the project account be used to receive funding from other external agencies/NGOs? If not, what mechanisms will be put in place to facilitate external funding when, and if, the need arises?
- Has the community decided on how the benefits/profits from the project will be divided between the community members? Has any formal agreement been properly recorded?

5.3 Project design

After the detailed feasibility assessments of the alternative options have been completed, it is possible to make an informed choice of the preferred project on the basis of the potential benefits and the likelihood of the benefits being realised. This process of assessment should be carried out with community stakeholders and appropriate resource people who are able to ensure that the BCA takes into account all the necessary variables discussed earlier.

During project design, the following activities need to occur to ensure that economic considerations are taken into account:

- Community-based planning is conducted to establish specific project goals, key milestones and performance criteria. These may relate to income generation, subsistence productivity, conservation or other matters. This helps to create a common understanding of the project, the expectations of community stakeholders, and time preferences for returns on activities.
- Issues of project administration and sharing of benefits are openly addressed and decisions are recorded, particularly with respect to financial management and transparency, divisions of project earnings, levels of external support, roles of different players, and project management structures. The potential for the free-rider problem should be assessed in relation to key project activities.
- Economic valuation studies needed for setting user fees or related charges are conducted and the information used to design project activities.
- Issues of scale are addressed that are related to production/conservation (e.g. differentiation between individual, household and/or community-based activities; planning for management of linkages with higher levels including access arrangements to technical skills, financial resources and organisational support).
- Boundary issues are defined, e.g. what are the geographic limits of the project, who are the relevant stakeholders, what are the externalities that are likely to occur outside of the project operations. Where benefits occur externally, consideration should be given to how they can be captured; where costs occur externally, they may need to be mitigated or compensated for or internalised.
- Temporal issues are taken into account, such as when necessary financial resources will be required and the arrangements for their provision. Consideration should be given to when labour inputs are likely to be in high demand and how community participants will meet these demands. Market and production cycles and the resources these will demand must also be considered, as well as the timing of capital investments and the likely timing of returns on investments.
- The social and human capital that exists, and any needed capacity building, are critically assessed. The timing of training and follow-up can significantly affect the costs and benefits associated with the project. In many cases, ongoing support will be needed and must be incorporated into the project design, as is the case with business management training.
- Assessment of whether the expected inputs from government and other agencies are realistic and deliverable

- given their budgetary situation.
- Property rights and resource tenure arrangements have been examined, to check if they are adequate; if not, then consideration has been given to how they can be strengthened. This is necessary to ensure that external investment in the project is relatively secure, and that there is a fair return for effort.
- A risk assessment is conducted and measures taken to minimise risk, e.g. insurance.
- Equity issues are explicitly designed into the project, particularly where there are marginalised or less fortunate groups within the community. Consideration should be explicitly given to gender equity, and equity between and within generations.
- Relevant socio-economic baseline data are collected in order to assess any future changes in the welfare of community groups (as opposed to increases in income from one activity at the expense of another, i.e. “welfare transfers”).
- Funding sources are identified, including capital investment from the community members, the government, external agencies, and/or trust funds.
- Possibilities of raising funds from user fees, resource rent, licences, and so on are identified and assessed to ensure that the revenues raised are greater than the expected costs of administering the charges.

5.4 Project implementation

During the implementation stage, it is important to closely monitor the progress of the project against the stated objectives. The more carefully developed the project plan, the greater chances of the specific objectives being achieved within the timeframe identified. However, it is also possible that due to factors beyond the control of the proponents, there are delays in the implementation of individual components. Occasional evaluation by independent agencies is always useful to get objective assessments of how the project is progressing.

The key questions to be addressed include:

- Which objectives are being adequately addressed?
- Which objectives may need to be modified?
- Which social and cultural issues need to be reconsidered?
- What strategies may be needed to address new objectives?
- What are the expected benefits and costs of alternative strategies required to address the modified objectives?

Sufficient flexibility needs to be built into the project plan to allow for adaptation and cost-effective delivery on the project objectives. Community involvement in such assessments will allow reflection, and an understanding of adaptive management. It will also ensure that the project can be modified to respond to changes in the priorities and needs of community members, particularly if a process approach to project management is pursued. Some key issues in managing projects adaptively are briefly outlined in Box 16.

Box 16. Managing projects adaptively

Good project planning can help to strengthen project design. However even the most thorough process of planning might not anticipate a sudden change in the project environment. An adaptive approach to managing projects, where strategies are developed, monitored and modified in a cyclical process, can improve project flexibility. Flexibility in project design is also important where a strong degree of community control in project activities is sought.

Some key issues in managing projects adaptively are as follows:

- a timeframe that enables experimentation and adaptation;
- an attitude among project staff that fosters the sharing of information about mistakes and successes, thus enabling new approaches to evolve;
- participation by beneficiaries so that projects are based on a strong understanding of local contexts;
- a relevant and well-implemented monitoring and evaluation system to provide feedback on strategies;
- support for experimentation, project flexibility and learning amongst lead agencies and donors.

Further reading: Bond & Hulme (1999); Salafsky & Margoluis (1999).

The type of activities relevant to economic issues that should occur during project implementation include:

- iterative assessment by community members of actual costs and benefits. The project design may need to be modified if the original BCA was not accurate and community expectations are not being met.
- iterative assessment of risks (expected and emergent) and how they can be mitigated.
- monitoring of social and human capital, and of emerging requirements, such as training in accounting, community conflict resolution, facilitating management committees, and resource harvesting and marketing.
- re-assessment of market access arrangements and the adequacy of the infrastructure given the demands of the project.

- review of the labour, resource and financial inputs and their adequacy given project goals. For example, in some cases, voluntary labour arrangements have proved popular initially, but later found inadequate, given the returns desired from a project. A system of payment for service can produce a more reliable flow of outputs when this is necessary for project success.
- consideration of the effectiveness of community and institutional rules and the enforcement of property rights and whether change is necessary.
- evaluation of project milestones and performance indicators at pre-determined times to ensure that reflection and review are continuous and not sacrificed when resources are stretched.

All the above should be conducted in a manner whereby community members and key stakeholders are involved. There are only a few occasions when an external and independent assessment can be useful, for example in assessing performance indicators or conducting financial audits. Even these examples should include consultation with community stakeholders.

5.5 Evaluation

The final stage of a project cycle is project evaluation. This is a systematic assessment of all aspects of the project and project planning to examine the elements of success and failure, and to draw out lessons for the future. The extent to which the original objectives have been addressed is the first aspect of evaluation. Once again, the issues that were considered during the appraisal stage would be revisited and assessed against the actual outputs.

The type of issues which should be considered from an economic perspective include:

- Whether the specific objectives of the project were appropriate and compatible with the communal needs and wants.
- Whether the technology was appropriate to achieve the expected improvement in the communal welfare and/or environmental condition.
- Whether financial and economic projections were realistic.
- Whether the institutional/organisational management aspects were appropriately considered and reflected in the project design.
- The impacts of the project on the income level, social capital, the natural resource stock and flow, and the environmental quality and conservation efforts (actual data should be compared to baseline data).
- The impacts on socio-economic status of the individuals and the community.
- The impact on quality-of-life indicators.
- An analysis of trends over time, e.g. productivity, income earnings, skills, conservation outcomes, market access, infrastructure and service availability and their relation to project activities.
- The long-term sustainability of ecological, economic and social gains.
- The long-term sustainability of habitat conservation.

The analysis used in BCA is the appropriate analytical framework to use when making an assessment of the impact of the project on the socio-economic well-being of the individuals and communities. In the evaluation report, lessons learnt are also highlighted thus providing feedback for improving other projects.

5.6 Summary

The project cycle is a useful mechanism to ensure that economic issues and those factors that affect economic issues are taken into account. While the above list of issues and activities will not be comprehensive, as variations (as illustrated in Annex IV) will exist for different types of projects, it can be used as a guide. The key points covered in this chapter are summarised in Figure 4.

To adequately implement what is proposed here, it is vital to realise that the “top-down”, “blue-print” approach is not likely to work. A “process approach” to project identification, development and implementation is more suitable. This means that, for community-based conservation and development projects, sufficient lead time is essential if the projects are to adequately reflect the key economic issues raised in this report. In particular, adequate time will be critical at the pre-feasibility stages of the project cycle and as discussed in Section 2.3, a flexible and phased approach is more appropriate, with the proponents and donors taking a medium- to long-term perspective.

Figure 4. Selected economic considerations during the project cycle

Project identification/ pre-feasibility study	Project feasibility	Project design	Project implementation	Project evaluation
<ul style="list-style-type: none"> Clarify goals, needs and aspirations of the community, its understandings of the potential for conservation and development activities, and desired activities/projects. Conduct situational analysis to assess community motivations, socio-economic status of individuals and communities, resource values, uses and tenure, availability of labour, access to finances, services, markets & infrastructure, supportive govt institutions and NGOs. Assess social capital/human capacities, including business and financial skills, and organisational abilities. Conduct a stakeholder analysis. Identify the current status of resource stocks and flows. Conduct institutional analyses, i.e. of available skills, services and resources, support for proposed project objectives, supportive legal frameworks (existing or possible). Consider the characteristics of the present resource tenure system and its implications for the proposed activities. Clarify project objectives and ideas for alternative activities and crudely evaluate them. Conduct a basic risk assessment of project activities and the likelihood of meeting project goals 	<ul style="list-style-type: none"> Conduct technical assessment, e.g. required skills, inputs, production processes, outputs, human capacity, suitability to context. Conduct environmental assessment, e.g. impacts, non-market values, externalities to project activities, risks, needed mitigation or compensation. Conduct institutional/organisational assessment, e.g. resource access and tenure, relevant govt policies and laws, available social and human capital, community linkages to external agencies, rule enforcement, role of custom and culture in resource management. Conduct social assessment, e.g. income distribution impacts, equity considerations, gender analysis, social structures, decision-making processes. Conduct financial and economic assessment, e.g. costs of labour and other inputs, operating and capital costs, value of outputs, BCA, mitigation/compensation costs, market availability, infrastructure. Conduct risk assessment, e.g. financial and market risks involving price, exchange rates and inflation fluctuations; risks to resource productivity. 	<ul style="list-style-type: none"> Establish goals, objectives, activities and performance indicators through community-based planning. Clarify issues of project admin. and benefit sharing, e.g. financial transparency, division of earnings, external support, project management, roles. Evaluate cost effectiveness of alternative developments using BCA. Conduct relevant economic valuation studies. Define project boundaries and stakeholders. Address issues of scale, e.g. the unit size of production/conservation. Address temporal issues, e.g. timing of expenditures and returns, labour inputs. Consider training needs, e.g. business and financial training. Incorporate national/ regional institutional linkages into project. Consider compatibility with land tenure and local institutions. Minimise risks and costs/mitigation measures. Address equity issues. Prepare project budget. Collect baseline data on socio-economic variables, e.g. income earnings, subsistence productivity. Identify a range of funding sources including user fees, resource rent, donors. 	<ul style="list-style-type: none"> Iteratively assess actual costs and returns. Iteratively assess risks (expected and emergent) and measures that can be taken to minimise or mitigate them. Monitor human and social capital achievements and requirements, e.g. conflict resolution training, committee management, financial management. Review alternatives and opportunities for IGA. Assess market access arrangements and the adequacy of infrastructure and services available to community given the proposed activities. Review labour, resource and financial inputs from community and any concerns. Consider the effectiveness of community and institutional rule enforcement. Review equity issues and the incidence of costs and benefits within the community. Monitor changing community expectations and values. Externally audit key performance indicators. Review project budget and milestone achievements. Encourage the community to take full control of the project over time. 	<ul style="list-style-type: none"> Assess whether specific objectives of the project were appropriate and compatible with community needs and wants. Evaluate the appropriateness of the technologies used. Consider how realistic were financial and economic projections. Assess whether institutional aspects were appropriately integrated into project design. Evaluate impacts on socio-economic factors documented in baseline study, e.g. income levels, resource flows and stocks, socio-economic status, quality-of-life indicators. Analyse trends over time, e.g. productivity, income earnings, skills, market access, infrastructure and service availability, and their relation to project activities. Assess the long-term sustainability of economic, ecological and social gains. Conduct independent community-based evaluation of project. Document the lessons learned and the outcomes. Assess the stability of partnerships and other supportive institutional frameworks.
				Feedback

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Annex I Participatory planning and evaluation tools

prepared by Sango Mahanty

Participatory planning and evaluation tools evolved in the late 1980s and 1990s to assist practitioners to work in a participatory mode in the context of rural development and resource management programmes. A wide range of specific methods for gathering and analysing data with communities comes under the umbrella of Participatory Rural Appraisal (PRA), Participatory Learning and Action (PLA) and Participatory Monitoring and Evaluation (PME). These have been developed, adapted and applied in a range of contexts, such as health, urban planning, rural development and resource management. Some specific methods that are useful in resource management are outlined below.

These methods were not developed to extract information for expert planning, but to elicit information for planning with, and for, communities. The development of participatory methods was part of a wider process of questioning expert and top-down modes of planning, with a recognition that communities have knowledge too, and that equity demands that they have a voice in formulating their own development agenda (for further background see Chambers 1997; Guijt 1996).

Before going into the specifics of the techniques, a few explanatory points should be made on the use of participatory methods. Firstly, since the methods were developed to support participatory planning rather than just data collection, the discussion that accompanies the process is as important as the output, making the development of strong facilitation skills very important. Practitioners need to be aware that the mechanical application of methods is not a substitute for good analysis and dialogue with communities. Nor should the data collected using PRA be seen as a substitute for in-depth, statistically valid data that need to be collected, for example for detailed benefit cost analysis. It is important to realise that PRA provides only a preliminary set of information. It is also important to note that the application of participatory methods should not be equated with participation in the project overall. This depends on key questions such as how much power communities and specific groups within communities have in decision-making.

The early application of participatory methods was criticised for its tendency to homogenise communities and ignore differences in power, for instance differences arising from gender, age and clan affiliation. This resulted in a diminished information base for planning, one that ignored, for example, the different roles and responsibilities of key groups in resource management. It also excluded certain groups from discussions, thereby allowing inequities in access to project activities and the benefits they might produce to continue. Practitioners are now becoming more sensitised to diversity within communities and the need to adapt methods to deal with this. For instance, preparing a Venn diagram with a gender-mixed group can produce a different outcome to one with a group of men or women only. The output from separating the sexes would be more likely to reflect different roles in resource use and management, and enable freer discussion in working groups, thus improving the group process (these issues are discussed further by Mosse 1994; Guijt & Kaul-Shah 1998).

Timelines

A timeline is a visual representation of key events in the history of a village. Drawing up a timeline can be a useful icebreaking exercise in communities, and helps to highlight critical issues or events that have shaped the current cultural landscape (i.e. the interaction between society and the biophysical landscape). Timelines provide background on the social and economic factors connected with changing patterns of resource use.

Venn diagrams

Venn diagrams are a visual way of representing key groups, agencies and organisations (sometimes also referred to as institutions) in a community, and their roles and relationships. This information is important for project facilitators in understanding how the community is organised, and in determining the potential roles and interests of specific groups in a programme. Figure 1 is an example of a Venn diagram from a workshop to monitor participation in a development and conservation project in Solomon Islands. It clearly shows that women and youth were less involved in project activities.

Transects

A transect is a pictorial representation of a landscape between two points, and can include important landscape features, land use, and patterns of settlement. The process of preparing a transect provides an opportunity to gain an overview and start discussion on key resource management issues such as tenure, and important resources and places for various groups in the community (see Figure 2).

Trend diagrams

Trend diagrams are used to explore changes in the status of resources and well-being in a community. Figure 3 shows an extract from a workshop discussion on trends in the availability of key resources that they collected for sale. This process yielded information on the status of these resources, and was used to discuss their future management.

Seasonal calendars

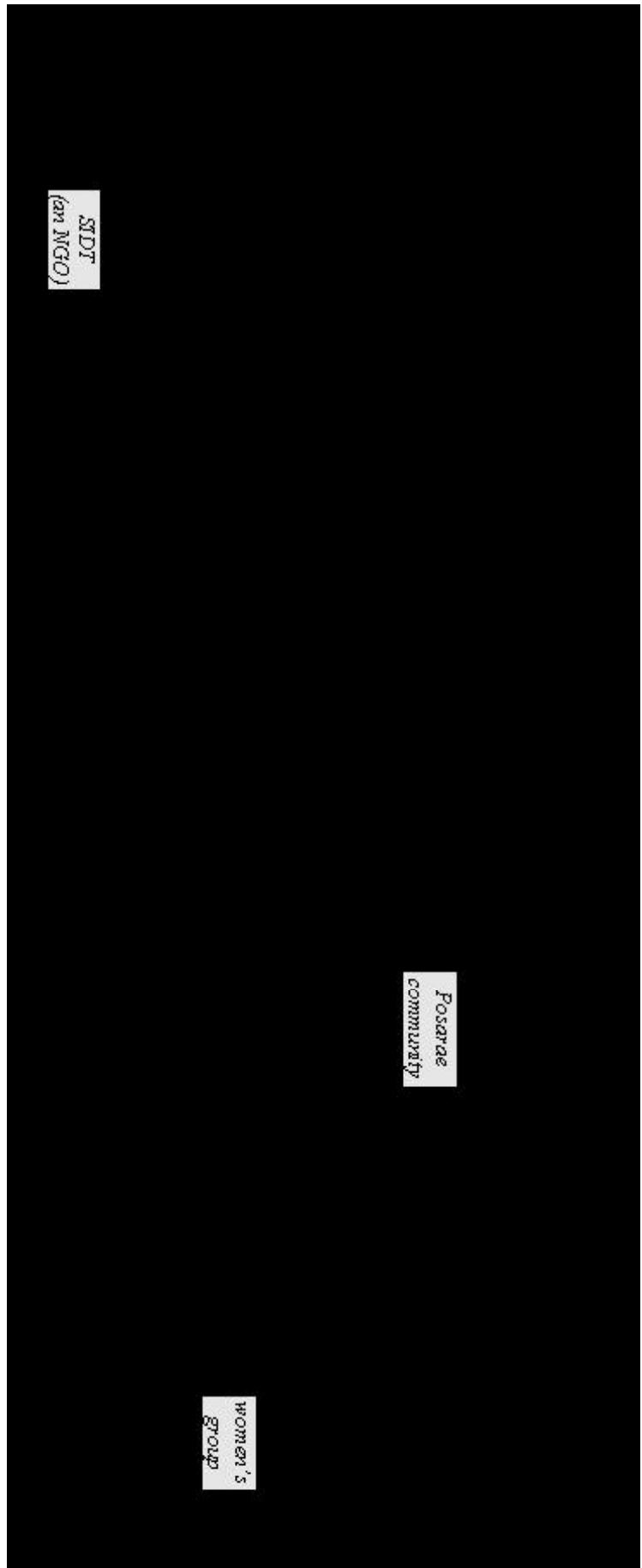
Seasonal calendars represent activities in a community over a year. The calendar may be organised by calendar month, or key seasons in the year. It relates patterns of activity in the community such as agriculture to seasons, and provides information on times when communities are likely to be busy with critical activities such as harvest, planting, and social obligations (see Figure 4).

Matrix ranking

Matrix ranking can be used to help communities prioritise their problems and/or potential management options or solutions. Options or problems are listed down the first column of a grid, and criteria for evaluating each option are displayed across the first row of the grid. The community establishes the criteria used to assess the urgency of problems, or the feasibility and attractiveness of management options, to reflect their needs and concerns. The community then assesses each option against the criteria, to generate an overall score for each option. This technique provides a systematic approach to planning, but can be complex to use in a community setting, and requires time and good facilitation.

Further reading and resources: Pretty (1995); Mosse (1994); Bronson et al. (1995).

Figure 1. Venn diagram from Posaræ representatives on the Arnævær Marine Conservation Area Coordinating Committee



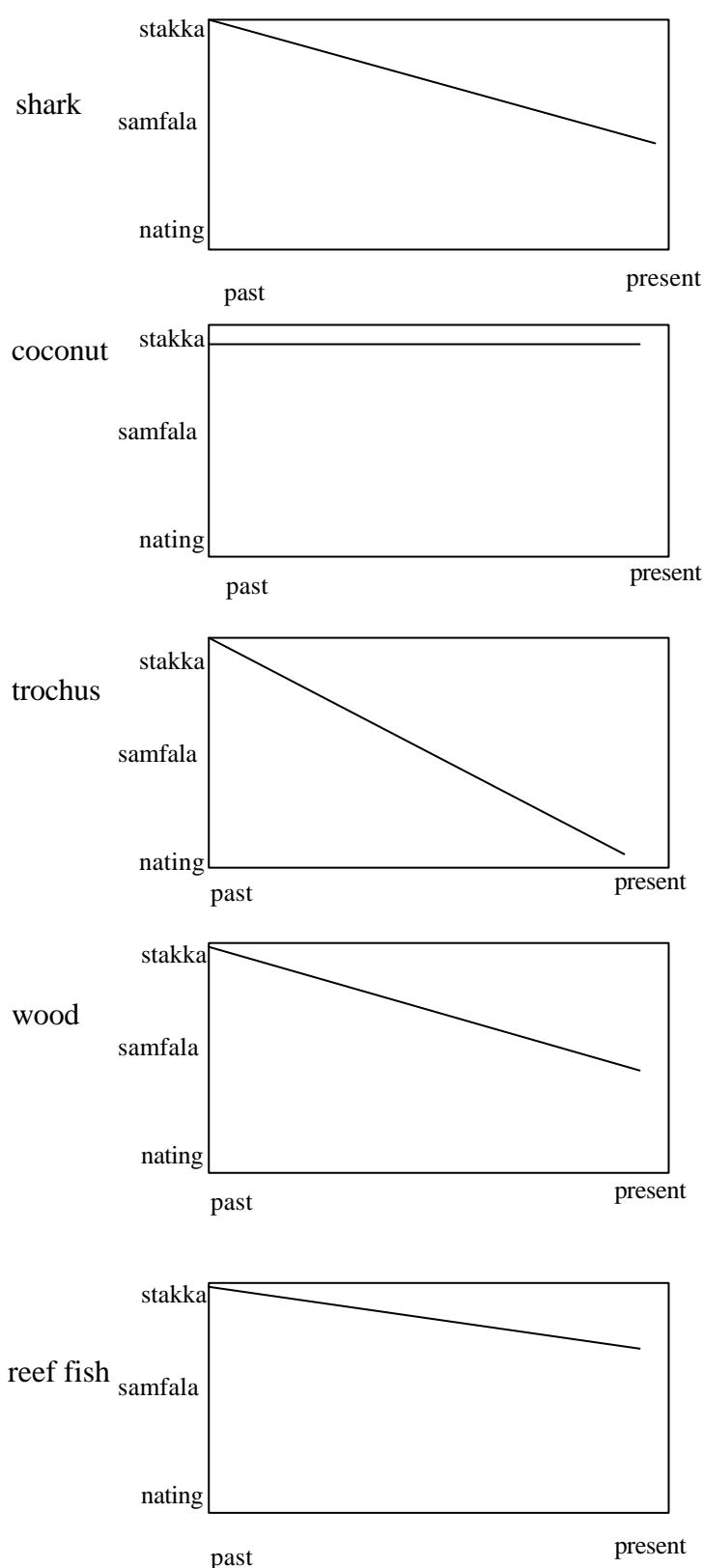
Source: Mahanty (1999).

Figure 2. Transect

Transect through Hog Harbour Village				
Soil	Red soil not good for gardening	Shallow brown soil, stony cliff	Good brown soil for gardening	Black soil mixed with coral
Water	None	None	3 water tanks	8 taps, 6 water tanks
Vegetation	Scattered trees	Vines and bush	Coconut and banana	Trees for firewood, perfume trees, other small bush
Food from gardens	None	None	Yam, taro, manioc, banana, beans	Island cabbage
Housing	None	None	None	Permanent houses of concrete, masonite, and iron sheet roofs. Bush houses of bamboo and thatch.
Toilets	None	None	5 pit toilets	10 pit toilets
Dumps	None	None	3 places	4 places
Cash Crops	Coconuts, breadfruit, oranges, mango, nandao, naka-vika, rosewood, whitewood, namalaus, and other timber trees	Breadfruit, fruit trees and timber trees	Manioc, taro, banana, paw-paw, beans, onions, coco-nuts, orange, citrus, breadfruit, mango, cocoa, nuts	Mango, grapefruit, orange, mandarines, natao, breadfruit, pawpaw, navoka, tamarind
Sources of Income	Cattle	Cattle and coconut crab	Copra, cattle, copra drying, selling fruits and nuts	Copra, cattle, fruits, vegetables, handicrafts to tourists, transport, stores, bakeries, royalties, sewing and services for others
Observations	1) Coconut crab is becoming scarce. Controls needed. 2) Firewood is not yet a problem but will be later. 3) Increases in population will require increased water capacity. 4) Gardens are very far away; it would be good if they were closer. 5) Many families don't have toilets; without a plan, the sanitation problem will get worse. 6) The school land is used up and will need more. Also need to have greater yields (production and economic) from the land in the area. 7) Service of trucks could be better coordinated and improved. 8) There are no proper rubbish dumps, and the village needs some.			

Source: Bronson et al. (1995).

Figure 3. Extract from trend diagrams on availability of resources – Arnavon community workshops



Stakka - plenty; *samfala* - some; *nating* - nothing

Source: Leary & Mahanty (1993).

Figure 4. Seasonal calendar from a village in Solomon Islands

	Jan	Feb	March	April	May	June	July	August	Sept	Oct	Nov	Dec
Weather (last 2-3 years)	Dry	Wind	Wind	Wind	Wind	Wet period	Wet	Relatively dry	Relatively dry	Relatively dry	Relatively dry	Relatively dry
weather generally more variable through year - less distinct seasons)		Wet	Wet	Wet	Wet		Fertile					
Activities for subsistence	Gardening throughout year					<i>Pana</i> /yam harvest	<i>Pana</i> /yam harvest	Planting <i>pana</i> /yam	Planting <i>pana</i> /yam			
						<i>Ngal</i> i/nut	Nut	Nut	Nut			
Activities for cash	happen	throughout year				harvest	harvest	harvest	harvest			
Community activities			Good Friday/ Easter					St Luke	Christmas			

Annex II Market and cultural goods and total environmental value

In the Pacific, there are many traditional cultural structures that determine how individuals interact with each other and the environment. These traditional ‘institutions’, such as *vanua* (Fiji Islands) and *fenua* (Tokelau) can be seen to produce three functions—economic, cultural and ecological—giving three different types of value.

- a) *Economic*: direct, individual, utilitarian or consumptive values, associated with products produced for the family’s own use or to meet social obligations in time of birth, death or marriage. These products can be regarded as having direct economic value, reflected in the market value, regardless of whether the products are harvested from the land and the seas, gathered from the foreshores or grown in garden plots. Where the products are obtained from their own gardens, etc, and not purchased, they still have a shadow economic value.
- b) *Cultural*: non-use values associated with maintaining the traditional culture of values and cosmological and religious beliefs, within the wider kinship systems and ecological context. In this context, society places value in maintaining a set of attitudes, practices and beliefs that are fundamental to the functioning of that society. Such values cannot be maintained or enhanced purely by using market goods and services, but require actual input of time from individuals who acknowledge an acceptance of their duty and obligations. This is time that could have been directed towards economic wealth-creating activities.
- c) *Ecological*: the respect for underlying ecological processes. Thus the concept of *vanua* or *fenua* can provide a strong foundation on which conservation activities can be built.

Drawing on *vanua* and *fenua*, UNEP’s concept of total environmental value can be extended to include the value of cultural glue. Total environmental value is thus defined as “the sum of the total economic value of market and non-market goods, ecological process value, and cultural function values”. That is

$$\begin{aligned} \text{Total environmental value} = & \quad \text{Total economic value (TEV)} \\ & + \\ & \text{Ecological process value (EPV)} \\ & + \\ & \text{Cultural function value (CFP)} \end{aligned}$$

Source: Lal & Young (2001).

Annex III Non-market valuation techniques

Several economic methods are available for measuring environmental and resource values, and a number of different typologies have been used to categorise them. Below, we will discuss non-market valuation using the mangrove ecosystem as an example. Mangroves produce values associated with the direct use of goods and services associated with mangroves, called the “direct-use” values. There are also values based on indirect uses of the services supported by mangroves. The third category of uses, non-use values, captures things such as the value attached by people when they bequest something to their children, or derived from knowing that something exists.

Goods and services supported by mangroves and their valuation		
USE VALUES		NON-USE VALUES
DIRECT USE VALUE	INDIRECT USE VALUE	
<ul style="list-style-type: none"> • Fish • Fuelwood • Medicine • Dye • Hose scaffolding • Recreation 	<ul style="list-style-type: none"> • Nutrient filtering • Flood control • Storm buffer • Shoreline stabilisation • Microclimatic stabilisation • Biodiversity maintenance 	<ul style="list-style-type: none"> • Bequest • Existence
Valuation techniques	Valuation techniques	Valuation techniques
<ul style="list-style-type: none"> • Revealed preference methods <ul style="list-style-type: none"> - Production method - Substitute method - Preventative method - Change in earnings - Hedonic method - Travel cost 	<ul style="list-style-type: none"> • Revealed preference methods <ul style="list-style-type: none"> - Preventative measures - Replacement costs • Expressed preference methods <ul style="list-style-type: none"> - Contingent valuation method (CVM), Choice modelling 	<ul style="list-style-type: none"> • Expressed preference methods <ul style="list-style-type: none"> - CVM, Choice modelling

There are two broad categories of methods: revealed preferences and expressed preferences. Recently, the benefit-transfer method has also been suggested.

Revealed preference methods

Revealed preferences are methods where actual choices made by individuals are used to derive market values of a resource. There are several different methods that fall under this category; only the key ones are summarised below.

Production method:

Goods and services produced by the environment are transacted in the market place and can be used to estimate the economic value. Thus for example, the value of forest products harvested, net of costs, can be estimated. To adequately use this technique, the physical changes in environmental characteristics on the marketed goods due to the proposed activities would need to be traced. Therefore, for example, a researcher estimates the quantity of different species of fish caught that are dependent on mangroves, and that may be affected if an area of mangrove were to be reclaimed. This, together with the price at which they are sold commercially, can be used to estimate the economic value, net of costs of fishing, to estimate net benefits of commercial fisheries supported by a unit area of mangroves. Market price can also be used as a proxy for estimating the economic value of subsistence fisheries.

Substitute or proxy method

In the case of non-marketed goods and services, such as dyes and medicinal values, the value of similar products, or close substitutes, sold in the market place can be used as surrogate market price. If there are apparently no marketed substitutes, then other methods may be used, including indirect opportunity cost, where the cost of the time spent collecting and preparing dyes or medicines could be used as a proxy.

Preventative expenditures

This approach allows one to estimate the value of a resource by determining how much people are prepared to pay to prevent its loss from occurring. Or alternatively, how much would it cost to replace the goods and services, once lost.

Thus for example, after mangroves are reclaimed, one may need to establish a seawall to prevent the erosion of the coastal areas. The cost of the seawall could be used as equivalent to the value of the storm buffering services provided by the mangrove forests. A similar approach can be used to determine the nutrient-filtering services valued by humankind, where the cost of establishing a solid-waste filtering device is used as a proxy.

Similarly, the cost of preventive measures taken to avoid getting affected by pollution is used as a proxy for the cost of pollution. Thus for example, in the event of ground water pollution, if local communities were forced to drink bottled water purchased from supermarkets, or installed home water-treatment plants, or obtained water from alternative sources, then the costs of these preventive measures could be used to estimate the cost of pollution.

Change in earnings methods

Where human health is affected by, say, air or water pollution, the economic cost of pollution is estimated using the loss in earnings approach, plus the cost of medical expenses. This approach does not however capture the chronic health effects, which may not result in actual loss in earnings. Nor does it reflect the true cost of pollution on society. Where human life may be lost, value of human life is estimated using insurance premiums people are willing to pay.

Hedonic method

This method relies on people's willingness to pay for a good, which often depends on its characteristics. Thus for example, the price that is paid for a house not only depends on its size, but also on its location, e.g. whether it is in a highly polluted area, or near an industrial site where there is excessive air pollution. Economists use such information to determine the economic value of, for example, air pollution, or environmental aesthetics.

Travel cost method

The recreational and aesthetic value of mangroves could be estimated using how much people are willing to pay to visit a site. Note that this method relies on the actual expenses incurred by the recreational user to derive a market demand for the resource and from which an appropriate economic value for the recreational experience is estimated. The actual expenditure itself is not equal to the economic value of recreational experience. Alternatively, access fees charged to enter national or marine parks could be used to measure the visitor's willingness to pay for the park. This, multiplied by the number of visitors, would give the economic value of the national park.

Expressed preference methods

This category of valuation is based on what people express as their willingness to pay for some environmental goods. This is often also called the "hypothetical valuation" method because respondents are given hypothetical scenarios and asked to indicate how much they would be willing to pay to either avoid the loss or to gain some improvement in the resource. This approach is called the "contingent valuation" method (CVM). Instead of asking people to directly express how much they would be willing to pay, other techniques such as the "choice modelling" approach (also known as "contingent ranking" method) have also been used. In the choice modelling approach, respondents are asked to consider and rank different scenarios that the researcher describes using a set of attributes, plus a cost associated with each scenario. Using the respondents' ranking, the researcher then estimates the value of a marginal change (improvement or loss) in the habitat or its use. Hypothetical valuation techniques are generally used to determine the value of intangible goods and services, such as bequest or existence value, changes in biodiversity value or changes in the ecological health of an ecosystem.

Benefit-transfer method

Where all else fails, benefit-transfer estimates have been argued by some to offer potential to estimate economic values. Benefit transfer is effectively using values estimated from previous economic studies conducted elsewhere and applying them to current site. It is important, however, to note that care needs to be taken when using this approach. It is important to ensure that, when using value estimates derived for other sites, there is close similarity between the characteristics of the two sites and the respective policy environments. In addition, there must be sufficient similarity in the stages of economic development, and the supply and demand conditions.

For more details see Freeman (1993).

Annex IV Economics of the proposed pilot project: an illustration

The two projects considered here were selected from the four identified by SPREP for their International Waters Programme. Appropriate references are made to the relevant sections in the main body of the report.

Example A: Pollution of groundwater

A rural community of 250 households lives on an atoll. The residents obtain their water from a lens that is at risk of major contamination from the disposal of the community's sewerage, including that from farmed animals, such as pigs. A pilot project could be designed to address the root cause of water contamination through a variety of different strategies, ultimately aiming to improve the quality of drinking water. This pilot project would integrate two focal areas of interest to the IWP – the preservation of freshwater resources and the management of human wastes.

Relevant environmental issues

- Pollution of groundwater lens from human and animal wastes, increasing organic content and the level of micro-organisms in the groundwater and associated ecosystem.
- The overall effects include:
 - deterioration of human health; and
 - degradation of the ecosystem and associated ecological services.

Key economic issues

- Human discharge of human wastes into the environment causes an externality problem—pollution of the public resource, i.e. the water lens.
- In most Pacific island nations, although groundwater is usually formally recognised to belong to the state, there is also an informal acceptance that the resource is communally owned. However, groundwater for all purposes is an “open-access” resource in most countries, no one individual has the incentive to minimise their discharge of human wastes, nor the ability to get others to reduce theirs. The level of pollutants discharged is above the optimum, because the public good is used for free (see Chapter 2, propositions 8 & 9).

Economic impacts

- Loss of income and/or life directly due to the impacts of consuming polluted water on human health;
- Loss in net economic benefits derived from use and non-uses resulting from the degradation of ecologically associated habitats. The key impacts other than those on direct human health through polluted water consumption could include a decrease in fisheries outputs, and a decline in ecological services (see Annex III).

The proponents (government and other stakeholders) of the pilot project hope to address the root cause of contamination and improve the quality of water, by treating the human sewage. Under ideal circumstances, the government, in partnership with the relevant communities, would first decide if any action were needed. To make this decision, a benefit cost analysis approach could be useful. That is, the government will choose to treat the sewage if the net benefits of sewage treatment are deemed to be greater than the economic value of the health effects and the net economic value of the changes in other use and non-uses of the water lens resulting from sewage being disposed of directly into the environment (see Chapter 3 and Annex III).

But in this case, the relevant stakeholders (who would have been identified during the situation analysis phase of the project cycle discussed in Chapter 4 and 5) have decided that the human health and ecological impacts of the water pollution are unacceptable. They have also made the decision to take steps to improve the quality of water. In the analysis provided below, it is assumed that the only option available is to treat the human sewage.

Once this decision has been made, the choice for the decision-makers (stakeholders) is to find that treatment option which is most cost effective (see Proposition 14, and Table 4).

Cost effectiveness analysis

Suppose there are two options: use household based composting toilets, or a central treatment plant for the whole community, each leading to the level of treatment that produces the same quality of water. To choose between the two options, one would first determine the economic cost for the 250 households. Please note that adequate, detailed information about the technical details of the two options is not available. The two options considered are totally hypothetical and a number of assumptions have been made.

Option 1: composting toilets

Calculate the capital cost of composting toilets, the labour costs of constructing each composting toilet, and other costs, for 250 toilets. This assumes that the entire 250 households adopt the composting toilets and that there is no unemployment in the society.

Option 2: central sewage treatment

Calculate the capital cost of the infrastructure for sewage collection, sewage pipes, and treatment plant, plus the labour cost involved in the construction of the infrastructure. In addition there are the ongoing operating costs of the running the central plant.

If the present value of the economic costs of composting toilets was less than the present value of the costs of central sewage treatment, then the stakeholders would choose the composting toilet option. This assumes that the people do not hesitate to use the composting toilets, and that the proposed technology is adopted. Moreover, the people have ready access to the funds required to establish the composting toilets (See Chapter 3).

While the choice of introducing composting toilets makes economic sense (because it is more cost effective), the key question that should also be asked is whether its adoption is likely to be feasible. If the use of the composting toilets is not socially (or in some cases culturally) acceptable, then the government in partnership may have to incur additional education costs to change people's attitudes. The cost of education should also be considered in the cost-effectiveness analysis (see Proposition 17). Such an assessment would have been done as part of the pre-feasibility/feasibility analysis (see Chapter 5).

If the pre-feasibility assessment suggests that the composting toilets are not socially acceptable even after conducting an appropriate education programme, then other alternative options may need to be considered. If the central sewage treatment option is the only option available, then the government has to establish the treatment plant. To encourage households to meet the cost of treatment, the use of economic instruments such as water charges, or sewage charges may be appropriate (see Figure 2).

Example B: Diving or fishing

A small community relies on reef resources for its daily subsistence needs. It is also involved in some commercial fishing. A local dive tour operator is also using the same reefs to support his commercial dive operations. He is concerned that the fishing activity of the local community threatens the growth of his business on the reefs they share. A local NGO has undertaken a baseline survey of reef resources, documented fishing activities and completed a socio-economic profile of the community. The pilot project supported by IWP could be designed to supplement the work of the local NGO to promote shared benefits for the use of the reef. The pilot project might seek ways to integrate the local community fishing activities with the dive tour operations.

Environmental issues

- Commercial and subsistence fishing reduces the diversity of fish and coral species.
- Diving experience relies on the quality of the dive site.

Economic issues

- Commercial and subsistence fisheries cause externality effects on the diving activities because they affect the quality of diving experience by adversely affecting species diversity and perhaps the habitat quality by the impact of fishing. (It is assumed here that the externality effects caused by the divers in terms of affecting fishing operations is minimal.)
- In many countries, although there is recognised communal "ownership" of resources, the governments manage the coral reefs and associated activities.
- The key economic question is "how to share the coral reef resources between a reef-based diving operation, and subsistence and commercial fishing?". Or, for the particular reef site, "which activity (dive operation or fisheries) will produce higher economic returns for the society?" (see Chapter 4).

The key management objective is then to make an informed decision based on the assessment of the net benefits that society will get from the dive tour operation as compared with the net benefits from commercial and subsistence fishing. The assumption behind this approach is that the society has to choose between the two options, and its choice will be based only on the economic contribution made by the two uses. The task in front of the analyst is to estimate the net benefits of recreational diving and the fisheries uses.

1. Market valuation of commercial and subsistence fisheries use

Choose the production valuation method if market prices and quantity data are available (see Annex III).

- In addition to the socio-economic survey conducted by the NGO, an analyst will also need to undertake an additional survey to obtain relevant information about the inputs used in the subsistence and commercial fisheries and the prices of the different fishes commercially marketed. Estimate shadow value of subsistence fishes (the shadow value of any input is its opportunity cost to a society, and is not the same as the observed market cost).

- Undertake a survey of current users involved in commercial and subsistence fisheries to obtain the following information:
 - Number of fisher persons employed,
 - Species and volume of fish caught,
 - Price of fish sold, and
 - Fixed and operating costs of fishing.
 - Using one of the methods outlined in Annex III, determine the net economic value of subsistence and commercial fisheries.
 - Using one of the non-market valuation methods outlined in Annex III, determine the net economic value of the non-use values affected by fishing, if any.
2. Economic value of recreational diving (It is important to note that the relevant economic measure is the economic value to the divers of additional fauna and flora diversity and improved habitat that would result from stopping commercial and subsistence fisheries) (the “good” that divers value is the diving experience because of high species diversity and the unspoilt quality of habitat).

To determine this value, one could use contingent valuation method (CVM) or choice modelling (see Annex III).

(Non-market valuation of non-use benefits associated with the particular area of interest is not necessary because the non-use values are not likely to be affected by the non-extractive uses made by the diving operations.)

If the net benefits of the site for the recreational diving are greater than the net benefits associated with the commercial and recreational fisheries use, then recreational diving use is the preferred choice. If those losing access to the site were to be compensated, then the appropriate value for compensation would be the net benefits lost by the commercial and subsistence fisheries (see Section 3.7 and Proposition 12).

A word of caution: given the small scale of many projects in the Pacific, it may not be cost effective to undertake the full-fledged detailed economic valuation. It may, however, be more useful to at least use the BCA process to systematically identify all the inputs and outputs associated with each use option. Then make an informed judgement based on as much qualitative and quantitative information as can be collected, compiled or collated, given the resources available.

Moreover, although the net benefit estimate may suggest that the particular coral reef site should be allocated to the dive operation, the stakeholders may decide, for equity reasons, to develop some rules and regulations that would allow the site to be shared between the two activities. This may require some restrictions in the fishing activity so that the impact on the species diversity and the habitat from fishing is minimised.

Annex V Useful web sites

There are many web sites that deal with environmental economic issues, but none that solely address the issues discussed in this report. The following are some general sites where different issues covered in this report can be found, and are given here as an indication only.

US Department of Interior: Bureau of Reclamation (project analysis): <http://www.usbr.gov/>

Environment Australia: <http://www.ea.gov.au/>

International Institute for Sustainable Development: <http://iisd1.iisd.ca/>

International Union of Conservation of Nature (IUCN): <http://www.economics.iucn.org/>

NSW Environment Protection Agency: <http://www.epa.nsw.gov.au/>

Organisation for Economic Co-operation and Development (OECD): <http://www.oecd.org/>

Resources for the Future: <http://www.rff.org/>

UN Commission on Sustainable Development: <http://www.un.org/ecosocdev/topics/environe/>

United States Environment Protection Agency (EPA), Economy and Environment: <http://epa.gov/economics/>

Professor Neill's web site, Canadian economic problems: <http://www.upei.ca/~rneill/>

World Resources Institute: <http://www.wri.org/>

World Bank: <http://www.worldbank.org/>

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