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**CRISP**



Coral Reef InitiativeS for the Pacific  
Initiatives Corail pour le Pacifique

## **PROCEEDINGS**

# **ECONOMICS OF MARINE MANAGED AREAS OF THE SOUTH-PACIFIC**

**Suva workshop (Fiji), 26-30 May 2008**



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# CRISP



Coral Reef InitiativeS for the Pacific  
Initiatives Corail pour le Pacifique



The CRISP programme is implemented as part of the policy developed by the Secretariat of the Pacific Regional Environment Programme for a contribution to conservation and sustainable development of coral reefs in the Pacific

The Initiative for the Protection and Management of Coral Reefs in the Pacific (CRISP), sponsored by France and prepared by the French Development Agency (AFD) as part of an inter-ministerial project from 2002 onwards, aims to develop a vision for the future of these unique eco-systems and the communities that depend on them and to introduce strategies and projects to conserve their biodiversity, while developing the economic and environmental services that they provide both locally and globally. Also, it is designed as a factor for integration between developed countries (Australia, New Zealand, Japan, USA), French overseas territories and Pacific Island developing countries.

The initiative follows a specific approach designed to:

- associate network activities and fieldwork projects;
- bring together research, management and development endeavours;
- combine the contributions of a range of scientific disciplines, including biology, ecology, economics, law and the social sciences;
- address the various land and marine factors affecting coral reefs (including watershed rehabilitation and management);
- avoid setting up any new body but supply financial resources to already operational partners wishing to develop their activities in a spirit of regional cooperation. This is why the initiative was prepared on the basis of a call for proposals to all institutions and networks.

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of the Pacific  
Community

This approach is articulated through a series of thematic objectives, which are:

**Objective 1:** Improve knowledge of the biodiversity, status and functioning of coral eco-systems.

**Objective 2:** Protection and management of coral eco-systems on a significant scale.

**Objective 3:** Develop the economic potential represented by the use values and biodiversity of coral eco-systems.

**Objective 4:** Dissemination of information and knowledge; capacity-building and leadership with local, national and international networks.

The CRISP Programme comprises three major components, which are:

**Component 1A:** Integrated Coastal Management and watershed management

- 1A1: Marine biodiversity conservation planning
- 1A2: Marine Protected Areas
- 1A3: Institutional strengthening and networking
- 1A4: Integrated coastal reef zone and watershed management

**Component 2:** Development of Coral Ecosystems

- 2A: Knowledge, beneficial use and management of coral ecosystems
- 2B: Reef rehabilitation
- 2C: Development of active marine substances
- 2D: Development of regional data base (ReefBase Pacific)

**Component 3:** Programme Coordination and Development

- 3A: Capitalisation, value-adding and extension of CRISP Programme activities
- 3B: Coordination, promotion and development of CRISP Programme

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**Robin SOUTH**

The proceedings of the workshop described in this document are the result of the collective input of the people shown in the accompanying list. The workshop organisers would like to thank these people for their help in the development the workshop agenda and for their contribution to the workshop proceedings.

The workshop organisers would also like to acknowledge the quality of the workshop sessions as demonstrated by the high standard of presentations, the expertise of the speakers and the degree of participation in the workshop working group sessions. This participation was a key factor in the successful production of the outputs of this workshop.

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## Executive Summary

A five-day international workshop was held in Suva from 26<sup>th</sup> to 30<sup>th</sup> of May 2008 to discuss the use of economics tools in coral reef management in Pacific countries and Territories and more specifically to support the design and management of marine protected areas (MPAs). The workshop was organized by the Coral Reef Initiative for the Pacific (CRISP), IUCN and SPREP.

The workshop was attended by thirty participants, including key stakeholders involved in economics and marine conservation in the Pacific from Conservation International, FSPI, IRD, PIFS, SOPAC, SPC, USP, WorldFish, World Bank, and government officials from Australia and New Caledonia.

The aim of the workshop was to share information between stakeholders and discuss how economic tools could be incorporated into the various stages of regional MPA design and management, and better support sound decision-making on coral reef management.

### **Structure of workshop**

The structure of the workshop consisted of presentations on a series of themes and working group discussions. Presentations focused on five main themes:

- understanding the special circumstances of South Pacific MPAs and the role economists could play in MPA planning and management;
- issues relating to the use of different economic assessment and valuation approaches in the Pacific;
- identifying specific economic assessment and valuation approaches which could be used in the Pacific;
- exploring potential MPA financing initiatives; and
- proposing potential case studies in Pacific Island Countries and Territories (PICTs) where economic instruments could be applied and tested.

Specific economic approaches discussed during the workshop presentations included the use of contingent valuation techniques to assess the non-use values of marine resources in Fiji, the use of input-output analysis to assess the local economic impact of the creation of MPAs in New South Wales, the design of a payment system for ecosystem services for MPAs in Vietnam, the application of cost-effectiveness analysis for Pacific Locally Managed Marine Areas (LMMAs), the use of Cost-benefit Analysis for natural resource management decision-making, and implementation of the Phoenix Island Protected Area (PIPA) endowment financing scheme.

In addition to the workshop presentations, two working group sessions were held to develop a basic typology of South Pacific MPAs based on management objectives, and to examine economic tools which could be applied to the different stages of the planning and management of South Pacific MPAs.

### **Using economics in MPA planning, development and management**

Workshop participants identified five main opportunities for applying economic assessment approaches to the different stages of MPA planning, development and management activities as follows.

*(i). MPA pre-establishment phase:*

Provide advice to decision makers about the advantages of using economic assessment to identify the benefits of marine resource conservation (e.g. using the Total Economic Value concept and assessment of different resource use options) to help make better informed choices about allocation of coastal and marine natural resources. The key issue is to determine the key choices, and how decision-makers will use the results of the economic analyses.

*(ii). MPA establishment and human, financial and other resource allocation phase:*

Provide economic advice to help identify economic implications of different resource allocations (trade-offs) and different MPA configurations and suggest ways of extrapolating economic information obtained from specific MPA case studies to regional scales. (Techniques here include Cost-Benefit Analysis (CBA), Multi Criteria Analysis (MCA), participatory CBA, Cost-effectiveness Analysis (CEA) and use of bio-economic models).

*(iii). MPA Management phase:*

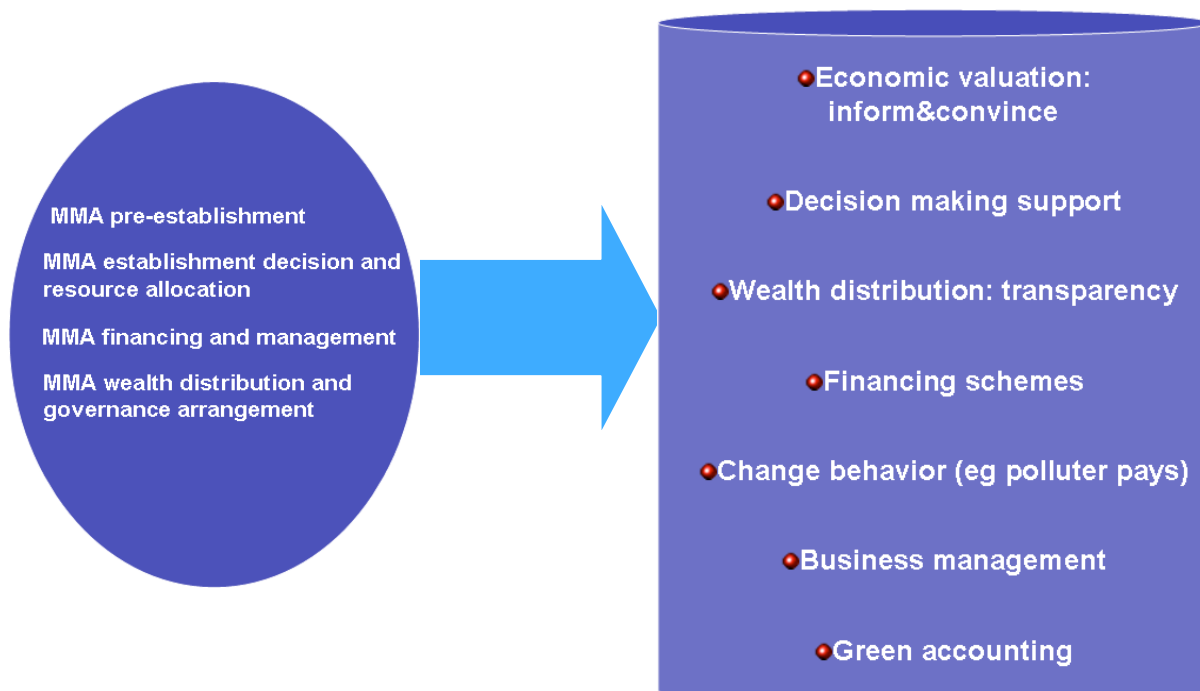
Provide advice on using economic approaches and valuation techniques to assist in MPA business planning and management. Approaches/techniques could include using revealed, and stated, preference techniques to collect information on the potential of market-based instruments for sustainable financing (e.g. using surveys to collect information on stakeholder willingness to pay for ecosystem services, or to pay user fees). Other approaches/techniques include collecting baseline economic and financial information for assessing direct and indirect costs and benefits for cost-optimisation and ongoing performance monitoring.

*(iv). Governance arrangements:*

Use economic assessment to identify the distribution of costs and benefits associated with on-going MPA management of resources for different groups (i.e. to address distributional/equity issues). Economic assessments can identify the existence of negative and positive externalities in relation to access to MPA resources, and suggest appropriate resource access arrangements to improve intra- and inter-generational equity in the distribution of cost and benefits. (Appropriate methods of managing access to MPA resources could include use of property rights or customary tenure arrangements, or use of taxes, permits, fees, or licences to manage use of MPA resources).

*(v). National accounts - Green accounting:*

Economic valuation techniques could be used to help develop green accounting approaches to incorporate the value of natural capital in national GDP and other accounting indicators. (This activity appears to have received little attention among national economic planners and statisticians in the Pacific to date).



*Fig. 1 : MPA/MMA different processes and objectives of economic assessment*

### **Issues in using environmental/resource economics in the Pacific**

One of the early observations from the workshop was the recognition that very few economic studies on coral reefs ecosystems or MPA initiatives have been carried out in the region to date. What work has been carried out appears to have had little influence on decision-making affecting MPA planning and management.

One of the reasons suggested for this dearth of studies may be the difficulty of applying conventional economic assessment approaches to the particular features and circumstances of MPAs in the region. For example, in contrast to the relatively large MPAs managed and financed by central government agencies in many countries, over four hundred MPAs in the Pacific are managed through community-based management approaches, are small in size, have food security and livelihoods as a priority concern, and reflect high cultural diversity and complex customary resource tenure situations.

Given these, and other distinctive features of MPAs in the region, some workshop participants preferred to use the term 'Marine Managed Areas' (MMAs) instead of 'MPAs' to reflect the wide range of potential management options in the region, from low-budget small-scale MMAs to complex endowment schemes. Nevertheless, one common factor among MPAs/MMAs in the region identified by workshop participants was the generally low level of national Government funding for MPA/MMA establishment and management<sup>1</sup>.

<sup>1</sup> For convenience, the term MPA has been used in this report, except where the report refers to specific types of MPAs which may involve community-based forms of management.

### **Improving the relevance of economic assessment in the Pacific**

Workshop participants suggested that economists should take the following points into account to help improve the relevance of economic analysis to Pacific circumstances and to encourage the use of economics in natural resource policy and decision making in the region.

- Assessment of the economic impacts of marginal changes in environmental/ecological conditions (e.g. the impacts of proposed resource use activities on coral reefs in comparison to the status quo), will be more useful for policy- and decision-making than studies which attempt to calculate the 'total economic value' of particular environments/ecosystems.
- The need for economists to provide information to decision-makers under financial and time constraints, may mean that economic studies have to focus on 'instrumental' or financial values (i.e. direct and indirect-use values such as the market value of fishing activities and tourism or support and regulation services) and ignore non-use values. Although some studies suggest that local communities in the region regard non-use values associated with marine resources as important, assessing these values may require complex and expensive studies to address different cultural perceptions among communities. Moreover (based on the results of a survey of studies estimating non-use values in the Pacific) non-use values appear to be particularly small in comparison to use and indirect use values.
- Communities can conduct cost-benefit analyses without having to ascribe monetary values to all impacts. Some costs and benefits cannot readily be quantified but should still be identified, and there is scope within CBA and MCA methods to do this.
- Many resource allocation decisions in the Pacific are made on the basis of the welfare of the community, rather than the individual. Economic analyses need to focus on welfare distribution analysis and propose the use of specific tools such as property rights or customary tenure arrangements.
- A number of databases containing information about resource use and use values for PICTs countries are readily available (e.g. the PROCFISH database, ReefBase Pacific databases). There also appear to be other sets of data on resource use and resource values which have been collected, but have not yet been used in evaluations. Given the need for resource use and valuation data for economic assessments, there would be considerable advantage to environmental/resource economists working on MPA issues from accessing this readily available information.



### **Case studies**

The final day of the workshop was dedicated to the identification of potential case studies in Pacific island countries, where economic assessment and valuation techniques could be applied and tested.

The workshop participants identified twelve case studies where economic approaches including economic valuation, could be usefully carried out. These case studies covered the creation, and sustainable management of MMAs, and the application of local studies to regional contexts.

The completion of these studies would greatly enhance knowledge about the effective use of economic concepts and approaches in the region. Examples of proposed case studies include a cost-benefit analysis of destructive fishing practices in Kiribati, a cost-effectiveness analysis of several management schemes for a network of LMMAs (locally managed marine areas) in Fiji, and a cost-benefit evaluation of different options for MMA management in Vanuatu.

Limited project funding will be made available through the workshop organizers (CRISP, IUCN and SPREP), and it is proposed that these agencies will develop partnerships with other agencies for co-funding of the case studies. New, and other interested, parties will be invited to participate in the funding of these projects.

### **Next steps**

Three priority activities were identified as the next steps to follow the workshop:

- Develop regional capacity in environmental/resource economics.
- Implement a robust framework for economic valuation of ecosystem services.
- Devote increased effort to demonstrating the usefulness of economic assessment to policy and decision makers.

Completion of the proposed case studies will be a key element in addressing these three priorities.

## Introduction

There has been increasing interest over the last fifteen years in the incorporation of economic assessment and valuation into natural resource and conservation management decision-making processes. Inter alia, economic approaches aim to estimate monetary values for goods and services derived from natural environments, such as natural resources and ecosystem services. Economic approaches also attempt to value the costs and benefits for individuals, businesses, communities and wider society from changes in the supply, quality, accessibility and other aspects of these goods and services. Therefore, assessments can help create a more easily understandable link between natural environments, ecosystem processes, conservation actions and human well-being (Azqueta *et al.* 2007; Farber *et al.* 2002; Pagiola 2004).

The results of economic studies can be used in several ways. For example, in the project evaluation stage, studies are useful in raising awareness about the value of the environment among decision-makers and the general public, in estimating the net benefits of interventions, and in comparing the costs and benefits of different resource uses. Economic tools can also be used by managers to identify possible financing sources for environmental goods and services (Balmford *et al.* 2002; Brander *et al.* 2007).

Economics can contribute to effective establishment and management of MMAs and thus conservation of coastal and marine ecosystems. For example during the MMA creation phase, benefit-cost analysis can be used to value potential return on investment and thus can assist the decision-making process. In the same way, economic indicators can be used in programs for monitoring and evaluation of the impacts of MPAs. Economic approaches may also contribute to financial sustainability issues when used as part of MPA business planning (Dalton 2003; Depondt *et al.* 2006; Dixon 1993; Sanchirico 2000)

However, despite the current acceptance of economic assessment, many authors believe that conventional economic assessment approaches are inadequate to address critical issues and relationships in biodiversity and ecosystem management. Shortcomings in conventional approaches may be due to scientific uncertainty about impacts on ecological processes, to a limited robustness in some methods used, to a lack of appropriate data, or to a lack of communication efforts (Balmford *et al.* 2006; Worm *et al.* 2006).

Environmental/resource economists face a number of challenges if they are to overcome these shortcomings. Firstly, better understanding and data is needed about relationships between changes in key habitat conditions, ecosystem functions and services, and human wellbeing. Secondly, the number and quality of local field surveys and monitoring programmes needs to be increased through engagement of key stakeholders and through use of suitable evaluation methods. Careful attention should be given to methods of extrapolating policy lessons learned at the local level to national and even regional levels. Thirdly, policies based on economic assessments should consider the potential for using market mechanisms and innovative economic instruments to encourage actions which benefit conservation while improving local livelihoods, such as payments for ecosystem services (FAO) or creation of markets for trading in carbon and biodiversity credits, etc. (Azqueta *et al.* 2007; Balmford *et al.* 2005; Balmford *et al.* 2006; Spash 2007).

The use of economic assessment for conservation and resource management involves particular challenges in the South Pacific, where the majority of islands have a limited natural resource base, high dependence on ecosystem services and very specific socio-cultural-political backgrounds (Beukering *et al.* 2007; Lal 2001). The limited availability of investment capital for economic development in the region means that coastal and marine resources in PICTs are needed for local economic growth. MPA establishment and management therefore have to play the double role of providing an effective tool for nature conservation while also contributing to economic welfare. Hence evaluation of the potential economic impacts of MPA on local livelihoods is an important part of decision-making processes in the region.

A first step in the process of encouraging discussion and application of economic assessment concepts and techniques to MPA management in the Pacific took place in May 2008, when environmental/natural resource economists and other key stakeholders with an interest in economic assessment and valuation of coral reefs in the Pacific participated in a workshop on Economics and Marine Protected Areas in Suva, Republic of the Fiji Islands. This workshop was held from 26-30 May 2008 and was sponsored by CRISP, IUCN and SPREP.

## General objectives of the Workshop

The general objectives of the workshop were to:

- Improve the use of economics in coral reef management in Pacific countries and Territories.
- Develop valuation methods for MPA economic impact analysis.
- Select a number of sites for pilot projects

## Specific objectives of the Workshop

It was envisaged that the following specific objectives would also be addressed during the workshop.

- Review studies involving economic assessment of MPA management and planning from outside the Pacific to identify cases where economic information has been used to inform MPA planning and management, and assess the relevance of these studies to conditions in the Pacific.
- Define Pacific stakeholders'/managers' expectations from economic assessment studies and identify the type of studies needed to meet these expectations.
- Evaluate methods for assessing economic impacts of MPA establishment and management on ecosystem services (principally provisioning, regulating and supporting services) and application of decision-support tools to the Pacific situation based on input from ecologists, social scientists and economists etc. in order to:
  - (i). produce an initial typology of Pacific MPAs as part of the process of adapting valuation and options development processes to regional characteristics and requirements;
  - (ii). review models of South Pacific ecological processes, ecosystem services and socio-economic and demographic pressures and trends;
  - (iii). achieve consensus about the appropriate form of valuation methods and their application to local situations;
  - (iv). assess the application of benefit transfer approaches to the Pacific region and evaluate the potential of standardized economic assessment methodologies and techniques, including valuation techniques;
  - (v). assess the use of Cost-Benefit Analysis, Multi-Criteria Analysis and other decision-support tools and methods for taking distributional (equity) impacts into account; and
  - (vi). identify novel valuation methods and methods for assessing externalities.
- Discuss potential pilot sites for case studies and consider human resource financial implications.
- Identify actions required to apply findings of economic assessments (e.g. business planning, communication of information to policy-makers and stakeholders; capacity building, funding incentives for implementing sustainable management etc.) and identify process to ensure successful implementation of these actions.

## Organization and implementation

The workshop was organized through a Committee comprising representatives from CRISP, IUCN and SPREP and implemented by consultants as listed in the table below.

Eric CLUA Steering Committee	CRISP Programme manager, NEW CALEDONIA
Philippe GERBEAUX Steering Committee	Chief Technical Advisor IUCN Regional Office for Oceania, FIJI
Caroline VIEUX Steering Committee	SPREP Chargée de la gestion des récifs coralliens, SAMOA
Nicolas PASCAL Implementing team	Consultant, SPAIN
Jean-Roger MERCIER Implementing team	Consultant, FRANCE

## Development of workshop program

The workshop was scoped by a workshop implementing team (Nicolas Pascal and Jean Roger Mercier) and revised by the Steering Committee (Caroline Vieux, Eric Clua and Philippe Gerbeaux). Further input on the workshop structure was provided by Lucy Emerton (IUCN), Nicholas Conner (WCPA), Dominique Rojat (AFD) and Padma Lal (SPC).

This process produced the following list of suggested topics for consideration in the workshop:

- The need to adapt economic valuation and assessment techniques (such as Cost-Benefit Analysis [CBA]) to address ecological and socio-economic processes.
- The need to insure ownership of the use and results of economic studies by policy-makers, managers and stakeholders.
- The need to increase the number of local field surveys.
- The need to ensure consistent protocols for the use of benefit transfer at the regional scale.
- The need to identify sources of finance for MPAs and methods for improving the use of business planning.
- The need to define standards for economic monitoring and evaluation programmes.
- The need to establish a network of regional environmental/resource economists.
- The need to strengthen networking activities with other organizations.

- The need to train all key persons involved in the economic aspects of MPA planning establishment and management.

As several of the above topics were beyond the scope of the workshop, it was decided to focus the workshop programme on the following three topics:

- identification of economic concepts and techniques appropriate for Pacific MPA planning and management and investment decisions (in particular MPA Cost-Benefit Analysis);
- identification of processes to ensure ownership of economic assessment by policy-makers to help improve the effectiveness and utility of economic tools;
- initial selection of potential case study sites.

A draft agenda inviting presentations on subjects relating to the above three topics was sent to over one hundred potential participants from sixty different organizations worldwide; thirty participants submitted papers and were able to take part in the workshop (see below). The final workshop agenda is shown in Appendix 1.



## Partners



The International Union for Conservation of Nature is a unique union. Its members include over 80 States, 111 government agencies, and 800-plus NGOs from some 180 countries. More than 10,000 internationally-recognized scientists and experts from more than 180 countries volunteer their services to its six global commissions. Its 1000 staff members in offices around the world are working on over 500 projects. For more than 50 years this 'Green Web' of partnerships has generated environmental conventions, global standards, scientific knowledge and innovative leadership. "IUCN builds bridges between governments and NGOs, science and society, local action and global policy. It is truly a world force for environmental governance."



### **Pacific Regional Environment Programme**

SPREP is a regional organization established by the governments and administrations of the Pacific region to look after its environment. SPREP has grown from a small programme attached to the South Pacific Commission (SPC) in the 1980s into the Pacific region's major intergovernmental organization charged with protecting and managing the environment and natural resources. It is based in Apia, Samoa, and has over 70 staff.

SPREP has 21 Pacific island member countries and four countries with direct interests in the region.

## Participants

The workshop was attended by thirty participants from key organizations involved in economics and marine conservation in the Pacific. Organizations included Conservation International, FSPI, IRD, PIFS, SOPAC, SPC, USP, WorldFish, World Bank as well as government officials from Australia and New Caledonia, as shown below.

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## Follow up

It is intended that the workshop and follow-up actions will not duplicate other programs and projects relating to coral reef management (e.g. Conservation International, ICRI and IFRECOR initiatives), but reinforce and enhance these initiatives.

The workshop will be followed by a call for proposals for case studies which could be funded under CRISP. Potential subjects for case studies were identified during the workshop (see Theme 5 Section below) based mainly on the draft typology of Pacific MPAs developed during the workshop working group sessions requests from stakeholders, and workshop discussions on methodological and data availability issues. Case studies should be managed by a scientific leader and a local stakeholder. It is also intended that the results of these case studies will be featured in scientific publications.

A post-workshop promotion strategy will be implemented through the production and distribution of a DVD version of the workshop proceedings to be sent to the workshop participants and selected institutions, and through the following media:

- Articles in local and official press (in e.g. Fiji, AFD news releases etc.)
- Announcements in specialized websites (e.g. Coral Cop, Noep, ReefBase, AERE, ISEE, EAFE)
- Articles in specific newsletters (e.g. PENREN)

## Workshop contents and presentations

The aim of the workshop was to share information between stakeholders and to discuss how economic tools could be incorporated into the various stages of regional MPA design and management, and better support sound decision-making on coral reef management.

Five principal themes were discussed:

- Theme 1: understanding the special circumstances of South Pacific MPAs and what role economists could play in MPA planning and management.
- Theme 2: applying different economic valuation approaches in the Pacific.
- Theme 3: identifying specific economic valuation approaches which could be used in the Pacific.
- Theme 4: exploring potential MPA financing initiatives.
- Theme 5: identifying potential case studies in Pacific island countries where economic instruments can be applied and tested.

In addition to the workshop presentations, two working group sessions were held to:

- define a basic typology of South Pacific MPAs, based on their management objectives; and
- examine economic tools which could be applied to the different stages of planning and management of South Pacific MPAs.

A round-table session was also held on the first day of the workshop to identify the outcomes participants wished to see from the workshop (see Appendix 2). In addition to the individual expectations of participants, there was consensus among the participants that an important outcome of the workshop should be to develop a clear message which could be tailored to local communities and other key stakeholders about the value (and limitations) of using economic assessment to improve decision-making affecting marine natural resources, and encourage sustainable development and poverty reduction.

The following section of this report provides details of workshop presentations categorized according to the five key themes noted above.

## Theme 1: Understanding the special circumstances of South Pacific MPAs and what role economists could play in MPA planning and management

A number of workshop presentations used the term Marine Managed Area (MMA) instead of Marine Protected Area (Grafton *et al.*), in order to address a wider range of MPA management options in the region, from low-budget small-scale MMAs to complex endowment schemes.

### **Presentations:**

#### ***Snapshot of MMAs in the Pacific, Issues and Options - Hugh Govan (Locally Marine Managed Areas - SPREP)***



This presentation provided a brief history of the MMAs in the Pacific and their geographical distribution. Specific issues for the more than four hundred reported MMAs in the Pacific are high levels of biodiversity, dominance of community-based management approaches, a small-scale approach to planning and management for most MMAs, concerns with food security, high cultural diversity and complex customary resource tenure arrangements. The low level of national Government funding for MMA establishment or management was noted.

#### ***MPA establishment and management and the role of economics in the context of customary resource tenure in the Pacific - Padma Lal (Pacific Islands Forum Secretariat)***



This presentation reviewed the different economic instruments and decision tools available for advocacy, making resource trade-offs, managing individual uses and governance of customary resources. The presentation described practical examples which could help to identify the main challenges facing the development and application of ecological economics. The main recommendation of the presentation was the adoption of an ecological economics paradigm and framework which would integrate assessment of ecological, economic and social systems and the spatio-temporal connectivity between these systems. A change in attitudes to the use of resource economics and to the capacity of Pacific policy- and decision-makers to use economic analysis was also seen as necessary.

## Theme 2: Applying different economic valuation and valuation approaches in the Pacific

Very few economic studies on coral reefs ecosystems or MPA initiatives have been carried out in the region to date. What work has been carried out appears to have had little influence on decision-making affecting MPA planning management.

One of the reasons suggested for this lack of attention may be the difficulty of applying conventional economic assessment approaches to the particular features and circumstances of MPAs in the region. For example, in contrast to MPAs in many countries, the large majority of the MPAs in the Pacific are managed through community-based management approaches, are small in size, and reflect high cultural diversity and complex customary resource tenure situations. The lack of economic studies in the region may also be due to the limited human and financial resources and skills in economic assessment. Most economic studies for MPAs in the region have so far relied on outside expertise.

Given the above background, it may be appropriate to adapt and apply both formal and informal economic assessment approaches to suit the different situations in the region. Workshop participants suggested that economists should take the following points into account to help improve the relevance of economic analysis to Pacific circumstances and to encourage the use of economics in natural resource policy and decision making in the region.

- Economists should give priority to the development and application of economic concepts and techniques to MPA management and governance.
- Assessment of the economic impacts of marginal changes in environmental/ecological conditions (e.g. the impacts of proposed resource use activities on coral reefs in comparison to the status quo), will be more useful for policy- and decision-making than studies which attempt to calculate the 'total economic value' of particular environments/ecosystems.
- Assessments of economic impacts of marginal changes in environmental/ecological conditions should also include comparison, however limited, of the costs and benefits of doing nothing, and pursuing a business-as-usual approach.
- Communities can conduct cost-benefit analyses without having to ascribe monetary values to all impacts. Some costs and benefits cannot readily be quantified but should still be identified, and there is scope within CBA and MCA methods to do this.
- Many resource allocation decisions in the Pacific are made on the basis of the welfare of the community, rather than the individual. Economic analyses need to recognise that individuals operating within such community-based approaches to decision-making may make different resource allocation decisions from those they may make if/when acting in their own interests.
- The need for economists to provide information to decision-makers under financial and time constraints, may mean that economic studies have to focus on 'instrumental' values (i.e. direct and indirect-use values such as the market value



of fishing activities and tourism or support and regulation services) and ignore non-use values. Although some studies suggest that local communities in the region regard non-use values associated with marine resources as important, assessing these values may require complex and expensive studies to address different cultural perceptions among communities. Moreover (based on the results of a survey of studies estimating non-use values in the Pacific) non-use values appear to be particularly small in comparison to use and indirect use values.

- A number of databases containing information about resource use and use values for PICTs countries are readily available (e.g. the PROCFISH database contains information on artisanal fisheries in more than seventeen South Pacific countries, and the ReefBase Pacific databases can be used to access published and grey literature and details of research projects in the region). There also appear to be other sets of data on resource use and resource values which have been collected, but have not yet been used in evaluations. Given the need for resource use and valuation data for economic assessments, there would be considerable advantage to environmental/resource economists working on MPA issues from accessing this readily available information.

## **Presentations:**

### ***Gaps in the valuation of marine ecosystems and services, values, and techniques - Helena Naber (World Bank)***

This presentation discussed gaps in the analysis in valuation of marine ecosystem services. The analysis is based on the Millennium Ecosystem Assessment 2005 classification of coastal and marine ecosystems, and considered different categories of ecosystems in terms of the distribution of ecosystem services, valuation techniques, values measured, and geographic extent of valuation. The presentation also considered the stated reasons behind conducting valuation and application of studies. Principal gaps in the valuation results were identified.



### ***Meta-analysis of economic valuation studies in the South Pacific for coral reefs ecosystems - Nicolas Pascal (Consultant)***

A literature search of economic studies of coral reef ecosystems has identified very few studies relating to the South Pacific. This presentation provided a breakdown of studies by valuation technique and economic sector. The results described in these studies varied considerably according to the area studied and the author. For example use values for coral reefs were estimated at between \$US\$6,000 and US\$43,000 p.a. per km<sup>2</sup> and represented between 13% to 45% of the combined estimated use, indirect, and non-use values of coral reefs.



### ***Assessing the economic value of the Great Barrier Reef Catchment - Robin South and Clive Wilkinson (International Ocean Institute [Australia] Reef and Rainforest Research Centre)***

Information on the economic value of the Great Barrier Reef Catchment area was given in this presentation. The economic value of the reef to the Australian economy has been estimated at AU\$6.9 billion p.a., with 84-87% of this value attributable to tourism, and approximately 66,000 full-time equivalent staff employed. The availability of substantial amounts of data on tourism, commercial fisheries and recreational activities enabled an atypically detailed level of assessment. This



assessment related to direct use values and did not include estimation of non-use values. The effects of climate change, and lessons learned from this assessment which could be relevant to PICTs situations, were also discussed in the presentation.

***Techniques for Valuing Marine and Coastal Environments: Experiences from New South Wales, Australia - Nicholas Conner (IUCN World Commission on Protected Areas Economic Valuation Task Force)***



This presentation provided background information on New South Wales MPAs, and an overview of techniques for valuing natural environments. Case studies based on three different methods were discussed i.e. the avoided cost approach, the Travel-cost method [TCM] and input-output analysis). The recreational value of a national park was calculated at AU\$50 p.a. per visitor using TCM. The avoided-cost method was used to estimate the subsistence value of a coastal lake for an Aboriginal community (AU\$468-1,299 p.a. for persons over 14 years old). Input-output analysis was used to estimate the economic impacts of parks on local economies. Processes for estimating direct and flow-on impacts of MPA management and visitor expenditure on local economies were described in the presentation.

***PIPA case study: general approach for economic valuation study - Sue Miller (Conservation International)***



The background and objectives of the Phoenix Island Protected Area (PIPA) were described in this presentation. An economic valuation undertaken for PIPA covered the fishery resources of the area and has supported the development of the management plan and a long-term financing vehicle. A reverse fishery licence has been developed based on the identified opportunity costs of conservation. An endowment scheme has been set up to compensate those detrimentally affected by lost fishery production. A 50% PIPA closure implies a US\$560,000 opportunity costs p.a. and requires a US\$10M endowment.

***Using cost-benefit analysis for improved natural resource management decision-making in Pacific island countries - Allison Woodruff - Pacific Islands Applied Geoscience Commission (SOPAC)***



A short presentation of Cost-Benefit Analysis (CBA) was provided as well as a discussion of the use of CBA in the decision-making process and as an advocacy tool. Four case studies were presented: (i). aggregate mining activities in the Marshall Islands (the estimated cost of building and maintaining coastal protection structures was US\$6.5 million over 25 years), (ii). flood management options in Apia (this CBA helped to promote the value of flood management investments by highlighting long-term payoffs relative to upfront costs), (iii). the implementation of sustainable measures for the pearl farm industry in the Cook Islands, and (iv). early flood warning systems in Fiji.

***Impact of land based activities on marine resources Cook Islands - Marita Manley (Secretariat of the Pacific Community)***



A study of the main impacts of land-based activities on the Rarotonga lagoon was discussed in this presentation. A ridge-to-reef approach for the management plan of land-based activities was used in the study and economic

damages were identified i.e. higher incidences of ciguatera poisoning, disruption of the lagoon ecosystem (algal blooms) and deterrence of tourists. A method for the economic valuation of these impacts was detailed, as were the issues encountered.

## Theme 3: Identifying specific economic valuation approaches which could be used in the Pacific

- ***PROCFish/C: actual status of reef resources and their use. Contributions to economic valuation of Marine Protected Areas from a subsistence and small-scale fisheries point of view - Mecki Kronen & Franck Magron (Secretariat of the Pacific Community Reef Fisheries Observatory)***

The PROCFish/C database containing information on small-scale fisheries was discussed in this presentation. The collection of socio-economic and resource data (finfish, invertebrate, and habitat data) in four sites in seventeen PICTs will enable assessment of the current status and level of reef resource utilization. Observations about fish price mechanisms, sustainability of small-scale fisheries and cultural changes were given in the presentation.



- ***New methods adapted to the Pacific: Simplified form of regional input-output analysis – Nicholas Conner (IUCN World Commission on Protected Areas Economic Valuation Task Force)***

Some pros and cons of using input-output analysis to estimate economic impacts on local economies were discussed in this presentation. A simplified version of input-output analysis was suggested as the basis for assessing direct effects when data is limited, for example it could be possible to quantify the impact of protected area visitor expenditures on local business activity as a proxy for impacts. Some information sources are described (e.g. business and visitor expenditure surveys).



- ***A bio-economic approach for MPA benefit and cost analysis - Nicolas Pascal (Consultant)***

This presentation discussed the case of potential overfishing in Tikehau (French Polynesia). A spatial fishery model was set up to test the impacts of an MPA and other resource management efforts on the fishery-dependent local economies. A cost-benefit analysis incorporating biological and economic uncertainties was carried out to assess these management options. Outputs showed the high sensitivity of results to biological uncertainties (such as natural mortality or larval dispersion rates).



- ***MPAs, economic valuation and making tradeoffs: practical examples - Padma Lal (Pacific Islands Forum Secretariat)***

Four case studies of economic valuation used in decision-making processes were described in this presentation: (i) the choice between wild or cultured live coral and live rock collecting for the aquarium trade in Fiji, (ii) economic or social preference in Tuvalu in relation to integrated systems of waste management, (iii) intangible benefits and user charges in Tonga, and (iv) economic valuation of conflict resolution/ prevention in Fiji. Total economic costs including externalities and some critical aspects such as the differences encountered between perception and reality, were estimated in two studies. The use of willingness to pay for defining charges was described. The role of economics in helping make informed decisions was also discussed.



- ***New valuation approaches: literature reviews - Isoa Korovulavula, University South Pacific.***

The limitations of traditional economic valuation approaches were described in this presentation. The lack of valuation at a micro level may be especially problematic for sustainable MPA management and decision-making in the Pacific given the particular circumstances of the region. More participatory and simplified approaches would appear to be necessary in this region. The presentation discussed aspects of different valuation and assessment methods which may be appropriate for Pacific conditions, such as Multi-Criteria Analysis, Participatory rapid economic valuation, and Deliberative Valuation Assessment. LMMAs in Fiji may represent an interesting opportunity for testing these techniques.



- ***Local bequest values for a traditional fishing ground: Navakavu case study - Tanya O'Garra (Consultant)***

This presentation described the findings of a study to estimate the economic 'value at risk' of ecosystems within a traditional fishing ground in Fiji. One important type of value identified in the study was bequest value, and a contingent valuation survey was undertaken to estimate this value. The study calculated a willingness to pay of FJ\$6.13/indiv/month and a willingness to contribute time at FJ\$16-28/indiv/month. Bequest values were identified by 78% of the local community as the most important reason for conserving fishing grounds but represent only 2% of estimated fisheries value.



- ***Community Benefits and Community Perceptions of the Waitabu Marine Park, Taveuni, Fiji - Kenneth Mackay (University South Pacific)***

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## Theme 4: Exploring potential MPA financing initiatives

### ***Costs of MMAs in the Pacific - Hugh Govan (Locally Marine Managed Areas - SPREP)***



This presentation discussed the costs of several community-based management (CBM) sites with estimated costs including setup, management and monitoring. The average annual costs from CBM in the Solomon Islands were estimated at US\$106/km<sup>2</sup> of MPA, and in Palau at US\$132,000/MPA. A breakdown of costs was given in the presentation. The scale costs of national networks and the cost-effectiveness of monitoring were also discussed.

### ***Vietnam case study PES, Lindsay Aylesworth (IUCN)***

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### ***Supplementary Livelihood Options for Pacific – Etika Rupeni (FSPI) & Tanya O'Garra (Consultant)***



The objective of the study described here was to identify the determinants of 'success' of livelihood diversification projects in the South Pacific. Different options may compensate families for an initial decrease in catch associated with MMA/MPA establishment and can help reduce impact on fisheries. A review of ten studies of 'lessons learned' from around the World was presented. Main determinants of success identified in the review were participatory project implementation, business training and existing markets for services/products. The South Pacific situation was analyzed (with forty-three projects documented), and the distribution of projects by livelihood type and target group was explained and key success factors described.

### ***Monitoring of MPAs: Experience from the GCRMN South West Pacific Node, Cherie Wippy Morris & Kenneth Mackay (University South Pacific)***

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## **Theme 5: Identifying potential case studies in Pacific island countries where economic instruments can be applied and tested**

The last day of the workshop was dedicated to the identification of potential case studies in Pacific island countries, and where these methodologies can be applied and tested. After the individual presentation of the case study of New Caledonia, twelve relevant case studies for the potential application of economic instruments to MPAs in the Pacific were identified during a work group session. These case studies cover the creation, sustainable management of MPAs, and the extrapolation of results obtained in site-specific studies to the regional scale. The completion of these studies is expected to greatly enhance the knowledge of effective economic instruments in the region.

Limited project funding will be made available from the workshop organizers (CRISP, IUCN and SPREP), and it is proposed that these agencies will develop partnerships with other agencies for co-funding of these case studies. New and other interested parties will be invited to participate in the funding of these projects. Potential case studies identified in the working group session are shown in Table 1 below.

### ***New Caledonia's reef (South West Coast) case study proposal - Nicolas Rinck (Province Sud, Nouvelle Calédonie)***

This presentation described the ecological and socio-economic characteristics of the New Caledonia South West Coast Barrier Reef which has recently been listed on the UNESCO Register of World Heritage Sites. Major uses of, and threats to, the reef ecosystems were identified in the presentation. The scope and outputs of an environmental evaluation supported by a large volume of high quality data were described. Integration of this study in the Reef Management Plan is currently being considered by Reef planners and managers.



**Table 1: Potential Case Studies using economic assessment and valuation tools**

PICT/subject	Geographic Scope	Objectives
<b>New Caledonia</b>	Country level	Evaluate the present and future values of coral reef ecosystem services under different conservation management scenarios. Focus on the impact of the UNESCO listing.
<b>Solomon Islands</b>	Country level	Estimate the value of coastal fisheries and the costs of fishery substitution. Use Benefit-Cost Analysis of MMAs to estimate the contribution of different options for fishery management to sustainable livelihoods.
<b>Tonga</b>	Selected sites in Tonga (AusAID sites)	Analyze management options for providing incentives for the Tonga Government to pursue and/or extend Community Based Management initiatives.
<b>Kiribati</b>	Tarawa	Support new regulations to restrict destructive fishing practices based on findings from economic assessments.
<b>Fiji</b>	Fiji (Island of Viti Levu)	Extrapolate estimates of local level use, indirect and non-use values of MMAs (four communities) to the whole island scale (for twenty communities).
<b>Socio-economic Voices From the Village</b>	Samoa, Tonga, Fiji, Solomon Islands, Palau	Update the World Bank 'Voices from the Village' report by using economic concepts to assess impacts on coastal and marine resources, and features of different MPA management approaches in different PICTs. Focus on assessment of the net benefits of different coral reef management methods for biodiversity and livelihoods.
<b>Vanuatu</b>	Efate Island	Estimate present and future values of coastal ecosystem services. Carry out Cost-benefit Analysis of MMAs and Cost-Effectiveness Analysis of Community-Based Management.
<b>Upscaling costs and benefits of LMMAs</b>	LMMMA sites	Use site specific estimates of the benefits and costs of locally managed MMAs to estimate the cost and benefits of an LMMMA network. Develop a business planning framework for LMMAs.

<b>PICT/subject</b>	<b>Geographic Scope</b>	<b>Objectives</b>
<b>Economic tools for the LMMA</b>	LMMA sites	Identify economic tools useful for LMMA adaptive management processes and develop a management framework to integrate these tools.
<b>User fees and licences for MMAs in Fiji</b>	Local community	Develop methodologies for calculating economically efficient and equitable charges for use of MMA resources which can be applied in customary tenure management situations.
<b>French Polynesia</b>	Moorea or Fakarava	Carry out a study using a Total Economic Value framework to value the direct, indirect and non-use values of coral reef ecosystems and associated ecosystems.
<b>MMAs and climate change</b>	Pacific regional level	Assess the role of the ecological, socio-economic and cultural features of MMAs in mitigation of climate change impacts. This study would focus on the relative costs of establishing and managing MMA networks compared to the costs of seawalls, building costs and relocation of populations associated with climate change impacts (e.g. in Samoa, and Kiribati).
<b>Green accounting/ Financing in PNG</b>	Country level	Determine the contribution of natural capital to national accounts and identify methods for linking the need for investment in natural capital to sustainable financing mechanisms.
<b>Regional transfer value</b>	Pacific regional level	Produce rules for using benefit transfer which are applicable to PICTs

The following section of the report described the outcomes of two working group sessions held during the workshop. The themes of the working group sessions were:

- Working Group Session 1: Defining a basic typology of South Pacific MPAs based on MPA management objectives and issues.
- Working Group Session 2: Description of the different development and management stages of South Pacific MPAs and selection of adapted economic tools.

## Working Group Session 1: Defining a basic typology of South Pacific MPAs based on management objectives and issues

Working Group Outcome: development of table as shown below.

Management objective	Some associated issues
Sustainable Food Security and supply	<ul style="list-style-type: none"> <li>• Sustainable (sea)food supply (artisanal, subsistence)</li> <li>• Improved nutrition</li> </ul>
Sustainable net income generation and management	<ul style="list-style-type: none"> <li>• Enhanced cash income (e.g. commercial fishing)</li> <li>• Diversifying sources of income</li> <li>• Enhancing stocks</li> <li>• Developing saving mechanisms</li> <li>• Benefiting from tourism</li> </ul>
Enhanced ecological conservation	<ul style="list-style-type: none"> <li>• Habitat protection</li> <li>• Helping governments comply with international commitments</li> <li>• Protecting global goods</li> <li>• 'Bartering' with outsiders</li> <li>• in-situ/on-ground research</li> </ul>
Conflict management and social/cultural conservation	<ul style="list-style-type: none"> <li>• Conserving key heritage goods and cultural elements</li> <li>• Improving land (and sea) tenure</li> <li>• Clarifying and anchoring property rights</li> <li>• Controlling poaching</li> <li>• Conflict management (absentee village chiefs)</li> <li>• Recreation support</li> </ul>
Protection against external physical impacts	<ul style="list-style-type: none"> <li>• Controlling water quality (e.g. at watershed scale)</li> <li>• Controlling coastal erosion</li> <li>• Enhancing resilience to climate variability</li> </ul>
Harmonious endogenous development	<ul style="list-style-type: none"> <li>• Acquiring and using planning tools</li> </ul>

## **Working Group Session 2: Description of the different development and management stages of South Pacific MPAs and selection of adapted economic tools**

Working Group Outcome: identification of five main phases of MPA planning and management and associated actions.

### MMA pre-establishment phase

Provide advice to decision-makers about the advantages of using economic assessment to identify the benefits of marine resource conservation (e.g. using the Total Economic Value concept and assessment of different resource use options) to help make better informed choices about allocation of coastal and marine natural resources. The key issue is to determine what these key choices are, and how decision-makers will use the results of the economic analyses.

### 2. MMA establishment and human, financial and other resource allocation phase

Provide economic advice to help identify economic implications of different resource allocations (trade-offs) and different MMA configurations and suggest ways of extrapolating economic information obtained from specific MMA case studies to regional scales (techniques here include Cost-Benefit Analysis [CBA], Multi-Criteria Analysis, participatory CBA, Cost-effectiveness Analysis and use of bio-economic models).

### 3. MMA Management phase

Provide advice on using economic approaches and valuation techniques to assist in MMA business planning and management. Approaches/techniques could include using revealed, and stated, preference techniques to collect information on the potential of market-based instruments for sustainable financing (e.g. using surveys to collect information on stakeholder willingness to pay for ecosystem services or to pay user fees). Other approaches/techniques include collecting baseline economic and financial information for assessing direct and indirect costs and benefits for cost-optimisation and ongoing performance monitoring.

### 4. Governance arrangements

Use economic assessment to identify the distribution of costs and benefits associated with on-going MMA management of resources for different groups (i.e. distributional/equity issues). Economic assessments can identify the existence of negative and positive externalities in relation to access to MMA resources, and suggest appropriate resource access arrangements to improve intra- and inter-generational equity in the distribution of cost and benefits. (Appropriate methods of managing access to MMA resources could include use of property rights or customary tenure arrangements, or use of taxes, permits, fees, or licences to manage use of MMA resources).

### 5. National accounts: Green accounting

Economic valuation techniques could be used to help develop green accounting approaches to incorporate the value of natural capital in the national GDP and other



accounting indicators. (This activity appears to have received little attention among national economic planners and statisticians in the Pacific to date).

The following section of the report describes follow-up activities that should occur over the next few months to develop and progress the outcomes of the workshop.

## Next steps

Three priority activities have been identified as the next steps to follow the workshop:

- (i). Develop regional capacity in environmental/resource economics.
- (ii). Implement a robust framework for economic assessment, including valuation of ecosystem services.
- (iii). Improve communication about the usefulness of economic assessment to policy and decision makers.

### **Develop regional capacity in environmental/resource economics**

A first priority will be to direct efforts to developing capacity in environmental/resource economics in the region. This priority should be tackled by implementing capacity building activities, carrying out case studies involving external and internal expertise and by providing incentives to encourage regional economists to apply their skills to MPA issues.

Notably, capacity building is already taking place through a Pacific Environmental Economics Network coordinated by the IUCN Oceania Regional Office in Suva. IUCN has developed terms of reference for this network and will be carrying out further activities in the near future to progress this initiative. The majority of economists who attended the workshop confirmed their willingness to actively participate in this network. Another capacity building initiative has been the launch of a Pacific resource economics newsletter (PENREN: Pacific Environmental and Natural Resource Economics News) through SOPAC (SOPAC).

### **Implement a robust framework for economic assessment, including valuation of ecosystem services.**

A second priority action will be to contribute to the conceptual development of the discipline of environmental/resource economics in the Pacific.

An initial step here would be for economists to establish guidelines to help researchers choose suitable methodologies and techniques to use in different assessment and valuation projects. For example, guidelines could provide information on correct ways of quantifying and valuing ecosystem services and their underlying biophysical processes (e.g. the biophysical response of marine ecosystems to over-fishing of key species). Guidelines could also provide advice on carrying out sensitivity analyses to test the robustness of the results of assessments, and on using benefit transfer approaches to apply values obtained at local levels to regional scales.

The proposed case studies described above could play a valuable role in the development of a more robust framework for economic assessment and valuation of ecosystem services in the region, and should be designed to incorporate features such as capacity building and benefit transfer of local results to regional scales.

Use of the above guidelines would also be expected to facilitate comparisons between different sites and countries and better appreciation by policy- and decision-makers about the importance of sustainable natural resource management. Use of these guidelines could also help progress development of green accounting methods.

### **Improve communication about the usefulness of economic assessment to policy- and decision-makers**

A third priority action will be to improve ways of providing information to policy makers on the findings of economic studies, and on the usefulness of economic analysis for decision-making.

One prerequisite for demonstrating the usefulness of economic analysis for decision-making is the need to carry out further studies in the Pacific which will collect information of interest to policy- and decision-makers. Use of benefit transfer approaches should help to reduce the project costs of some studies where site-specific data collection is not essential.

Information provided to widely accessible media such as newspapers and radio programs can also help to publicize the economic value of MPAs and coastal and marine resource conservation, and raise public awareness about sustainable resource use.

A third way of publicizing and communicating information about the role of economic assessment is to liaise with external agencies funding Pacific economic and social development projects (e.g. UNDP, FAO, World Bank) to encourage the integration of environmental/resource economics approaches in project management. Potential themes relating to economic and social development projects might include development of national accounting measures incorporating valuation of natural capital or satellite environmental accounts ('green accounting'), or development of community banking/credit schemes. Better communication with these agencies can help to demonstrate the usefulness of economic assessment to senior government policy and decision makers.

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# Appendix 1: Final workshop agenda

## CRISP Economic workshop Suva – 26<sup>th</sup>-30<sup>th</sup> of May 2008 Final AGENDA

<b>Monday, May 26</b>		Moderator: Eric Clua, Jean-roger Mercier, Nicolas Pascal
<b>Opening session:</b>		
Welcome		Opening from Mr l'Ambassadeur de France à Suva.
CRISP program overview and general context of the workshop		Eric Clua, CRISP
Overview of IUCN and environmental economic valuation		Philippe Gerbault, IUCN
Overview of SPREP and environmental economic valuation		Caroline Vieux, SPREP
Overview of workshop, objectives and expected outputs		Nicolas Pascal, CMIMA-consultant
Overview of workshop, objectives and expected outputs		Jean-Roger Mercier, consultant
Personal presentations and environmental economic valuation initiatives and expectatives in the Pacific (5' each)		Round table. Oral exposure of each organism represented
<b>Theme 1: Understand South Pacific MPA specificities, trends and needs</b>		
Round table workshop objectives		Group session
<b>Lunch</b>		
Snapshot of MPAs in the Pacific, Issues and Options		Hugh GOVAN, CRISP
Pacific MPA specificities and objectives - Discussion		Group discussion
MPA establishment and management and the role of economics in the context of customary resource tenure in the Pacific		Padma LAL, Forum Secretariat
Needs from the Pacific people - discussion		Group discussion
Proposals on agenda and last minute fix		Moderator
Recovery from trip and rest		
<b>Evening:</b>		
<b>Tuesday, May 27</b>		Moderator:
9h00	Summary and agenda	
<b>Theme 2: Economic valuation general approach in the Pacific</b>		
Gaps in the valuation of marine ecosystems and services, values, and techniques		Helena NABER, World Bank
Meta-analysis of economic valuation studies in the South Pacific for coral reefs ecosystem		Nicolas PASCAL, CMIMA-consultant
Assessing the economic value of the Great Barrier Reef Catchment Area		Robin SOUTH, International Ocean Institute
Techniques for Valuing Marine and Coastal Environments – Experiences from New South Wales, Australia		Nicholas CONNER, NSW Department of Environment and Climate Change
PIPA case study: general approach for economic valuation study.		Sue TAEI, Conservation International
Using cost-benefit analysis for improved natural resource management decision-making in Pacific island countries		Allison WOODRUFF - SOPAC
Impact of land based activities on marine resources Cook Island		Marita MANLEY, Secretariat of the Pacific Community
New methods adapted to Pacific: Simplified form of regional input-output analysis		Nicholas CONNER, NSW Department of Environment and Climate Change
Status and use of coastal resources, economic issues, commercial species, fisheries activities -including aquaculture - and non-m		Franck Magron & Mecki Kronen, Secretariat of the Pacific Community
17h30	Evening: Meeting of the steering comitee	
<b>Wednesday, May 28</b>		
	Agenda - Burning questions	Moderator:
<b>Paralel sessions</b>		
	<b>Define a rough South Pacific MPA typology based on issues</b>	
	<b>What are the needs related to MMAs in the Pacific region</b>	
<b>Theme 3: Explore specific sectorial economic valuation approach and new methods</b>		
MPAs, economic valuation and making tradeoffs – case study of live cultured versus wild coral harvest for aquarium trade		Padma LAL, FORUM SECRETARIAT
Bio-economic fishery model for MPA		Nicolas PASCAL, CMIMA-consultant
New valuation approaches literature reviews		Isa KOROVLAVULA, University South Pacific
Community Benefits and Community Perceptions of the Waitabu Marine Park, Taveuni, Fiji		H. SYKES & Kenneth MACKAY, University South Pacific
Evening: Meeting of the Rapporteurs from the Parallel Sessions		
<b>Thursday, May 29</b>		
	summary and agenda	Moderator:
	Non-use valuation study Navakavu iqliqoli	Tanya O'GARRA, University South Pacific
<b>Theme 4: MPA financing initiatives</b>		
	LMMA costs	Hugh GOVAN, CRISP
	Vietnam case study PES	Lindsay AYLESWORTH, IUCN
	Monitoring of MPAs: Experience from the GCRMN South West Pacific Node	Cherie WIPPY MORRIS & Kenneth MACKAY, University South Pacific
	Supplementary Livelihood Options for Pacific – study	Etika RUPENI - FSPI - Tanya
	Supplementary Livelihood Options for Pacific – PCC and bioprospection	Eric CLUA, CRISP
	Evening: Meeting of the Rapporteurs from the Parallel Sessions	
	Meeting of organizers and key participants (6-8 max) to draft outline of findings	
	Dinner	to be confirmed
<b>Friday, May 30</b>		
<b>Session 5: Economic valuation candidate sites</b>		
	Candidate Sites for Future CRISP Case Studies	
<b>Session 6: Results and future</b>		
	Validation of Outline of Findings 1	Steering comitee
	Validation of Outline of Findings 2	Steering comitee
	Organizers' Views on Findings and Next Steps	Steering comitee
	Feedback from participants	Moderator
	Closure of workshop	Moderator

## Appendix 2: Participants' expectations of workshop outcomes ('burning questions')

EV = Economic Valuation

PICTs = Pacific Island Countries and Territories

Jean-Roger Mercier (Consultant): How can economic valuation support local communities in creating or maintaining their MPAs?

Eric Clua (CRISP): Which sites and which experts could take a leading role in implementing economic studies?

Philippe Gerbeaux (IUCN): How can IUCN help? How can sustainable financing mechanisms be applied?

Caroline Vieux (SPREP): As Jean-Roger Mercier, and also, how we can support government policy and decision-makers?

Isoa Korovulavula (USP/IAS): How can we integrate economic valuation into the socio-cultural context of communities in the Pacific?

Hugh Govan (SPREP): How we can assist people in the Pacific to achieve their lifestyle; how could we contribute something useful to help achieve sustainable livelihoods for communities?

Franck Magron (SPC): How can PROCFISH assist EV studies by contributing information collected in PICTs?

Etika Rupeni (SLOPIC/FSPI): How can MPA tools address livelihood issues? We need to include the livelihood equation in workshop discussions during the week. Communities own 80% of the coastal fisheries. How do you engage the community leaders who make critical decisions?

Robin South (IOI): How do we convince subsistence fishermen of the value of resources? How can we help them to understand that conserving resources is more profitable than fishing them?

Vina Ram-Bidesi (USP, Marine Studies): How do we make economic assessment more practical? We need ways of carrying out practical assessments based on a conceptual framework and ways of applying theoretical aspects of economics.

Helena Naber (World Bank): What are the perceived gaps in the use of EV?

Sue Miller-Taei? (CI): Focus on EV of MPA resources/ecosystem services has sidetracked the need to identify what types of applied science and economic tools can support MPA planning and management (and sustainable financing). We should also investigate how EV could contribute to adaptation to climate change, e.g. by evaluating the contribution of MPAs to adaptation to climate change impacts?

Pip Cohen (WFC): How can we mobilize economic information, who are the audiences we are targeting and how can they be reached?

Allison Perry (WFC): How can economic tools best take account of the types of changes we will see as a result of changes in larger drivers?

Nicolas Rinck (South Province New Caledonia): EV is part of the decision-making process in New Caledonia. We need to look for tools to support better management of reefs.

Lo Sivo (CI): We need to identify the usefulness of EV to PICTs especially Fiji, and how can EV be useful in MPA planning?

Dawn Gibson (USP): How can MPAs provide benefits to coastal communities in relation to tourism?

Bill Aalbersberg (USP-IAS): How can we gather information that's useful for community members? In the Pacific context social relationships are more important than money. How do we monitor happiness that is not related to money? How can non-monetary values be incorporated in valuation?

Kenneth MacKay (USP/IMR): Are there indicators that we can use that integrate a series of benefits, instead of using complex EV?

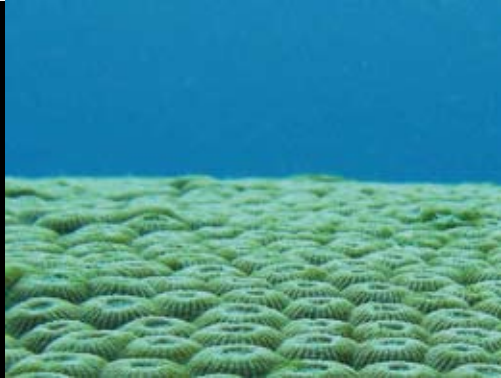
Allison Woodruff (SOPAC): Which organizations are involved in conducting EV, and how have they contributed to improved resource management in PICTs?

Angela Ambroz (SOPAC): How do we deal with the lack of data in the region?

Nicholas Conner (WCPA): How we can identify those people who make resource management decisions and how can we provide them with suitable information to help them to make more informed choices?

Marita Manley (SPC Suva): The new Pacific Environmental Economists Network should be expanded to be a repository for data that have been used in economic assessments and could be used in future studies. Methodological issues need to be discussed.

Nicolas Pascal (Consultant): What are PICT people's expectations about EV?



## Executive summary

A five-day international workshop was held in Suva from the 26th to 30th of May 2008 in order to discuss the use of economic tools in coral reef management and, more specifically, to support the design and management of marine protected areas (MPAs) in Pacific Countries and Territories. The workshop was organized by the Coral Reef InitiativeS for the Pacific (CRISP), IUCN and SPREP.

Thirty participants attended the workshop, including key stakeholders involved in economics and marine conservation in the Pacific. Conservation International, FSPI, IRD, PIFS, SOPAC, SPC, USP, WorldFish Center, World Bank and government from Australia and New Caledonia were represented.

### Structure of workshop

Presentations focused on five main themes:

- understanding the special circumstances of Pacific MPAs and the role economists could play in MPA planning and management;
- issues relating to the use of different economic assessment and valuation approaches in the Pacific;
- identifying specific economic assessment and valuation approaches which could be used in the Pacific;
- exploring potential MPA financing initiatives; and
- proposing potential case studies in Pacific Island Countries and Territories (PICTs) where economic instruments could be tested and applied.

Specific economic approaches discussed during the workshop included the use of contingent valuation techniques to assess the non-use values of marine resources in Fiji, the use of input-output analysis to assess the local economic impact of the creation of MPAs in New South Wales (Australia), the design of a payment system for ecosystem services for MPAs in Vietnam, the application of cost-effectiveness analysis for Pacific Locally Managed Marine Areas (LMMAs), the use of cost-benefit analysis for natural resource management decision-making, and implementation of the Phoenix Islands Protected Area (PIPA) endowment financing scheme.

### Issues in using environmental/resource economics in the Pacific

One of the early observations from the workshop was the recognition that very few economic studies on coral reefs ecosystems or MPA initiatives have been carried out in the region to date. What work has been carried out appears to have had little influence on decision-making affecting MPA planning and management.

One of the reasons suggested for this dearth of studies may be the difficulty of applying conventional economic assessment approaches to the particular features and circumstances of MPAs in the region. For example, in contrast to the relatively

large MPAs managed and financed by central government agencies in many countries, most of the four hundred MPAs in the Pacific are managed through community-based management approaches; small in size, they have food security and livelihood as a priority concern and reflect high cultural diversity and complex customary resource tenure situations. One other common factor among MPAs/MMAs in the region identified by workshop participants was the generally low level of national Government funding for MPA/MMA establishment and management.

### Improving the relevance of economic assessment in the Pacific

Several points have been identified by participants to help improve the relevance of economic analysis to Pacific circumstances and to encourage the use of economics in natural resource policy and decision making in the region. Specific recommendations about methods adapted to local context, valuation priorities and sources of data were described. A focus has been made about simplified approaches for small scale MMA evaluations. The importance of welfare distribution analysis and economic tools to support property rights or customary tenure arrangements has been recognized.

### Case studies

The workshop participants selected twelve case studies where economic approaches including economic valuation, could be usefully carried out. These case studies covered the creation and sustainable management of MMAs, as well as the application of local studies to regional contexts.

Limited project funding will be made available through the workshop organizers (CRISP, IUCN and SPREP), and it is proposed that these agencies will develop partnerships with other agencies for co-funding of the case studies. New, and other interested, parties will be invited to participate in the funding of these projects.

### Next steps

Three priority activities were identified as the next steps to follow the workshop:

- Develop regional capacity in environmental/resource economics.
- Implement a robust framework for economic valuation of ecosystem services.
- Devote increased communication effort to demonstrating the usefulness of economic assessment to policy and decision makers.

Completion of the proposed case studies will be a key element in addressing these three priorities.