ISSN 0377 – 452 X

REPORT OF MEETING

SPC Regional Policy Meeting on Coastal Fisheries Management

(Nadi, Fiji Islands, 17-21 March 2003)

SECRETARIAT OF THE PACIFIC COMMUNITY
NOUMEA (NEW CALEDONIA)

SECRETARIAT OF THE PACIFIC COMMUNITY

SPC REGIONAL POLICY MEETING ON COASTAL FISHERIES MANAGEMENT
(Nadi, Fiji Islands, 17-21 March 2003)

REPORT OF MEETING

Noumea, New Caledonia
2003

Original text: English

Secretariat of the Pacific Community Cataloguing-in-publication data

SPC Regional Policy Meeting on Coastal Fisheries Management (Nadi, Fiji Islands : 17-21 March 2003)

(Report of Meeting / Secretariat of the Pacific Community)

1.Fisheries management—Congresses—Oceania. 2. Fisheries management—Oceania. 3. Coastal fisheries—Congresses.
I. Title II. Secretariat of the Pacific Community III. Series

SPC333.917 AACR2

ISBN 0377-452X

ACKNOWLEDGEMENT

The SPC Regional Policy Meeting on Coastal Fisheries Management was made possible through financial contributions from the following agencies and government: Secretariat of the Pacific Community (SPC), Commonwealth Secretariat, Food and Agriculture Organization of the United Nations (FAO), Western Pacific Regional Fisheries Management Council (WPRFMC), and the Government of France.

AUTHORS

1. Dr Michael King – Meeting consultant, 108 Esplanade Toogoom, Queensland, Australia
2. Ueta Fa'asili – Meeting Coordinator/Fisheries Management Adviser, Secretariat of the Pacific Community, BP D5, 9884 Noumex Cedex, New Caledonia.
3. Semisi Fakahau – Chief Programme Officer, Special Advisory Services Division, Commonwealth Secretariat, Marlborough House, Pall Mall, London, United Kingdom SW1Y 5HX

Preparation of this report benefited from the inputs of several SPC staff including Aliti Vunisea and Helene Lecomte.
The authors are grateful for their contributions.

Prepared for publication and printed at the
Secretariat of the Pacific Community headquarters
Noumea, New Caledonia, 2003

CONTENTS

Acknowledgement ..... **ii**

I. BACKGROUND TO THE MEETING **1**

II. MEETING AIM AND METHODOLOGY **3**

Table 1: Questionnaire form 3

III. MEETING SUMMARY REPORT **5**

Table 2: Summary of problems in coastal fisheries management 5

Table 3: Key problems in coastal fisheries management Results from respondents to the questionnaire 13

Table 4. Solutions and proposed actions from working groups 14

Table 5. Training and assistance requested by participants 16

IV. RECOMMENDATIONS FROM THE MEETING **17**

V. PROGRAMME FOR THE MEETING **19**

VI. PARTICIPANTS, RESOURCE PEOPLE AND SPC ATTENDEES **23**

VII. PAPERS PRESENTED AS ANNEXES **33**

ACRONYMS

CBFM	community-based Fisheries Management
CFP	Coastal Fisheries Programme
CMT	customary marine tenure
CSPOD	Canada-South Pacific Ocean Development
FAD	fish aggregation device
FAO	Food and Agriculture Organization of the United Nations; IO, HQ in Rome, Italy
FLMMA	Fiji Locally Managed Marine Areas
HRD	human resources development
IWP	International Water Programme
MPA	marine protected areas
NGO	Non-governmental Organisation
NMFS	National Marine Fisheries Service
SPC	Secretariat of the Pacific Community
SPREP	South Pacific Regional Environment Programme
WPRFMC	Western Pacific Regional Fishery Management Council

I. BACKGROUND TO THE MEETING

The meeting was held in response to a recommendation from member countries and territories at the second Heads of Fisheries meeting in July, 2001. The meeting agreed that it would be "timely to have a broadly based regional consultation or workshop on community-based management of Pacific Island coastal fisheries." The deliberations and outputs of the policy meeting will become a fundamental part of the SPC Coastal Fisheries Programme's strategic plan and thus directly shape the activities and outputs of the newly-formed Fisheries Management Section.

The meeting was also to provide a basis for a field study in selected Pacific Island countries to assist fisheries agencies review their capacity to address the problems identified. Finally, all information from the meeting and field study will be used to adapt the work plan and outputs of SPC's Fisheries Management Section to ensure that these accurately reflect the needs of member countries and territories.

II. MEETING AIM AND METHODOLOGY

The aim of the meeting was to develop strategies to ensure the sustainable development and management of coastal fisheries in Pacific Island states. The meeting was held to provide a forum for country representatives to address common problems in coastal fisheries and suggest how the SPC Coastal Fisheries Programme and other agencies can assist countries in taking remedial actions.

The methodology included obtaining pre-meeting information on key problems from country representatives through a questionnaire (Table 1). The results were collated as a summary of key problems in coastal fisheries management. At the meeting, participants and resource people shared experiences and participants used problem-solution tree techniques to develop strategies to address the common problems identified.

Table 1: Questionnaire form

Coastal Fisheries Management Meeting Questionnaire

Please list as many as four key problems relating to coastal fisheries in your country. Discuss these widely with work colleagues and fishers so that it is generally agreed that the four problems listed are the most important ones. Problems may include fisheries issues relating to overexploitation, use of destructive fishing methods, habitat destruction, data collection, fisheries regulations and enforcement etc. These suggestions are not meant to be restrictive – the problems can include fisheries and environmental issues – or anything that affects coastal fisheries in your country. For each key problem identified, follow the procedure suggested below, entering details on the four parts of the form.

1) Determine a key problem.
2) List the negative effects of the problem (on the fish stock, community, etc).
3) List possible solutions to the problem.
4) List sustained and practical activities that could be taken to address the problem.
5) Finally, you should indicate whether or not you want to make a short (ten minute) statement or presentation on this problem. It is not necessary to give a presentation – your contribution will be taken into account in summaries prepared by SPC and resource staff.

The above problem/solution procedure is described in the SPC manual "Fisheries Management by Communities". Please fax, email or post the completed form to Ueta Faasili at SPC.

NAME …… **COUNTRY** ……..……

ORGANISATION …… **POSITION** ……..

Key problem 1: ……

Effects of problem: ……

Causes of problem: ……..……

Possible solutions: ……..……..……

Proposed actions: …….

……

Do you wish to make a presentation on the above problem? YES NO (circle one)

The above section (between dashed lines) was repeated four times in the form.

III. MEETING SUMMARY REPORT

3.1. Background - setting the scene

The Permanent Secretary for the Public Commission in Fiji Islands, Ratu Tui Cavuilati, gave the opening address *(Paper No.1).* Ratu Tui summarised the importance of the inshore fishery and the many changes affecting marine resources within the coastal zone. He stressed the importance of research and management of inshore fisheries. Coastal populations in the Pacific depend heavily on coastal resources for both subsistence and economic reasons; thus the sustainable use and management of resources within the zone is of vital importance. Many attempts at resource management at the community level exist within the countries of the region and there is a need to support work done by organisations, NGOs and agencies in this area. Governments have not always been proactive in the management of coastal fisheries and therefore the meeting is a timely one to put in place strategies to address problems and factors that affect the sustainability of fisheries in the coastal zone.

The Director of Fisheries in Fiji Islands, Mr Maciu Lagabalavu, was nominated to chair the meeting. Mr Ueta Fa'asili, the SPC Fisheries Management Adviser and coordinator of the meeting, provided an introduction to the programme (programme in Section 5).

SPC's Director of Marine Resources, Dr Tim Adams presented a paper on the need for a long-term regional strategy on coastal fisheries management (*Paper No.2).* He provided a summary of the aims and objectives of the workshop. The goal of SPC's Coastal Fisheries Programme (CFP) is that "the long-term social and economic value of small-scale fisheries and aquatic living resource use in the Pacific is optimised." The CFP (as a support and advisory body) can only work with member states to achieve this goal. It is therefore most important that this meeting provide clear guidelines on actions that must be taken and, perhaps develop a regional toolbox of methods, to solve fisheries management problems.

3.2. Key problems in coastal fisheries management

The meeting consultant, Dr Mike King, presented a summary of fisheries management problems and effects based on data from the questionnaire survey (*Paper No.3).* Problems in coastal fisheries, identified by respondents to the questionnaire, are listed in Table 2 in order of decreasing importance (based on the percentage of countries nominating the problem as important). Full details of the survey are summarised in Table 3 of this report.

Table 2: Summary of problems in coastal fisheries management

Overexploitation of marine species	78%
Inadequate or outdated fisheries regulations	50%
Inadequate enforcement of fisheries regulations	50%
Lack of capacity in the country (e.g. in stock assessment, data collection)	50%
Destructive fishing methods (e.g. explosives, breaking coral)	39%
Overly efficient fishing methods (e.g. night diving, small mesh nets, scuba)	22%
Overlap between national/provincial/island responsibilities	17%
Shift from subsistence to commercial fishing	11%
Ciguatera fish poisoning	11%
Illegal fishing by foreign vessels	6%

In addition to the above, respondents noted problems associated with the pollution or degradation of wetlands and coastal zones. Of these, siltation, eutrophication and uncontrolled or excessive coastal development were prominent (see spreadsheet summary in Table 3).

3.3. How well are national fisheries agencies equipped to manage coastal fisheries?

Mr Semisi Fakahau, Chief Programme Officer, Commonwealth Secretariat, presented a paper and discussion on how participants in the fisheries sector are empowered to manage coastal fisheries effectively (*Papers No.4 and 5).*

Mr Fakahau said that one of the major deficiencies in fisheries management in the region and other areas of the world was in the involvement of people who own and use the resources. More emphasis went to the economic and scientific aspects of fisheries management but less to the social aspects. The Commonwealth Secretariat fisheries programme puts more emphasis on the social aspects of fisheries management through capacity development in the coastal small-scale fisheries sub-sector. It uses the human resources development (HRD) approach to ensure the effective participation of owners and users of coastal fishery resources in their management. In Lake Victoria, the HRD approach is applied to the whole fisheries sector, whereas in Tonga it is applied only to one institution (the Ministry of Fisheries) in the fisheries sector. The following points summarise the presentation and the following wide discussion on the topic.

- Capacity building (particularly in resource management) is needed and should be addressed at the sectoral level.
- For community capacity building there is a need for long-term projects (more than two years), and donors should cooperate to cater for this.
- Effective coastal management can only be achieved if capacity building is first addressed through H.R.D.
- Need to take into account customary and cultural issues in the planning process of coastal fisheries management and development projects.
- In the absence of capacity building there are likely to be problems with the sustainability and continuity of projects.
- Training needs should be properly analysed or assessed before training takes place.

3.4. The collection and use of fisheries statistics

Mr Masanami Izumi, FAO Fishery Officer, presented a paper on the use of fisheries statistics in the management of coastal and subsistence fisheries (*Paper No.6).* He emphasised the importance of involving communities in data collection and said that training in statistics and data collection is a major need. Although FAO does not have training programmes, specific requests in this area could be considered.

Ms Josie Perez, National Statistics Office from the Philippines, presented a paper on fishery data collection systems development in agriculture censuses in Pacific Island countries. She provided examples of fisheries statistics and data gathered from agriculture censuses. A major challenge is how data already collected in countries (in censuses) can be used for practical management purposes.

In the discussions that followed, many countries emphasised the need for data collection and survey training. A point was also raised by Niue regarding the impracticality of running large-scale data collection surveys on smaller islands with staffing constraints. There is a need for a tool box of methods for both small and large islands. The consultant suggested that there are alternative methods of data collection including the use of senior high school students in keeping log-book records. The meeting made the following recommendation.

Recommendation 1. It is recommended that SPC examine ways to assist countries in collecting inshore fisheries data and developing a statistical data storage system with special emphasis on national fisheries agencies with small numbers of personnel.

A second recommendation was made regarding statistical training and later amended to include the provision of advice on the use of data for fisheries management.

Recommendation 2. It is recommended that SPC identify resources to conduct training on statistics and data collection. In addition SPC provide advice on the use of these data for fisheries management.

Mr David Hamm, NMFS, Honolulu, described the collection of data and fishery statistics in the US Pacific islands (*Paper No.7).* The provision of quality fisheries data on a timely basis is regarded as very important for management purposes.

Types of surveys applicable to subsistence fisheries were discussed and Etuati Ropeti, of the Fisheries Division, Samoa presented findings of a national subsistence survey in Samoa.

Dr Tim Adams presented a paper describing how regional organizations can assist with the development of national databases (*Paper No.8*). He said that it is impossible to develop a detailed database similar to that for tuna fisheries for subsistence or village fisheries. For such fisheries, agencies should move away from data-hungry intensive fisheries management. However, there is still a need for some statistics. Discussions centred around the need for training and information on statistics and data collection as well as for PROCFISH to train people in-country to allow for continuity. The need to empower communities to conduct monitoring and to allow for information transfer back to the people was also discussed. Discussion resulted in the following recommendations.

Recommendation 3. It is recommended that SPC conduct socioeconomic surveys in countries that have MPAs to determine if there are differences between areas with MPAs and areas without MPAs.

3.5. National regulations applied to coastal fisheries

The session on fisheries regulations began with a presentation by Transform Aqorau, Legal Counsel at the Forum Fisheries Agency, on national regulations applied to coastal fisheries (*Paper No.9).* He advised the meeting that FFA is obliged to address issues relating to highly migratory fish stocks and is not able to assist island countries in legal aspects relating to their coastal fisheries resources. He advised that coastal fisheries legislation is a complex issue in its own right and justifies the development of legal services within SPC.

There is the general perception of resources as income. He stressed the importance of understanding existing legislation and how this relates to community-based fisheries activities and use. There was a discussion on the possibility of SPC conducting awareness workshops and learning materials in this area. SPC does not have a legal framework, but national governments could use their own legislation and existing by-laws.

Recommendation 4. It is recommended that SPC establish a legal service to respond to requests from island countries for assistance in legislation related to coastal fisheries.

A paper on the application and enforcement of fisheries regulations was given by Dr Mike King (*Paper No.10).* The presentation suggested several points that could be considered by participants.

- Difficulties of enforcement: Are there alternatives to costly government enforcement (e.g. community-based fisheries management and enforcement)?
- Are there ways of simplifying enforcement?: Is there value in concentrating enforcement on those marketing fish rather than on those catching them, for example.
- Application of minimum size limits: Would it assist countries to have a register and guide to recommended minimum sizes for say the 30 most important inshore species?
- Public awareness: What can be done in this are? Could an agency such as SPC assist with publicity material on the need to manage inshore fisheries and apply regulations?

Discussions included the possibility of harmonizing legislation and regulations. There are difficulties because of the complexities within countries and communities. One suggestion was to decentralise, rather than centralise regulations, and make use of island councils, etc.

It was also suggested that maximum size limits as well as minimum size limits should be considered. Also, as size limits already exist, the challenge is in enforcing these regulations. There was also a need for community awareness and public awareness in general concerning regulations.

Recommendation 5. It is recommended that SPC document and recommend regional size limits for important species to help countries in the preparation of regulations.

Another problem is that, in many cases, fisheries officers were also enforcement officers. The need for enforcement and awareness work on legislation was supported by many countries.

Recommendation 6. It is recommended that SPC develop non-technical publicity material to be used to assist countries in raising public awareness on the need for fisheries management and fisheries regulations.

Participants raised the possibility of SPC engaging a consultant to review legislation, which was outdated in most countries. Mr Fakahau suggested that there was a need for simplifying the words used in regulations so that these could be understood at the community level. This reflects the tendency to focus too much on scientific and economic factors and not enough on the people that use the resources.

Samoa suggested that there was a real need for prosecution in fisheries in order to provide a strong message to the public. The Director of Marine Resources, Dr Tim Adams, agreed to look at issues raised in relation to enforcement and legislation.

3.6. The involvement of fishing communities in coastal fisheries management

A session on the involvement of communities in coastal fisheries management was introduced by Dr Mike King (*Paper No.11).* One way to ensure that subsistence or village fisheries are sustainable is for fisheries agencies to encourage and support fishing communities to manage their own fisheries resources. In this case, the community is encouraged to define its own problems with fish stocks and the marine environment and propose solutions to these problems. The community sets its own conservation rules, and it (rather than the government) has a responsibility to enforce them.

American Samoa suggested that it was important to include other organizations and stakeholders in the community-based management process. Niue requested that the challenges and failures of community-based management initiatives be discussed and shared. Tuvalu raised the time period required before a community can successfully manage its fisheries resources.

Participants also discussed alternative sources of seafood and income that could be offered to communities when management plans, including MPAs were put in place. Alternatives suggested included the provision of FADS and this should be supported by SPC.

3.7. Country experiences in the involvement of communities

Several countries provided details of their experiences with the involvement of communities in fisheries management.

- Marshall Islands - Terry Keju briefed the meeting on Marshall Islands' project and outlined some of the challenges faced (*Paper No.12*).
- Fiji (FLMMA) - Alifereti Bogiva, gave a brief summary of the approach and process used by FLMMA in community-based management in Fiji.
- Niue (International Waters Programme) - Sione Leolahi Explained the process and objectives of their project. Concerns were a very low input from the young people and the belief that participation should be compensated *(Paper No.13*).
- Cook Islands (raui System) - Nooroa Roi described the system that is based on tradition and respect and does not rely on having any legislation in place *(Paper No.15).*
- American Samoa - Fatima Sauafea emphasised that differences in economies and lifestyle can affect the management process and the degree of success. She suggested how to get more participatory motivation. One of the main problems encountered was with the time schedule set and the inability of communities to meet this *(Paper No.14).*
- Samoa - Etuati Ropeti said that the success in Samoa was due to concerted effort, monitoring, and consistent checks on the programme at the ground level.
- Solomon Islands - Kenneth Bulehite described the SPREP/IWP programme that is still in its initial stages *(Paper No.16).*
- Vanuatu - Graham Nihomo provided a summary of the management projects in Vanuatu and challenges faced. Conflict of legislation, responsibilities between customary and administration, and lack of capacity to enforce fisheries regulations were major problems.

Participants praised the initiatives on community-based management in the region and believed that there was a move from culture as a “hindrance” into a tool that can be used in fisheries management. Mr Semisi Fakahau noted that there is also a need for publicity material on all the good work that has been done in the Pacific region as most available materials are from outside the region.

Nauru suggested that for countries like theirs, there was more a need for co-management given the small land areas and overlap in responsibilities of the different government departments and agencies. Especially since the country lacks community structures.

Samoa stated that, at this stage, some problems have begun to emerge in the Fisheries Management programme. These included people fishing within management areas and the programme now becoming a political tool where some of the projects had strongest support around election periods. An additional problem was related to sustaining people's interest especially when CBFM does not produce immediate benefits.

There was a need for training in data collection at all levels and the possibility of developing a simple, region-wide method of surveying subsistence fisheries and a database system to store information was required. There was also a need for awareness materials to be developed by SPC for the use of all countries.

Recommendation 7. It is recommended that SPC assist in the development of national community programmes for the management of coastal fisheries resources

3.8. Gender issues in the management of coastal fisheries

A presentation on gender issues in coastal fisheries management was given by Aliti Vunisea of SPC. *(Paper No 17*) This was discussed as an issue that has to be considered in all levels of coastal fisheries management. It was argued that women are better managers and the possibility of considering women taking over management initiatives in the future should be considered. There was a need to consider ways to address the added responsibilities that women face in their involvement in the traditional and market economy, taking on dual- and triple-day programmes.

Discussion included the suggestion by Mike King that women had a longer-term (or inter-generational) view of conservation than men who were more concerned about obtaining seafood on a daily basis - the inclusion of women in coastal management was therefore vital.

3.9. Customary marine tenure (CMT) and the empowerment of communities

SPC Fisheries Management Adviser, Mr Ueta Fa'asili, introduced the session on Customary Marine Tenure and the empowerment of communities *(Paper No 18).*

Etuati Ropeti discussed the process of empowerment of Samoan communities to manage coastal fisheries. Alifereti Bogiva gave examples of customary marine tenure in Fiji (*Paper No 19)* and Tevita Latu gave the example of Tonga *(Paper No.20*) written with Marc Wilson).

Mr Blaise Kuemlangan presented a paper on the empowering coastal fishing communities (*Paper No.21).* Discussions suggested that proper legislation could assist in enforcement. Because of issues that face fisheries agencies there is the question whether the legislation in place is sufficient to address new problems. This supported a proposal that SPC assist in legislation formulation. There is also a need to work on by-laws for countries with community-based programmes. Dr Ken MacKay provided information on MPRs in countries and their system of management.

3.10. SPC work related to the management of coastal fisheries

There were several presentations on SPC work related to the management of coastal fisheries. SPC's Principal Scientist, Mr Pierre Labrosse, discussed the work of PROCFISH focussing on the collection of statistics. The Community Scientist, Dr Mecki Kronen, presented a paper on socio-economic data *(Paper No.22).*

SPC's Fisheries Development Officer, Mr Steve Beverly, presented a paper on outer-reef slope fisheries and the use of FADs *(Paper No.23).* Following the presentation, both Tokelau and Palau requested to be considered for the introduction of FADs.

Aquaculture Adviser, Mr Ben Ponia, presented a paper on SPC's work in aquaculture (*Paper No.24).* Following the presentation, Palau suggested that SPC and FAO examine the potential for aquaculture in member countries; Solomon Islands requested training assistance in prawn farming.

SPC's Senior Scientist, Mr Being Yeeting, gave a presentation on the live food fish and aquarium fish trade as community projects. He also discussed a live fishery management plan endorsed at a recent meeting.

3.11. Organisations, donors and NGO involved in fisheries management.

Mr Masanami Izumi, FAO Fishery Officer, gave a presentation on the work of FAO in relation to fisheries and emphasized FAO's major meeting schedule in 2003 *(Paper No.25).*

Mr Walter Ikehara of the Western Pacific Regional Fisheries Management Council (WPRFMC) gave a presentation on the work of the council in US Pacific islands *(Paper No.26).* Ms Michel Lam presented the work of the Marine Aquarium Council in relation to the aquarium fish trade *(Paper No.27).* Dr Warwick Nash gave a presentation on the role of the WorldFish Center based at SPC *(Paper No.28).*

Ms Sophia Bettencourt of the World Bank gave a presentation on the initiatives of World bank around the region and its work in coastal area management.. Ms Paula Holland of the International Waters Programme summarised the aims, objectives and processes used in the programme *(Paper No.29).* The programme is still in its implementation stages. Ms Mary Powers gave a presentation on SPREP's coastal management activities.

Dr Kenneth McKay described the work of CSPOD and discussed the main development issues areas to consider when applying for funding *(Paper No.30).*

It is necessary to create opportunities for younger qualified people and perhaps regional organizations such as SPC and SPREP could look at opportunities. Priorities have to be decided by the countries. If training is seen as a major need, then countries should request this. Training opportunities can also be through attachments to other countries. For example, those in new community-based systems can be trained and taught through work with other fisheries agencies involved in CBFM.

Mr Ed Peek presented a brief summary of points to consider when formulating a proposal *(Paper No.31).* He emphasised the need to keep to the development priorities of the day and address issues that donors would like to see included in the projects they fund. The importance of keeping in mind that project implementation and management initiatives is a two way process between the donors and the communities. There should always be room allowed for flexibility. It is also important that success should not be measured during implementation of the project but after the completion of external assistance for the project.

3.12. Problem-solution tree analyses

A presentation on the use of problem-solution trees in solving problems related to coastal fisheries management was given by Mike King (*Paper No.32).*

3.13. Group discussions to formulate action plans

Participants were separated into four groups to address the problems summarised in the results of the questionnaire survey (given in Table 3). In the group meetings, participants discussed effects and causes for each problem before suggesting solutions and related remedial activities.

3.14. Presentation of group results

A nominated person from each working group presented their group's plan, including solutions and suggested actions to address each problem.

3.15. Summary of actions for the management of coastal fisheries

The working group results were collated and summarized (Table 4) before being presented back to the meeting by Mike King for further discussion.

A survey form produced a summary of training and assistance required by individual countries and territories (Table 5).

Final discussions were wide ranging and resulted in several recommendations. American Samoa believed that community representatives should be given an opportunity to participate at the Heads of Fisheries meeting. The response from SPC was that countries could look at the possibility of including community representation in their delegation.

There was also a recommendation that any future work of the coastal management section should include capacity building. This should involve attachments to SPC and to other countries with management initiatives in place. In summary the recommendations were as follows.

Recommendation 8. It is recommended that SPC's Coastal Fisheries Management section should assist with capacity building through attachments of island nationals.

Other discussions by participants centred on the prioritization of SPC activities and resulted in the following recommendations.

Recommendation 9. It is recommended that activities of SPC's Coastal Fisheries Management section should not be prioritized as countries have different levels of activities which may not accurately be reflected if prioritized.

Recommendation 10. It is recommended that SPC's Coastal Fisheries Management section coordinate its activities with the aquaculture, FAD, and artificial reef programmes to promote these as alternatives to existing coastal fisheries.

Recommendation 11. It is recommended that SPC establish a framework for the implementation of the enforcement of coastal fisheries regulations.

There was a discussion on the time frame of the proposed field study of the Coastal Fisheries Management section and the report of this meeting. Mr Fa'asili replied that the report and the final draft of the field study will be completed before the Heads of Fisheries meeting in August.

The meeting was closed by Dr Tim Adams, who assured participants that SPC will produce the draft report of the meeting within the next two weeks. All information from the meeting will be used to adapt the work plan and outputs of the SPC's Coastal Fisheries Management section to ensure that it accurately reflect the needs of member countries and territories.

Table 3: Key problems in coastal fisheries management Results from respondents to the questionnaire

KEY PROBLEM	Associated problems (causes?)	A.Samoa	Cook Islands	FSMicronesia	Guam	Fiji	Kiribati	Marshall Islands	Nauru	Niue	N.Marianas	Palau	PNG	Samoa	Solomon Islands	Tokelau	Tonga	Tuvalu	Vanuatu	# of countries	% of countries	Proposed solutions
delining	1a) inadequate or outdated fisheries regulations			■					■	■		■								4	22	revise regulations; zones; bylaws? SPC
fish	1b) non-compliance; poor enforcement of regulations				■	■		■	■	■		■							■	7	39	better awareness, enforcement; CBFM?
catches	1c) overlap between national, provincial, island councils						■						■						■	3	17	review legislation; collaboration; conflict resolution
	2) illegal fishing by foreign vessels											■								1	6	increased enforcement, penalties, confiscation
	3) overexploitation; overfishing; excessive fishing effort	■	■	■		■	■		■	■	■	■		■	■	■		■	■	14	78	management plans, regulations, CBFM, MPAs
	4a) overly efficient methods - night-diving with lights																■			1	6	ban or restrict use of lights for uw fishing
	4b) overly efficient methods - small mesh nets,				■				■								■			3	17	regulations; licenses for nets
	4c) overly efficient methods - hookahs, scuba,														■					1	6	resrict or ban use of SCUBA/hookah
	5a) destructive fishing methods - poisons, explosives	■		■		■								■	■		■			6	33	increase awareness and fines; use CBFM
	5b) destructive fishing - dredges, breaking coral, others						■								■					2	11	ban or restrict use of dredges
	6) shift from subsistence to commercial fishing				■														■	2	11	licenses for commercial fishing; FADs
	7) ciguatera fish poisoning									■						■				2	11	decrease pollution, protect habitats?
	8a) lack of agency capacity (res. mapping, assessment)		■					■	■			■	■					■	■	7	39	training for staff; socioeconomic data; HRD; SPC
	8b) lack of agency capacity (data collection etc)		■					■	■	■		■	■			■		■		8	44	training; database; use of schools; SPC
degradation	1) degradation, poor land management, siltation	■		■	■	■	■					■								6	33	restrict forestry, agriculture near rivers
of marine	2) sewage; water run-off				■					■	■			■						4	22	drainage improvement;
environment	3) fertilizers, pesticides, organic pollutants				■							■		■						3	17	restrictions on use; guidelines for disposal
including	4a) waste disposal; rubbish tips							■		■				■						3	17	waste management plan; awareness
coral	4b) disposal of oil products										■									1	6	improve oil waste management (recycling?)
reefs	5) alien and invasive species										■									1	6	controls on imports
	6a) uncontrolled or excessive coastal development		■								■			■						3	17	zoning; balanced development; EIAs; reserves?
	6b) destruction of wetlands, mangroves										■			■						2	11	restore wetlands; mangrove planting; CBFM
	6c) over-use of coastal zone; increasing tourism				■					■										2	11	education; awareness-raising
NOTES																				18		<< number of countries responding

Many questionnaire respondants listed "causes" of a problem rather than the "Key problem" itself; these are listed in column two of the above summary
For example, "shift from subsistence to commercial fishing" may be the cause of the more important (or key) problem of "declining fish catches"
KEY: MPA = Marine Protected Area; CBFM = Community-based Fisheries Management; SPC = assistance requested from SPC

Table 4. Solutions and proposed actions from working groups

Key Problem	Associated problems or causes	Solutions	Actions Phase 1	Phase 2	Phase 3	Phase 4
Fisheries-related problems						
1a) inadequate or outdated fisheries regulations	a) no capacity to review laws b) laws culturally insensitive c) lack of political support d) value of fisheries not appreciated	a) increase capacity b) review laws c) education, awareness. d) assess value of fisheries	a) Discussions with line agencies. b) Assessment of effect of outdated regulations. c) Awareness building d) awareness programmes	a) Identify capacity needs Consultation with government	a) Development/application Consultation with agencies on change in regulations	a) Implementation
1b) non-compliance; poor enforcement of regulations	a) high cost of enforcement b) penalties too low c) courts do not prosecute d) lack understanding of law	a) Reduce costs b) Amend legislation c) on-the-spot fines d) public awareness prog.	a) Increase budget allocat. c) reduce process time d) training/workshop	a) Coordinate withother agencies c) reduce to minor contravention	a) Public awareness	a) request assistance
2) illegal fishing by foreign vessels	a) Captain's ignorance b) Limited surveillance capacity b) commercial demands or motives c) No licenses or permits	a) educate the captains coupled with strong fines b) improve awareness and increase surveillance capabilities and awareness c) issue licenses and permits nationally/regionally	communicate to boat owners (through flag state) fishing access requirements and EEZ delimitations.	Request assistance from FFA		
3) overexploitation; overfishing; excessive fishing effort	a) lack of management plans b)technological changes c) high dependency on resource	a) prepare management plans b) apply regulations c) decrease dependency	a) establish MPAs with monitoring/enforcement b) improve enforcement c) increase awareness	a) apply regulations b) restrict some gear c) stock enhancement	a) improve legislation c) examine alternative	c) FADs, aquaculture
4a) overly efficient fishing methods - night-diving with lights	a) Requirements for income b) Minimum fine & cost c) Restore traditional fishing	a) find alternatives b) Apply regulations c) Apply regulations	a) training in other methods b) consult with stakeholders c) consult with stakeholders	a) eg - introduce FADs b) develop enforcement c) enforcement	Public awareness materials	Enhance community participation
4b) overly efficient fishing methods - small mesh nets,	a) Over- harvesting b) Technology improvement c) Loss of breeding stocks	a) Improve regulations b) Improve regulations c) seek SPC assistance	a) Moratorium b) Legislation c) stock assessment	a) Stock assessment b) Awareness raising c) monitoring	a) Monitoring b) Monitoring	
4c) overly efficient fishing methods - hookahs, SCUBA,	Need to increase catch/income. Availability of diving gear	Total ban on unsuitable gear	Introduce regulations to ban use of gear	Enforce the new regulations		

5a) destructive fishing methods - poisons, explosives	Smuggling of explosives Availability of chemicals Lack of alternative fisheries	Establish rigid control Awareness campaign Create opportunities	Harsh penalties Training workshop Encourage offshore fishing (FAD program)	Secure storage sites multi-media campaigns Community aquaculture	Awareness programme Monitoring	Monitoring
5b) destructive fishing methods - dredges, breaking coral, others	a) ineffective management b) lack of awareness c) lack of alternatives	a) effective management b) increase awareness c) create opportunities	a) review existing status b) awareness campaign c) aquaculture	a) implement changes b) workshop with stakeholders c) offshore fishing (FADs)	b) publicity material	b) School curriculum
6) shift from subsistence to commercial fishing	a) technological innovation b) over-capacity	a) restrict gear & methods b) regulate capacity	a) develop regulations b) TAC, licensing, closed areas	awareness campaign	monitoring & enforcement	
7) ciguatera fish poisoning	a) destruction of corals by subsistence fishers, ship wrecks, channel clearing, reef blasting, sand mining And by tourists and snorkellers b) waste water, sewage	a)Reduce coral destruction b) Reduce contamination	a) Discussion with tourist associations, hotels, dive shops and construction companies b) discussions with relevant agencies	a) Prepare publicity material	a) Distribute publicity material – dive shops, airports, hotels etc	
8a) lack of agency capacity (resource mapping ,assessment	Lack of qualified staff Limited funding for training	Seek SPC/aid assistance	Conduct training programme			
8b) lack of agency capacity (data collection etc)	a) lack of qualified staff b) lack of equipment	a) upgrade staff skills b) upgrade equipment	a) develop HRD program b) develop software, IT	workshops, training	attachments; in-service trg.	scholarships
Environment-related problems						
1) degradation, poor land management, siltation						
2) sewage; water run-off	a) untreated sewage b) erosion c) bacteria	a) proper treatment b) land-use plans c) education/awareness	a) infrastructure b) stakeholder committees c) EIAs	a) water monitoring b) ICZM c) Publicity campaigns	a) contingency plans b) Awareness raising c) Monitoring	a) eg warning signs b) Monitoring
3) fertilizers, pesticides, organic pollutants	a) no controls on farming a) no management plan	a) control farming practices b) implement plan	a) discussions with farmers and fishers b) public awareness	b) media campaign		
4a) waste disposal; rubbish tips						
4b) disposal of oil products						

5) alien and invasive species	a) Lack of enforcement & quarantine b) Loss of biodiversity c) loss of native species	a) build up capacity b) removal of alien spp c) preventative measures	a) training b) Awareness/ publicity c) improve quarantine	a) interagency cooperation b) Research c) stronger legislation	a) stronger laws/penalties b) inter-agency cooperation c) Awareness raising	a) Monitoring b) Monitoring c) Monitoring
6a) uncontrolled or excessive coastal development	a) soil erosion b) weak legislation c) loss of habitat	a) land use manag. plan b) strengthen legislation c) mangrove reseeding	a) Stakeholder committees b) request assistance c) ICZM	a) ICZM b) New controls/laws c) MPAs	a) public awareness camp. b) public awareness camp c) reef reseeding	a) monitoring b) monitoring c) monitoring
6b) destruction of wetlands, mangroves	Excessive development	Rehabilitation (replanting?)	Install requirement for EIAs			
6c) over-use of coastal zone; increasing tourism						

Table 5. Training and assistance requested by participants**.** Numbers represent each country's rating of importance (1 = high priority)

SERVICES TO BE PROVIDED	**COUNTRIES**															
	*0 Am. Samoa	Cook Islands	FSM	Fiji	Kiribati	*1 Marsahll Is	Nauru	Niue	CNMI	Palau	*2 PNG	Samoa	Solomon Is	*3 Tokelau	Tonga	Tuvalu	Vanuatu
Legislation	3	6	1	6	5	4	5	6	2	3		2	6	6	7	6	5
Stock Assessment	6	3	4	4	3	2	6	5	1	2	1	3	4	4	4	1	4
Minimum size limits		7	7	5	4		7	7	3	1		4	5		6	8	7
Coastal Fisheries Management plans	2	4	2	1	6		4	2	4	4		6	3	7	3	4	6
Statistics	4	1	3		1	1	2	1	7	5	4	1	7	2	2	2	2
CBFMP	1	5	6	7	7		3	3	6	6	3	5	2	1	5	3	1
Training	5	3	5	2	2	3	1	4	5	7		3	1	5	1	5	3

*0- 4th rating was given to Enforcement
*1- Ask Marshall about its CBFMP- not rated
*2- 2nd rating was given to Resource Mapping (fish and habitat)
*3- 3rd rating was given to ciguatera survey

IV. RECOMMENDATIONS FROM THE MEETING

Recommendation 1. It is recommended that SPC examine ways to assist countries in collecting inshore fisheries data and developing a statistical data storage system with special emphasis on national fisheries agencies with small numbers of personnel

Recommendation 2. It is recommended that SPC identify resources to conduct training on statistics and data collection. In addition it is recommended that SPC provide advice on the use of these data for fisheries management.

Recommendation 3. It is recommended that SPC conduct socioeconomic surveys in countries that have MPAs, to determine if there are differences between areas with MPAs and areas without MPAs.

Recommendation 4. It is recommended that SPC establish a legal service to respond to requests from island countries for assistance in legislation related to coastal fisheries.

Recommendation 5. It is recommended that SPC document and recommend regional size limits for important species to help countries in the preparation of regulations.

Recommendation 6. It is recommended that SPC develop non-technical publicity material to be used to assist countries in raising public awareness on the need for fisheries management and fisheries regulations.

Recommendation 7. It is recommended that SPC assist in the development of national community programmes for the management of coastal fisheries resources

Recommendation 8. It is recommended that SPC's Coastal Fisheries Management section should assist with capacity building through attachments of island nationals.

Recommendation 9. It is recommended that activities of SPC's Coastal Fisheries Management section should not be prioritized as countries have different levels of activities which may not accurately be reflected if prioritized.

Recommendation 10. It is recommended that SPC's Coastal Fisheries Management section coordinate its activities with the aquaculture, FAD, and artificial reef programmes to promote these as alternatives to existing coastal fisheries.

Recommendation 11. It is recommended that SPC establish a framework for the implementation of the enforcement of coastal fisheries regulations.

V. PROGRAMME FOR THE MEETING

8.30 am.

1. Background – setting the scene

Opening of the meeting	Ratu Tui Cavuilati P. Secretary, Fiji PSC
Election of a Chair person	U. Faasili
Introduction to the meeting and programme	U.Fa'asili
The need for a long-term regional strategy on coastal fisheries management	T.Adams

2. Key problems in coastal fisheries management

Summary of fisheries management problems and effects from questionnaire survey.	M. King
Discussion of problems and effects (some participants to expand on their questionnaire entries)	Participants

3. How well are national fisheries agencies equipped to manage coastal fisheries?

Capacity development in the coastal fisheries sub-sector	S. Fakahau
Discussion and recommendations	Participants/Chair

4. The collection and use of fisheries statistics

Introduction – the use of fisheries statistics in the management of coastal and subsistence fisheries	M. Izumi
Data collection in island countries	
- Fishery data collection system development in agriculture census in the Pacific Island countries	J. Perez
- NMFS' activities on data collection / fishery statistics in the U.S. Pacific Islands	D. Hamm
Types of surveys applicable to subsistence fisheries	
- Marshall Islands' experience	T. Keju
- Samoa's experience	E. Ropeti
How regional organisations can assist with the development of national fisheries databases.	T.Adams
Discussion and recommendations	Chair

5. National regulations applied to coastal fisheries

Legislation covering the management of coastal fisheries	T. Aqorau
The application and enforcement of fisheries regulations. Size limits to be regionalised? Is assistance required? Discussion	M. King

6. The involvement of fishing communities in coastal fisheries management

The difficulties of centralised fisheries management Community-based fisheries management (CBFM)	M. King

7. Country experiences in the involvement of communities

The Marshall Islands experience	T. Keju
The Fiji experience	A. Tawake /K. Tabunakawai
The Niue Experience	S. Leolahi
The American Samoa experience	F. Sauafea
The Cook Island experience - Raui	Nooroa Roi
The Samoa experience	E. Ropeti
The Solomon Islands experience	K. Bulehite
The Tonga experience (AusAID project)	T. Latu
Vanuatu experience	G. Nimoho

.

8. Gender issues in the management of coastal fisheries

Gender roles in coastal fishing communities	A. Vunisea
Discussion	

9. Customary marine tenure(CMT) and the empowerment of communities

Introduction; indigenous rights in coastal fisheries resources	U. Fa'asili
Legislating for empowering coastal fishing communities	B. Kuemlangan
The use of village by-laws to support community- based fisheries management in Samoa	E. Ropeti
An example of CMT from Fiji	A. Bogiva
An example of CMT from Tonga	Tevita Latu*

10. SPC work related to management of coastal fisheries

Input of Research Assessment in to Management - Social economics	P. Labrosse /M. Kronen
Outer slope fisheries	S. Beverly
Aquaculture	B. Ponia
Live food fish/ Aquarium fish as community projects	B. Yeeing

11. Organisations, donors and NGOs involved in fisheries management projects

FAO	M. Isumi
The World Bank/IUCN	S.Bettencourt
SPREP	Paula Holland
Support for fisheries management projects *(based on demand, this session may be expanded into a workshop on the preparation of proposals)*	Ed Peek
C-SPOD	K. Mackay
WPRMC	Walter Ikehara
Marine Aquarium Council	M. Lam
WorldFish Center	Warwick Nash

12. Problem /Solution tree analyses

The use of problem/solution trees in problem solving	M. King

13. Group discussion to formulate action plan

Participant groups to address key problems Causes, solutions and possible remedial actions are required for each key problem.	Participants

14. Presentation of group results

Spoke person from each group to present results	Presenters
Discussion of group results	Participants

15. Summary of actions for the management of coastal fisheries resources.

Presentation of the summary of proposed actions	U. Fa'asili/M. King
Close of meeting	T. Adams (Director of Marine Resources)

VI. PARTICIPANTS, RESOURCE PEOPLE AND SPC ATTENDEES

American Samoa

Alofa Tuaumu
Acting Deputy Director
Department of Marine and Wildlife Resources
P.O. Box 3730
96799 Pago Pago, American Samoa
Tel +684 6334456
Fax +684 6335944
E-mail dmwr@samoatelco.com

Cook Islands

Nooroa Roi
Information Officer
Ministry of Marine Resources
P.O. Box 85
Rarotonga, Cook Islands
Tel +682 28730
Fax +682 29721
E-mail rar@mmr.gov.ck

Federated States of Micronesia

Valentin Martin
Marine Resources Conservation and Management Officer
(MRCMO)
Department of Economic Affairs
PO Box PS-12
Palikir, Pohnpei
Federated States of Micronesia – FSM 96944
Phone: +691 3202620
Fax: +691 3205854/3202079
E-mail fsmrd@mail.fm fsmfisheries@mail.fsm

Fiji

Maciu Ligabalavu
Director of Fisheries
Ministry of Agriculture, Fisheries and Forestry
Fisheries Division
GPO Box 358, Suva, Fiji
Tel +679 3301611
Fax +679 3308218

Kiribati

Johnny Kirata
Acting Director
Ministry of Natural Resource Development
P.O. Box 64, Bairiki, Tarawa, Kiribati
Tel +686 28095
Fax +686 28295
E-mail Johnnyk@mnrd.ki

Marshall Islands

Danny Wase
Director
Marshall Islands Marine Resources Authority
P.O. Box 860
96960 Majuro, Marshall Islands
Tel +692 6258262
Fax +692 6255447
E-mail mimra@ntamar.com
Dannywase@yahoo.com

Nauru

Peter Jacob
Acting Chief Executive Officer
Nauru Fisheries and Marine Resources Authority
Nauru
Tel 674 44443733
Fax 674 4443812
Email peterjacob_nfmra@hotmail.com
ceo@naurufisheries.com

Niue

Brendon Pasisi
Principal Fisheries Officer
Department of Agriculture, Forestry and Fisheries
P.O. Box 79, Alofi, Niue
Tel +683 4302
Fax +683 4079
E-mail fisheries@mail.gov.nu

Northern Mariana Islands

Raymond B. Roberto
Fishery Data Manager
Division of Fish and Wildlife, Department of Land and Natural Resources (DLNR)
PO Box 10007. SAIPAN, MP 96950
Northern Mariana Islands
Tel +1670 6646000
Fax +1670 6646060
E-mail rbsdfw@itecnmi.com

Palau

Theo Isamu
Bureau of Marine Resources
P.O. Box 359
Koror, PW 96940, Palau
Tel +680 4883125
Fax +680 4883555
E-mail Theodmr@palaunet.com

Papua New Guinea

Philip Polon
Fisheries Manager - Sedentary
NFA - National Fisheries Authority
P.O. Box 2016, Port Moresby, N.C.D.
Papua New Guinea
Tel +675 3090444
Fax +675 3202061
E-mail ppolon@fisheries.gov.pg

Samoa

Tanielu Su'a
Director/Head of Samoa Fisheries
Ministry of Agriculture, Forests, Fisheries & Meteorology
P.O. Box 1874, Apia, Samoa
Tel +685 23863 (direct line)
Fax +685 24292
E-mail dansua@lesamoa.net
Samoafisheries@lesamoa.net

Solomon Islands

Sylvester Diake
Under Secretary (Ag)
Department of Fisheries and Marine Resources
Ministry of Natural Resources
P.O. Box G13, Honiara
Solomon Islands
Tel +677 38674
Fax +677 38730
E-mail sbfish@ffa.int

Tokelau

Mose Pelasio
Senior Policy Advisory Officer
(Natural Resources and environment)
Office of the Council of Faipule, Fakaoko
Tokelau
Tel +690 3127
Fax +690 3108
E-mail mose.pelasio@clear.net.nz

Tonga

Tevita Finau Latu
Senior Fisheries Officer
Ministry of Fisheries
P.O. Box 871, Nuku'alofa, Tonga
Tel +676 25629
Fax +676 23891
E-mail tevitaf@tongafish.gov.to

Tuvalu

Mr Malaki Tihala
Deputy Director
Fisheries Department
Ministry of Natural Resources
Private Mail Bag, Funafuti, Tuvalu
Tel +688 20348
Fax +688 20346
E-mail ffavms@tuvalu.tv

Vanuatu

Graham N. Nimoho
Principal Fisheries Extension Officer
Department of Fisheries
Private Mail Bag 9045/Sac postal privé 9045
Port Vila, Vanuatu
Tel +678 23119
Fax +678 23641
E-mail fishery@vanuatu.com.vu

RESOURCE PERSONS

Commonwealth Secretariat	Semisi Fakahau Chief Programme Officer Special Advisory Services Division Commonwealth Secretariat Marlborough House, Pall Mall, London United Kingdom SW1Y 5HX Tel +44 (020) 77476375 Fax +44 020 77476307 Email s.fakahau@commonwealth.int
Department of Marine and Wildlife Resources American Samoa	Fatima S. Sauafea Fisheries Biologist Department of Marine and Wildlife Resources P.O. Box 3730 96799 Pago Pago, American Samoa Tel +684 6334456 Fax +684 6335944 E-mail fsauafea@hotmail.com
FAO	Blaise Kuemlangan Legal Officer FAO Legal Office Food and Agriculture Organization of the United Nations Via delle terme di Carecalla, Rome, Italy Tel 39 0657054080 Fax 39 0657054408 Email Blaise.Kuemlangan@fao.org Masanami Izumi Fishery Officer Food and Agriculture Organization of the United Nations (FAO) Sub-Regional Office for the Pacific Islands Private Mail Bag, Apia Samoa Tel +685 20710 or 22127 Fax +685 22126 Email Masanami.Izumi@fao.org
Fijian Affairs Board	Mr Alifereti Bogiva
FLMMA	Ms Kesaia Tabunakai Mr Etika Rupeni

Forum Fisheries Agency	Transform Aqorau Legal Counsel Forum Fisheries Agency P.O. Box 629 Honiara Solomon Islands Tel +677 21124 Fax +677 23995 Email transform.aqorau@ffa.int
Forum Secretariat **C-SPOD**	Kenneth T. MacKay Field Program Coordinator C-SPOD Forum Secretariat Private mail bag Suva Email kenneth@forumsec.org.fj
JICA	Hideyuki Tanaka Program Formulation Adviser JICA Tokyo Japan E-mail tanakah@faiaqua.com
Marshall Islands Marine Resources Authority	Terry Keju Community Fisheries Officer Marshall Islands Marine Resources Authority P.O. Box 860 96960 Majuro Marshall Islands Tel +692 6258262 Fax +692 6255447 E-mail tkeju-1990@yahoo.com
Marine Aquarium Council	Michelle Lam Marine Aquarium Council Pacific Region Coordinator P.O. Box 302 Honiara Solomon Islands E-mail michelle-lam@aquariumcouncil.org
Ministry of Agriculture, Forests, Fisheries and Meteorology **Samoa**	Etuati Ropeti Principal Fisheries Officer-Extension Ministry of Agriculture, Forests, Fisheries and Meteorology P.O. Box 1874 Apia Samoa Tel +685 22624 Fax +685 24292 Email eropeti@lesamoa.net

Native Land and Fisheries Commission

Nacanieli Nabukavou
Native Land and Fisheries Commission
Fiji

Unaffiliated

Ed Peek
1 Isles Place
South Bruce ACT 2617
Australia
Tel +61 (2) 6251 3093
Email eandb.peek@bigpond.com

National Marine Fisheries Service

David Hamm
NMFS-Honolulu
2570 Dole Street
Honolulu, HI 96822-2396
United States of America
Tel 808 983-5330
Fax 808 983-2902

National Statistics Office
Philippines

Ms Josie Perez
National Statistics Office
Philippines
Tel 632 7132140 – 632 7149369
Fax 632 7131234
Email J.Perez@mail.census.gov.ph

SPREP

Paula Holland
Natural Resource Economist
South Pacific Regional Environment Programme (SPREP)
P.O. Box 240
Apia
Samoa
Tel +685 21929
Fax +685 20231
Email PaulaH@sprep.org.ws

Mary Power
Coastal Management Officer
South Pacific Regional Environment Programme (SPREP)
P.O. Box 240
Vaitele
Apia
Samoa
Tel +685 21929
Fax +685 20231
Email MaryP@sprep.org.ws

International Waters Programme	Kenneth Bulehite SPREP International Waters Programme - Solomon Islands PO Box 1424 Honiara Solomon Islands Tel 677 28735 Fax 677 28735 Email intwaters@solomon.com.sb Sione Leolahi SPREP International Waters Programme - Niue P.O. Box 74 Alofi, Niue Tel +683 4032 Fax +683 4079 Email sionel@mail.gov.nu
University of the South Pacific	Dr Nathan Evans Marine Studies Programme, USP P.O.Box 1168 Suva, Fiji Tel 679 3212403 Fax 679 3301490 Email evans_n@usp.ac.fj
Western Pacific Regional Fishery Management Council	Walter Ikehara Western Pacific Fishery Management Council Division of Aquatic Resources Department of Land and Natural Resources State of Haveli Honolulu, Hawai United States of America E-mail walter.n.ikehara@hawaii.gov Kitty.simonds@noaa.gov
World Bank	Sofia Bettencourt Senior Natural Resources Economist World Bank Office in Sydney Level 19, CML Building 14 Martin Place Sydney, NSW 2000 Australia Tel +61 (2) 9223 7773 Fax +61 (2) 9223 9903 E-mail sbettencourt@worldbank.org

The WorldFish Center (WorldFish)

Warwick Nash
WorldFish Center
C/o SPC
BP D5
98848 Noumea
New Caledonia
Tel +687 260131
Fax +687 263818
Email WarwickN@spc.int

University of the South Pacific

Duncan Williams
Postgraduate
Marine Studies Programme
USP
Fiji

Joytishna Raj
Postgraduate
Marine Studies Programme
USP

The WorldFish Center (WorldFish)

Idris Lane
WorldFish Solomons office
P.O. Box 77
Gizo, Western Province
Tel 677 60022
Fax 677 60534
E-mail i.lane@cgiar.org

CONSULTANTS

Dr Mike King
Fisheries Consultant
108 Esplanade Toogoom, Queensland
Australia
Tel 61 (7) 4128 0001
E-mail c/o jenny-kallie@bigpond.com.au

SECRETARIAT OF THE PACIFIC COMMUNITY

Dr Tim Adams
Director, Marine Resources
Tima@spc.int

Steve Beverly
Fisheries Development Officer
Steveb@spc.int

Ueta Fa'asili
Fisheries Management Adviser
Uetaf@spc.int

Dr Mecki Kronen
Community Fisheries Scientist
Meckik@spc.int

Pierre Labrosse
Principal Reef Fisheries Scientist
Pierrel@spc.int

Hélène Lecomte
Secretary, (Director, Marine Resources)
Helenel@spc.int

Ben Ponia
Aquaculture Adviser
Benp@spc.int

Aliti Vunisea
Community Fisheries Officer
Alitiv@spc.int

Being Yeeting
Live Reef Fisheries Specialist
Beingy@spc.int

VII. PAPERS PRESENTED AS ANNEXES

Paper	Author	Title
1.	Ratu Tui Cavuilati	Secretary for the Public Service, Fiji.
2	Dr. Tim Adams.	Why Regional Strategies for Coastal Fisheries Management?
3	Dr. Mike king	Problems in coastal fisheries management in Pacific island countries; summary of results from a questionnaire survey
4	Semisi Fakahau	Lake Victoria Regional Human Resources Development Programme
5	Semisi Fakahau	A Human Resource Development Programme.
6	Masanami Izumi	Regional Policy Meeting of Coastal Fisheries Management
7	David C. Hamm	Activities on Data Collection and Fishery Statistics in the U.S. Pacific Islands
8	Dr.Tim Adams	SPC role in relation to quantitative information about Pacific island fisheries.
9	Dr. Transform Aqorau	Overview of Legislation Governing Coastal Fisheries Management in the Pacific Islands.
10	Dr.Mike King	The application and enforcement of fisheries regulations in Pacific island countries.
11	Dr. Mike King	The difficulties of centralised fisheries management in Pacific island countries; involving communities and fishers in management.
12	Terry Keju	Community-Based Fisheries Management Program in the Marshall Islands
13	Sione Leolahi	The Niue Experience experiences in the involvement of communities (SPREP IWP)
14	Fatima Sauafea	Community-based coastal fisheries management in American Samoa
15	Nooroa Roi	The Raui System in the Cook Islands
16	Kenneth Bulehite	Solomon Islands Experience in Community and Related Coastal Fisheries Management
17	Aliti Vunisea	Gender Issues in Coastal Management
18	Ueta Faasili	Indigenous Rights and its Role in Fisheries Management in the Pacific Islands
19	Alifereti Bogiva,	Customary Marine Tenure: Implications on Community-Based Fisheries Management in Fiji.
20	Tevita Latu and Marc Wilson	Tonga's approach to coastal fisheries management
21	Blaise Kuemlangan	Creating legal space for community based fisheries management and customary maritime tenure in the Pacific: issues, trends, threats and opportunities.
22	Mecki Kronen	The ProcFish and DemEcoFish Research Project – Objectives of the Socio-Economic Component.
23	Steve Bervely	SPC's Fisheries Development Section: some thoughts on our role—past, present, and future—in coastal fisheries management in the region.
24	Ben Ponia	Aquaculture alternatives in the Pacific
25	Masanami Izumi	The FAO in the Pacific
26	Walter Ikehara	Investigating the Effects of Import and Export of Reef Fish on Pacific Island Economies and Resources.
27	Mitchell Lam	Why certification is needed for the Aquarium industry?
28	Warwick Nash	The role of the WorldFish Center in the Pacific
29	Paula Holland	The International Waters Programme and coastal management
30	Kenneth Mackay	Community Managed Marine Protected Areas in the Pacific Islands:

Paper	Author	Title
		Summary of Case Studies**.**
31	Ed Peek	Support for Fisheries Management Projects What donor agencies are looking for.
32	Dr. Mike King	The use of problem/solution trees in solving fisheries management problems.
33	Being M.Yeeting	The challenges in the management of the Live Reef Food Fish Trade in the Pacific

ANNEXES

ANNEX 1

OPENING SPEECH OF THE REGIONAL MEETING ON MANAGEMENT OF COASTAL FISHERY RESOURCES BY RT. TUI CAVUILATI,
SECRETARY FOR THE PUBLIC SERVICE

The representative of the Commonwealth Secretariat
The representative of the FAO
Representatives of other Fisheries Organizations
The Head of the SPC Fisheries Program
Ladies and Gentlemen,

Welcome to Nadi and Fiji

I gladly accepted the invitation to be here with you for two reasons. First it is good opportunity to catch up with the latest on the fisheries of the region and secondly, to meet up with two of my very close associates Mr. Ueta Fa'asili and Semisi Fakahaun now with the Commonwealth Secretariat. It is good to be back in familiar territory.

Sustainable harvest of Coastal Fishery Resources is crucial in terms of employment, income generation, food security and poverty alleviation in Pacific Islands. This is especially true in rural fisheries communities where catches of subsistence and artisanal seafood provide the sole source of protein for them.

When we talk about Coastal Fisheries Resource Management, we are referring here to the proper management of fisheries in different marine environmental ecosystems, which are unique to Pacific Islands, i.e. the coastal mangroves, estuarine ecosystems, lagoons and of course the fringing reefs. Not forgetting of course the riverine fishery, which is also very important to inland villagers.

The Pacific is also unique in that our fisheries resources are varied and also many in terms of the different types and species of fish and non-fish that we have.

There are over 90 such species of fish and non fish in some Pacific islands countries and I am sure the long term challenge is there for fisheries managers, and scientists to address relevant issues of importance in determining the best scientifically based information on each of these resources if we are to properly manage these resources well.

The Pacific is also unique in terms of taste of our fish. I am sure some of you will get the opportunity to do this whilst here in Fiji.

This unique taste of our fish, which of course live and grow in our clean environment and seas have often generated the increasing demands of fish from overseas buyers.

Information and data on coastal fishery resource is very important if we are to effectively manage our fisheries and it is again a challenge to participants here to consider having some plans and strategies on data collection, data analysis if we are to address fisheries management issues.

However, despite the lack of hard data in most Pacific Islands Countries, it is generally accepted that the coastal inshore and reef areas are heavily exploited and, in many cases, overexploited. Most fisheries agencies and fishing communities acknowledge that catch rates of fish and shellfish from the lagoons and inshore reefs of many areas have been declining for a number of years.

Overexploitation has resulted from a combination of many factors including increasing population sizes, the use of overly efficient or destructive fishing methods, and environmental disturbances.

The continued increase in islands populations puts enormous pressure on the marine environment in the search for food.

The development of overly efficient fishing methods has caused some fish stocks to be threatened. The use of modern materials such as chicken wire for fence traps and monofilament nylon for gill nets, for example, has made fishing effort more effective. In some cases, modest developments such as the availability of scuba diving gear and underwater torches, which allow the spearing of fish resting under corals at night, have resulted in a dramatic increase in fishing efficiency.

In some countries, the use of explosives and poisons to disable and capture fish represents a serious threat to marine ecosystems and the long-term viability of fisheries. These destructive fishing methods include the use of toxic plants, commercially available poisons such as bleaches (sodium hypochlorite), insecticides, and explosives. Explosives and severe poisons are many times more damaging to small animals, such as fish larvae and coral polyps, than they are to large fish. Destroyed coral reefs result in low fish production, and may not recover for aver 20 years.

Some traditional methods of fishing have left enormous areas of lagoons and reefs with hardly any marine life as the result of repeated practices over the past years.

Environmental disturbances have resulted from not only natural events such as cyclones and storms but also from human activities. These activities include the destruction of nursery areas (including mangrove areas) by road construction and land reclamation. Corals are collected for sale as souvenirs and coral blocks are used or building. Harbour dredging and coastal building projects often release silt into the water, and this blocks off sunlight of smothers coral. Poor land management practices have resulted in erosion and the siltation of lagoons. Environmental disturbances and habitat destruction have been linked to increasing incidences of ciguatera fish poisoning and outbreaks of the crown-of thorns starfish. All these human activities and unregulated initiatives will continue to affect the natural ability of the marine environment to sustainably produce and reproduce, while still supplying human needs. In countries where excessive damage to marine environment has been prolonged, total extinction of some important species has been recorded. In others, fish stocks have been greatly depleted to the stage where few of the important ones are nearing extinction. In general, the inshore and coastal fishery resources of many Pacific Countries have been seriously declined.

The time to act is now if we are to ensure that our children and their childrens'children enjoy the tasy meals of fish that we are enjoying now and also to our future generation.

Government responses to the decline of fish stocks usually involve setting up public awareness programmes and introducing fisheries legislation to address the management of their fisheries.

In many countries, fisheries rules and regulations have been devised and imposed by government authorities with very little or no input from important stakeholders such as fishing communities.

Here in Fiji, through efforts of some NGO's, USP and the SPC we were able to involve traditional fishing right owners in the management of their fisheries in their areas. The result so far have proven to be effective in that some of their fishery which have been overly exploited fish populations have increased as result of some measures that were agreed to by the communities, the fisheries department and other stakeholders.

Awareness training to stakeholders, and consultations on the importance of their fishery and its economic value is vital and very important if we are to succeed in managing our fisheries.

While rules and regulations are seen to be good management approaches, enforcement authorities have always faced with finance, personnel and resource constraint, which make enforcement and monitoring of legislation rarely successful. There are so may problems encountering the health of our inshore resources and need close attention.

In spite if these problems, most island countries are at present focusing in the development of their tuna management plans in order to guide their future domestic developments for national economic interest.

Enormous energy, resources and time have been spent in trying to manage – highly migratory fish stocks for the Pacific Ocean.

Costly regional programmes are put in place to form part of management strategies in order to provide back-up information for needed plan of actions to manage these resources. All these energy, resources and time are expended for little value in return for Pacific Island countries compared to huge benefits in favor of our foreign partners.

On the other hand, relevant authorities have not spent adequate time in examining the importance of coastal fisheries. In particular, their value to the livelihoods of many people in local communities has been overlooked or undervalued. Studies by SPC revealed that subsistence fisheries have always provided a much larger portion of national fish catches in island countries. The average of subsistence fish catches amongst island countries of the SPC is estimated to 83,913 Metric Tone annually, with the value of about USD179.9 Million (DALZELL ET AL. 1996). This huge amount represents the extent of subsistence fisheries that are consumed at local levels by SPC islands countries. With this amount source from subsistence fisheries, it is certainly an important matter for responsible authorities to accord high priority.

Ladies and Gentlemen,

This is in fact the first time Heads of Fisheries have been called upon to devote your time on issues of special importance on coastal fisheries management. As I mentioned earlier, we have as a region, put in enormous time, energy and finance to the management of our tuna resource and highly migratory fish stocks in the Pacific like some of you have just returned from the US Treaty Consultation in Marshall. While the tuna resource, from the economic point of view is seen as a potential investment for national fisheries development, one should not negate the value of our inshore and subsistence fisheries to the livelihoods of our local and rural communities.

Ladies and Gentlemen,

You have an extensive and challenge for all of you this week is to address all the problems facing the inshore fishery resources of Pacific islands and determine how those problem could be resolved.

As fisheries managers, policy makers and fisheries specialists, you would be able to share experiences on issues relating to the problems common in Pacific Islands. I have confidence in your various expertises, that by the end of this week, you will be able to formulate a strategy that will not only assist island countries to spearhead their national plans in managing coastal fishery resources, but also help guide the work of regional organizations, so that your needs as Pacific islands are met.

While I regret that my own national commitments would not permit my staying as part of the meeting in the rest of the week, I shall be following with great interest on subject matters discussed during the course of the meeting, particularly the outcome of the regional management strategy.

I wish you all the success in your coming deliberations and a fruitful outcome at the end of the meeting.

ANNEX 2

Why "regional strategies for coastal fisheries management?"

By Tim Adams
Director, SPC Marine Resources Division

Meaning of "Regional" Strategies

I'll start by pointing out that what I am going to say here is not cut-and-dried – it is only my opinion – and the main reason for this address is to try and provide some talking points. I will not be at all upset if you disagree with any part of it.

First of all, I think we need to define what we mean by "regional" strategies for coastal fisheries management.

Coastal fisheries, from time immemorial, have been managed differently from country to country, from reef to reef, and even from village to village. It is important to note that we are not asking you to design a regional fisheries management plan that will either straitjacket the way that coastal fisheries are managed in each area, or to try and move decision-making to the regional level. You have set up regional organisations to help you, not to tell you what to do.

What we mean by "regional strategies for coastal fisheries management" is to identify the common elements and principles that countries, and areas, hold in common – and to clearly identify the issues and problems that *can* be helped with at the regional level, through regional agency assistance and co-operation between countries.

(a) Common Principles

For example, under "common principles" might be the need to maintain sustainable fisheries that support the long-term well-being of coastal people. [But this may not be a form of wording that satisfies everyone. Some communities may be looking to tourist reef diving, rather than fisheries, to ease their transition into the cash economy, in which case the wording of the common regional principle would need to accommodate this local priority. Because this meeting is about coastal fisheries, should we restrict consideration only to fisheries?]

(b) Issues that can be addressed at the regional level

And there are several examples of "issues that can be addressed at the regional level", which we will go into later. One of these is provided by this meeting itself – experience-sharing. The Pacific Islands region is a huge patchwork of many different coastal fisheries and fisheries management practices, and each fishery, whether healthy or in trouble, can teach something to somebody else. In fact, Pacific Islands fishery management practices, particularly rights-based fisheries ideas, are already teaching the rest of the world something useful.

Good ideas can only spread if those ideas can be communicated, and one of the issues that can be tackled at the regional level is thus to provide a forum for communication and interchange.

MEANING OF "STRATEGY"

I'll say a brief word now about strategies, and why we are using this particular word. A strategic response is one that looks ahead and tries to plan for the future, according to existing priorities and anticipated future developments. And a strategic plan also tries to leave some leeway for unforeseen developments – in other words, it has contingencies – and it tries to anticipate the whole range of the issue and not leave gaps, or let things slip through.

This may sound obvious. But if we look closely at the way that many of us work, from the national to the regional level – most of our time is spent in responding to issues arising, and requests. We spend most of our time fighting fires or, to use an analogy topical to New Caledonia at the moment, in clearing up the mess after the cyclone.

We want this meeting to be an opportunity to step back a pace and look at ways of enabling countries and communities to weather the storm when it comes – to build roofs that won't be blown away, and to have ways of assessing the risk, evaluating the impacts, and mobilising national and regional attention and resources to the places that need it most.

I'll try not to get too carried away with the analogy. Fisheries are not such a life-and death situation as housing, medical care, and even education, and there are not enough resources for governments to manage coastal fisheries rigorously themselves. It is unrealistic to set up plan that tries to cover every contingency without letting anything slip through. We can however tackle the first issue – promoting fishery management mechanisms that help stop our roof getting blown away.

It is for this reason that we are talking at this stage about strategies, and not plans. At the regional level we can't implement detailed contingency plans for every coastal fishery. I would venture to suggest that you can't, in most cases, even do this at the national level, but would need to devolve much of the detail to the local level. But what we can do is identify broad strategies that can be applied to our work across the whole area under consideration, and which take us away from the purely ad-hoc approach – responding to those who shout loudest – towards a framework of policies and regulations which enable problems to be contained before they start, with sufficient flexibility to quickly address new problems, and institutional structures which can objectively identify problems and enable resources to be mobilised towards them.

This is the main aim of this meeting. Some of you may already have implemented a strategic approach to coastal fisheries management, in which case we would very much like to hear how it works in different places. In other cases, we would like to hear just what national aspirations and issues you are asked to tackle.

A STRATEGIC APPROACH

The strategic approach, at its most fundamental, requires a decision about what the responsibilities are at different levels. Which fisheries, or components of a fishery, are best managed at the local level, and which at the national level, or through national collaboration at the regional level? When I was with the Fiji Fisheries Division (around 15 years ago), we were struggling with a dichotomy. On the one hand we had a set of fisheries regulations which actually gave considerable powers of decision to local communities, but on the other hand there was an expectation that government should take responsibility for managing everything.

Although I was only acting Director of Fisheries, and didn't have a mandate for radical change, one of the policies that I did try to cultivate was that *decisions about the allocation of coastal fishery resources should be left to the people who depend on them*. That Government should, for example, not try to decide every last detail of who should be licenced to take bêche-de-mer in each particular fishing rights area, but that decisions like this should be left to the registered custodians of the fishing rights. I felt that the limited resources of Government should be concentrated on providing information support for this existing local framework, and in tackling the issues that were outside the scope of the community, particularly the management of foreign investors, points of export, and fishery issues that cut across many fishing rights areas.

In other words, fishing rights owners should be given the responsibility for health of their own fisheries, and government should not be expected to be responsible for everything. It may seem obvious now, but at the time it was a difficult concept to put across. Although fishing rights owners expected to obtain maximum benefit from their fisheries, they still held the government responsible, and expected the government to put things right if there was overfishing, or dispute.

At the regional level, there is definitely no expectation that collective regional action should be responsible for any aspect of coastal fisheries management. But perhaps there ought to be. There are certain coastal fisheries which have a truly international dimension, particularly those which involve highly mobile foreign investors, or address shared overseas markets, and we have certainly recognised the utility of sharing some decision-making in the management of highly-migratory species like tuna.

However, I throw that thought in just to worry you. I actually think, at this stage, that there is little political scope, or need, for collective *decision-making* at the regional level on coastal fisheries. The regional approach to coastal fisheries that we are aiming for is actually to identify the strategies that should be taken by SPC, governments, and other actors to help those responsible for managing coastal fisheries, without taking away responsibility, or decision-making power. And, as I said at the start, the first step is to identify the common issues that encompass all, or at least most, of the region. What principles and problems do we have in common?

OUTPUTS OF THE MEETING

As well as helping you to step back a pace and consider your own national and local roles in coastal fisheries management, the process will help regional programmes like SPC, and will also be of interest to the international community in deciding international work programmes relating to coastal resources. The identification and declaration of common principles and priorities will also be of interest to donors, not necessarily in persuading them to spend more money on you, but in pointing them towards the issues where the money that they have already earmarked can make a difference. In the absence of clear directions from you, donors are forced to identify priorities themselves, or take the advice of others.

The outputs of this meeting will thus be a building block in many broader processes. For example, we will see that they are fed into regional inputs to the United Nations Informal Consultation Process on Oceans and brought to the attention of various regional and international actors in both the fisheries and the environmental fields. At the national level, the Regional Coastal Fisheries Management Strategy that emerges from this process should help you design part of your own future work-programmes, as well as drawing the attention of other government departments to the need to work together on certain issues. (I am well aware of the difficulties that are sometimes faced in government, particularly when you are competing within the budgetary process, or have overlapping (or conflicting) remits and mandates, and reference to broader external agreement can be helpful in persuading others that you are indeed being objective and serious in your proposals.)

As far as SPC is concerned, the outputs of this meeting will become a fundamental part of the SPC Coastal Fisheries Programme's strategic plan for the triennium 2003-5 and thus directly shape our activities, particularly the activities of the CFP Fisheries Management Section under Ueta's control. The SPC Governing Council, CRGA, approved the draft CFP strategic plan in November 2002, but it was approved as a "living document" under the clear understanding that the SPC Heads of Fisheries Meeting would further refine it this year.

After this meeting, we will use the outputs to both draft broad Regional Strategies for Coastal Fisheries Management, and refine the specific elements of the CFP Strategic Plan that relate to Coastal Fisheries Management. Both of these documents will come back to you for deliberation and decision at the 4th Heads of Fisheries Meeting in August, and there will be ample opportunity for comment before then.

So, to recap, in terms of direct followup, we are planning three things:

(a) For this meeting to output a list of agreed points, shared problems and common principles. We do not expect this meeting itself to come up with a finalised set of strategies, but to agree on the basic elements that will go into it;
(b) To draft "Regional Strategies for Coastal Fisheries Management" after the meeting, which will be of broad guidance to all actors, whether local, national, regional or international. This will conform to the

agreed outputs of the meeting and will be circulated for comment and possible restructuring, before final consideration at the 4th Heads of Fisheries Meeting.

(c) To refine those elements of the existing Strategic Programme Plan (2003-5) of the SPC Coastal Fisheries Programme that relate to coastal fisheries management. This also will be circulated, for final decision by HoF3 in August in Noumea.

Indirectly, there will be other future consequences:

Many of you are probably aware of CROP, or the Council of Regional Organisations in the Pacific, which is simply a mechanism for promoting collaboration and communication between regional intergovernmental organisations. At the end of this year, the CROP Marine Sector Working Group, which also includes observers from several regional non-governmental organisations, is planning to convene a major "Pacific Islands Regional Ocean Summit", where CROP agency member governments will decide actions to be taken under the principles of the "Pacific Islands Regional Ocean Policy" that was endorsed by the Pacific Islands Forum last year, and considered during the SPC governing council by SPC member territories. The Regional Strategies for Coastal Fisheries Management will guide some of the deliberations of that Summit as well.

And in the future, of course, any agreed regional principles should also be of assistance to you in developing or refining national and local fisheries strategies and guiding activities.

DEFINITION OF "COASTAL FISHERIES MANAGEMENT"

One thing I've left out so far is the definition of coastal fisheries themselves. At SPC we normally define coastal fisheries as "fisheries that are carried out by the Coastal States of the region" – including domestic tuna fisheries – a definition that covers the entire scope of the work of the SPC Coastal Fisheries Programme. However, SPC has no mandate to work on *management* aspects of tuna fisheries, beyond the provision of scientific advice by the Oceanic Fisheries Programme, and this is the role of the Forum Fisheries Agency and, when the new Convention comes into force, the Western and Central Pacific Tuna Fisheries Commission. So when we are talking about "Coastal Fisheries Management" in this meeting, we are talking entirely about non-tuna fisheries. Mainly, reef and lagoon fisheries. The fisheries that are the mainstay of Pacific Island food-security and rural economies.]

POSSIBLE ELEMENTS OF A REGIONAL STRATEGY FOR COASTAL FISHERIES MANAGEMENT

I don't want to go into too much detail about the possible elements of a regional strategy for coastal fisheries management here, since I don't want to influence the outcome of the meeting. However, I will make several suggestions to get you thinking.

The first thing to decide is the overall goal of the regional strategy. The goal of the SPC Coastal Fisheries Programme is that "the long-term social and economic value of small-scale fisheries and aquatic living resource use in the Pacific is optimised." However, the CFP is a regional intergovernmental advisory programme whilst direct action can only be taken at the national and local levels, and this regional strategy needs to be much broader in application than any one agency work-programme.

It is therefore most important that this meeting provides clear guidelines on common actions that must be taken to solve shared fisheries problems. It is not enough to say, for example, that we can solve a particular problem in a troubled fishery by having a management plan. We need to get down to specifics. We need to spell out exactly what outputs are required and what actions we need to take. And of course, it may be that SPC input is required to assist countries with certain actions.

A word of warning in this regard. We need to be sure that the problems we are addressing are the ones that are truly the most important in their effects on fisheries, fishers, fishing communities and the marine environment. This is more likely to be the case if fisheries departments are in regular contact with fishers and people in the community. This may not always be so. Many field workers, for example, study resource species but neglect to interact with the people fishing them. It must be remembered that most fisheries problems are related to people not fish.

8.1 So here are a few things to consider:-

(a) I've already mentioned the value of experience-sharing when it comes to developing strategic approaches to coastal fisheries management problems. SPC, and other regional actors, already act as a medium for exchange – this meeting being a case in point – but does this sharing need to be improved, or broadened? And if so, how? And what can be done at the national level to improving communication between communities?

(b) Are there certain fisheries where members could eventually agree on regionally-applicable minimum standards? Are there fisheries where international operators go from country to country seeking those who are least able to resist their offers, because local management systems can't react quickly enough to that particular threat, and where a regional standard would help local fisheries managers to justify their policy decisions, or at least to "raise the stakes"?

(c) Are there certain fishing methods where there is regional agreement about their unsuitability? Again, such wider agreement can be of considerable assistance in helping local fisheries managers to justify their own decisions to restrict the use of such methods, in the face of undue pressure.

(d) Are there any common subregional or regional feelings about what should be the balance between national and local fisheries decision-making? How much responsibility can be given to communities, and how much of the onus of resource-maintenance should be laid at the door of government? Where does ownership and responsibility rest for different kinds of fishery?

(e) In Pacific island fisheries, a commonly-identified problem is that catches of inshore seafood species are decreasing. From responses to the recently completed SPC questionnaire survey it appears that the causes of this common problem are both varied and numerous. It is unlikely that we can identify a single strategy to address this, but can we develop a "toolbox" of strategies that can be applied in different combinations to different situations, depending on the results of analysis?

(f) Are there certain "tools" which can be agreed to be of universal utility in coastal fisheries management? Marine Protected Areas, for example, are held to be an excellent form of "insurance" against overfishing, but have been difficult and sometimes divisive to apply in practice, at least at the government level. How is the "area insurance" principle best applied?

(g) What is the best approach to obtaining and providing information on coastal fisheries? We'll be spending some time on this during the meeting, and also describing the SPC "PROCFISH/C" project which is making a concerted regional attack on developing baseline scientific information, but what should be the longer-term strategy for maintaining local "triggers for action" and fulfilling national information needs? And at what levels is monitoring most effective?

(h) Most Pacific Island countries, through their adherence to various international instruments, are committed to the Precautionary Approach to natural resource management. But is there regional agreement on how this might be practically applied to Pacific Island reef and lagoon fisheries?

[Personally, when I have been in positions of fisheries management responsibility, I have found the precautionary approach to be useful in dealing with applications to exploit resources which are suspected to be overstressed by further exploitation, but where there is insufficient information to actually prove it. Under the precautionary approach, the burden should be put on the operator to try and *prove* that the resource can sustainably withstand exploitation, rather than on the fisheries department to try and prove that it will be damaged. On the other hand, many resource managers are bothered by the precautionary principle because it is often invoked by lobby groups to try and close down anything that they don't agree with. The critical factor to pin down is *reasonable doubt*. Any worries about over-exploitation should be reasonable worries, and there may need to be guidelines, or rules-of-thumb, that can be used by the decision-making authority to decide what is reasonable. Another point is that the precautionary approach should also apply to traditional communities as well as resources – it should apply to people as well as fish. If there is reasonable suspicion that a community will be adversely impacted by the

restriction or ban of a *longstanding* fishing practice, then that restriction should be looked at very closely indeed.]

(i) Perhaps most thought-provoking of all, could certain countries set up an analogue of the regional mechanism at the national level? A mechanism that would gather together local community heads to talk about shared coastal fisheries management issues, "minimum terms and conditions", and shared information requirements for all areas at the national level, and possibly even to develop a national analogue of the law of the sea. Each fishing rights area would have certain "sovereign" rights to manage its own "EEZ" and a responsibility to cooperate on the management of shared resources and "straddling stocks" through the national fisheries department. The fisheries department itself would begin to look a bit like the Forum Fisheries Agency. It would coordinate meetings of member fishing rights owners to agree on shared coastal fisheries management issues, but also be directly responsible for managing highly migratory fisheries and EEZ areas outside the limit of customary fishing rights.

That is all I can think of for now. These ideas are not logically structured, but mainly to provide talking points, and it is up to you to come up with, and agree on, the likely elements and principles of a regional strategy for coastal fisheries management. I will leave it up to the experts to guide you through the rest of the meeting.

ANNEX 3

Problems in coastal fisheries management in Pacific island countries; summary of results from a questionnaire survey

Michael King, Fisheries Consultant

The importance of seafood in Pacific islands

In most Pacific islands, seafood has traditionally been the most important source of protein. Subsistence fishing, the catching of fish to eat rather than to sell, results in a total catch that is often several times larger than that from commercial fishing. Seafood consumption is highest in low-lying islands and coral atolls, such as many countries in Micronesia where soils are too poor to support agriculture. In Kiribati, for example, seafood consumption is 150 kg per person per year (compared with a world average of about 12 kg per person). Even in high islands where agriculture is practised, seafood consumption often approaches 50 kg per person per year.

Declining catches of seafood

Subsistence catches of fish and shellfish appear to have been declining in the lagoons and inshore reefs of many Pacific Islands for some years (Dalzell et al. 1996). In some cases lifestyle changes, including loss of traditional culture and increased involvement in the formal employment sector, have meant that less people are going fishing for food. In some cases, commercial fishing is increasing. However, in spite of the lack of hard data, most authorities and fishing communities agree that catch rates are decreasing, indicating that stocks of several seafood species are declining.

Threats to exploited marine species

Other than increases in population sizes (particularly in urban areas) the most obvious reasons for the decline of inshore fish stocks are the use of overly efficient and destructive fishing methods and environmental disturbances. These causes were noted and expanded on by respondents to the questionnaire distributed to fisheries agencies in Pacific islands.

The development of overly-efficient fishing methods has caused some fish stocks to be threatened. The use of modern materials such as chicken-wire for fence traps and monofilament nylon for gill nets, for example, has made fishing effort more effective. In some cases, quite modest developments such as the availability of underwater torches, which allow the spearing of fish resting under corals at night, have resulted in a dramatic increase in fishing efficiency.

In some countries, the use of explosives and poisons to disable and capture fish represents a serious threat to marine ecosystems and the long-term viability of fisheries. These destructive fishing methods include the use of toxic plants, commercially available poisons such as bleaches (sodium hypochlorite), insecticides, and explosives. Poisonous plant material may be derived from the roots of the climbing vine, *Derris elliptica,* and the nut of the coastal tree, *Barringtonia asiatica*.

The collateral damage associated with the use of poisons and explosives is that smaller animals, including larvae and coral polyps, are more easily killed than the target species. Destroyed coral reefs result in low fish production, and may not recover for over 20 years.

It is a common but erroneous belief that all destructive fishing methods are modern in origin. However, traditional fish drives and some collecting activities may involve damage to corals, either directly as a result of breaking coral to catch sheltering fish, or indirectly through the impact of many people moving over the reef. In the past the marine environment was more likely to be able to sustain such damage because the frequency of the activity was low and fewer people were involved.

Environmental disturbances have resulted from not only natural events such as cyclones and storms but also from human activities. These activities include the destruction of nursery areas (including mangrove areas) by road construction and land reclamation. Corals are collected for sale as souvenirs and coral blocks are used for building. Harbour dredging and coastal building projects often release waterborne silt that reduces sunlight penetration or smothers coral. Poor land management practices have resulted in erosion and the siltation of lagoons. Environmental disturbances and habitat destruction have been linked to increasing incidences of ciguatera fish poisoning and outbreaks of crown-of-thorns starfish.

Problems and causes of effects on coastal fisheries, identified by respondents to a questionnaire survey recently conducted by SPC, are listed below in a tentative decreasing order of importance (based on the number of countries nominating the problem as important in the questionnaires).

Overexploitation – too many people fishing for too few fish (60% countries)
Inadequate or outdated fisheries regulations and/or inadequate enforcement (50%)
Lack of capacity in the country – eg in stock assessment, data collection (50%)
Overly efficient fishing methods – eg night diving, small mesh nets, SCUBA (40%)
Destructive fishing methods – eg explosives (25%)
Illegal fishing by foreign vessels (15%)
Shift from subsistence to commercial fishing (15%)

In addition to the above, respondents noted problems associated with the pollution or degradation of wetlands and coastal zones. Of these, siltation, eutrophication and uncontrolled or excessive coastal development were prominent (see attached spreadsheet summary).

During this meeting, a key task is to use our collective knowledge to solve these problems using problem/solution tree techniques. As we go through this process, I urge participants to keep in mind several points.

The importance (and often neglect) of subsistence fisheries.

In most, if not all, Pacific Island countries, the total weight of seafood caught in subsistence, or village, fisheries is greater than that from commercial fisheries. And, when a nominal value per kilogram is put on the subsistence catch, it is often found to be of greater value than commercial catches. This is particularly so if one considers the net profits from commercial fisheries, many of which rely on imported boats, equipment, and even bait. Subsistence fisheries on the other hand, are intensive in labour but generally low in other fishing costs.

Subsistence fisheries also provide health benefits and cost savings beyond their intrinsic value. Locally caught and consumed seafood decreases a country's reliance on cheap and low quality protein imported from overseas; sheep ribs from New Zealand, turkey tails from the United States of America, and canned fish from Japan are ubiquitous food items in island countries. Decreases in local seafood consumption is also contributing to the high incidence of heart disease and diabetes in Pacific Islands. Hence increasing seafood consumption, or restoring it to previous levels, will have benefits in reducing the cost of health care as well as in foreign exchange savings.

However, in spite of the obvious importance of subsistence fisheries to local populations, most government fisheries agencies devote the majority of their financial and human resources to assessing, developing and managing commercial fisheries. Subsistence fisheries, in spite of their great contribution to public food supply and health, are largely ignored.

The awareness of professionals – is it what it should be?

We need to be sure that the problems we are addressing at this meeting are the ones that are most important in their effects on fisheries, fishers, fishing communities and the marine environment in our particular countries. We can only do this if we are in regular contact with fishers and people in the community and aware of their problems. Most of you will believe this to be the case, but it is not always so. Many field workers for example study a resource species but neglect to interact with the people fishing it. It must be remembered that most fisheries problems are related to people not fish.

The trend to involve stake-holders in fisheries management.

Many agencies involved in the conservation and management of fisheries and the marine environment are taking steps to involve stake-holders in management decisions. These steps include the formation of Fisheries Advisory Committees in commercial fisheries and the use of Community-based Fisheries Management in subsistence fisheries. Stake-holder involvement results in the ownership of fisheries management actions and regulations. We will be hearing more of these at this meeting.

The application of conservation measures and fisheries regulations.

Whether community-based or not, fisheries conservation measures, including the prevention of destructive fishing and the imposition of fish size limits, will cause a short-term decrease in catches. The same is so for the setting up of Marine Protected Areas as these reduce the area available for fishing.

As most subsistence fishers require seafood for their families on a daily basis, it is unreasonable to expect fishing communities to adopt conservation measures which will initially reduce present catches of seafood even further without offering alternatives. The alternatives may include the diversion of fishing pressure to areas immediately beyond the reefs through the introduction of other means of fishing and the promotion of community-level aquaculture. At this meeting we have SPC specialists here to talk about some of these alternatives.

The imposition of draconian or severe regulations without fishing community support and without promoting alternative means of obtaining seafood is unlikely to be sustainable.

Taking advantage of the experience available at this meeting

At this meeting we have access to the collective experience of some of the most senior fisheries people in the Pacific to discuss particular fisheries management problems and propose solutions. If we cannot solve fisheries problems at such a meeting, in the presence of 100s of years of collective experience, then our coastal fisheries are indeed in trouble.

At this meeting we have large number of people from Pacific countries talking about their experiences in coastal fisheries management. In many of the questionnaire forms respondents mentioned the lack of capacity to address problems in fisheries management. There will be an examination of capacity development in the coastal fisheries sector lead by Semisi Fakahau.

Many countries nominated the lack of statistical information as an important issue, and a session on fisheries statistics will be lead by Masa Izumi. The usual fisheries data are concerned with catches and fishing effort. Without these data we are not likely to be in a position to know whether we have a problem or not. We cannot determine, for example, if seafood catches are falling because there are less people fishing or if they are falling because stocks are decreasing. And of course a favourite soapbox topic of mine is the need to collect statistics on the most important fisheries of all, subsistence fisheries. Is it possible to develop a standard method of collecting these data from communities or villages in countries across the region? Perhaps we can find out.

National fisheries regulations and their enforcement appear to be major concern of participants. applied to coastal fisheries. These will also be discussed.

Some participants will be sharing their experience in the involvement of communities in fisheries management. And SPC specialists are here to talk about developments such as aquaculture and outer-slope fishing.

Last, but certainly not least, we have representatives from regional organisations and aid agencies. We also have Ed Peek with an extensive background in aid projects, to advise on the preparation of proposals. What are aid organisations looking for in proposals? Probably the same things that we are all promoting – the involvement of communities and stake-holders, both men and women, both titled and untitled. Now is our chance to find out.

But most of the work at this meeting will be done by participants. The main event is when we break into groups to address the problems that countries have raised in response to the questionnaire survey.

What we need from this meeting are clear guidelines on actions that must be taken to solve our fisheries problems. It is not enough to say, for example, that we can solve a particular problem with a fishery by having a management plan. We need to get down to specifics. We need to spell out exactly what actions we need to take to address these problems. It is also important that different countries indicate what types of assistance they may need in pursuing their plans of action.

ANNEX 4

LAKE VICTORIA REGIONAL HUMAN RESOURCE DEVELOPMENT PROGRAMME

Commonwealth Secretariat Methodologies

1. Overview The strategic objective of this HRD programme is to present the assessment of needs, and resultant Training Plans based on the maximum input of participants within the industry themselves, whether in the private or public sector. The outcome therefore would reflect totally how people assessed their own, and colleagues', or fellow group members', training needs. Additionally, it would allow a platform for group identification of problems within any particular system. Fundamental to this strategy is the requirement of the team to be adaptive listeners, to be able to control the flow of an interview/group meeting without filtering or influencing the content, without introducing personal ideas or prejudices and, sometimes, instilling a sense of confidence in the confidentiality of the communication. However, since not everyone is comfortable in a set meeting, a formal interview or in the plurality of a group, important issues were in danger of being overlooked if a safety net were not introduced. Similarly, it is not always productive to assume that the information recorded at one particular interface is correct, or truly representative. People, especially in rural communities with conservative ideas, appreciate the opportunity to discuss concepts and possible solutions themselves, often at length and in detail. This takes time. Within the public sector, where one of the key elements of HRD is to facilitate team strengthening, it was also considered appropriate to allow members of the individual District teams the opportunity to discuss amongst themselves the priorities, strengths, weaknesses and required solutions of that team and its work environment. In order to accomplish this within a limited time-frame it was necessary to conduct a bimodal schedule of visiting and gathering information and comments. In short, each office/area/community was visited (as far as was possible) twice, with a six to seven-week gap between visits. This allowed a logical development of ideas amongst the fishery participants themselves. An introductory visit, no formal interviews, no need to identify solutions or detail experiences. An explanation of what is trying to be achieved, stressing the importance of the participants initiating the ultimate comments and recommendations, credibility building, answering questions, and informally discussing topics of mutual interest. The, as yet, unfocused impressions were then recorded for later use. A period in which participants could initiate discussion amongst themselves, at a time and setting of their choice. With no checklist of points to cover, since none were issued at the first meeting, people were free to let the flow of their discussions take any direction which they considered appropriate. Sufficient time was available for all members of the "group" to put forward their ideas, and for the group as a whole to prioritise their ideas and formulate comments representative of the entire participatory number. A second visit in which a more formal approach was adopted. The reason for this structured format is simple. Since the objective was to clearly define zonal needs in addition to individual and specific group needs, a similar format for all similar situations would have to be adopted. Otherwise information could not be compared, and aggregated data impossible to quantitatively identify. Since different approaches were undoubtedly required for different participant groups (viz. District Fisheries Office staff and a Part-Time Rural Women's Fish Marketing Group), various tools were used and these are introduced in detail in section 2.4. This visit, using the appropriate tools, built on the original impressions, incorporated the refinements resulting from the intervening period, and focused attention of the participants on: - reasons for problems - training and institutional reforms required to overcome problems With hindsight, the team concur that improvements to this system could be made, but are also convinced that this is the correct approach, given the constraints, objectives and the fundamental requirement for participation at the earliest possible stage of plan development, rather than purely at the implementing stage. · Regional meeting · Endorsement meeting · Dodoma meeting 2. THE HRD CONSTRUCTION PROCESS The process is a planned and systematic attempt to develop the people necessary to do a specific job, or in the case of Tanzania, to do the most probable jobs. It is considerably more that a training exercise, since the delivery of training must be integrated with the planning for the training and the management of the outcomes of the training. Each is a logical component, and if followed correctly will result in a sustainable training programme which:

matches training with real needs

- maximises the results of that training

To carry out an assessment of these planning, training and management needs requires the use of a number of tools, each more suited than the others to perform under different circumstances. What can be used in a well-structured, local government institution with well-defined roles, could not be used in a loose formation of fishers in a fluid beach situation. Within the government service, there is no single structure. Each District, as has been seen, acts relatively autonomously. Therefore, although somewhat repetitive, it has been necessary to conduct this exercise in each District. As such, the individual steps in the process are explained

in the relevant sections. These steps rely on the use of a Logical Framework which provides the vehicle to supply unbiased data on planning and training and management needs. By using this approach in all Districts, comparisons can be made and biases avoided. Amassed data can then be filtered, analysed, compared and evaluated to arrive at the real training needs. This in turn forms the objectives of the Training Plan. 3. ASSESSMENT TOOLS The most obvious tool to use in any situation is an interview. This, however, is not as simple as first would appear. It is essential to prepare, and to strike a balance between keeping the interview on line, and not intimidating the interviewee. Interviews, in this case were limited to officers in the public sector, or private sector individuals who were not part of a group. Additionally, non-formal interface is a continuous part of any evaluation, and would come under the umbrella of interview. Apart from quantifying responses to very specific questions, this technique does little to assist in deciding if responses are truthful, biased or representative of the community/group/ cadre as a whole. The structured plural interview leading to group assessment (particularly group self-assessment) was successfully employed as a basis for identifying consensus on problems, solutions and future directions. Two distinct formats were utilised. The first refers to homogenous groups, that is, those with a commonality of purpose, aspiration, social profile etc., and who have in some way attempted to mobilise. The structure is shown below, although it should be emphasised that this is a loose format - ideas for discussion, not fixed questions and answers. **3.1 Group Formation and Activity Assessment**

Name, location of group Status of group History What are your reasons for wishing to form a group. Examples: To have more collective power To assist in accessing markets To assist in problem-solving To reduce purchasing costs through having discounts To protect against exploitation To access credit facilities To develop from a saver's group to a user's group To address environmental issues To form a base for self-policing, and self-protection To form a base for data collection Other In group formation, what problems do you encounter. Again, examples: Awareness of the steps involved Lack of technical advice Identification of office bearers, personnel Responsibility allocation Other In group management, what problems do you face. Some examples to measure against: Identification of management responsibilities Time management Group management skills Planning skills Record-keeping and reporting skills. Communication skills Other The second group-oriented, semi-structured approach is much more relevant to non-homogeneous groups, that is, those who represent a wide spectrum of social/economic profiles, but who display one common denominator linking them as a group (e.g. location or gender). They are generally not as "organised" as the former and have yet to identify the commonality of purpose which could encourage this (see 6.6). Additionally, this format is used for individuals. The format of this appraisal is presented below: 3.2 Non-homogenous Group/Individuals – Private Sector The objective here is again to identify Human Resource Development needs. This activity must be logical if meaningful perceptions are to be achieved. The steps are as follows: (i) List ALL problems, irrespective of their relevance.

(ii) Filter these to identify those which can be addressed in this assessment.

(iii) For each one of these, ascertain:

· Why is it a problem · What actions are, or have been taken · If these succeeded, why did they succeed · If these failed, why did they fail · What was required to prevent these actions from failing, in terms of a) Training b) Management c) Organisational strength d) Support from Government, NGOs, CBOs, etc. The different approach is justified in the sense that in the first approach attempts to identify the prevailing conditions which initiated group formation and subsequent activities leading to success or failure, following the decision to mobilise: the second attempts to identify the pressures and responses (successful or not) which would influence a group decision to mobilise. With both the above sets of groups (see 6.6), a third tool was employed to analyse the strengths, weaknesses and development needs (as a functioning group of people) by identifying how they have influenced performance in the past, how they may do so in the future, and the lessons learned. The format is shown below: 3.3 Field Survey – Small-scale Private Sector Groups CRITICAL INCIDENT ANALYSIS (CIA) This form of approach identifies real, as opposed to perceived, problems and the requirements to overcome them, depends almost exclusively on people's ability to analyse their situation objectively. CIA merely offers the tool to do this. Ideally it requires a homogenous group, preferably who are well known to each other, and who are comfortable talking in each others presence. Good facilitative skills will often be required to create levels of confidence with some group members. The following are guidelines only, and the facilitator should use discretion as to how far to go with each step. Principally, there are three simple steps. It is often useful to explain clearly to the group what you are attempting to do, and why. Wherever possible, include the reasons people state for any given answer. (i) Attempt to get the group to identify the four or five (maybe more, maybe less, use discretion) major problems which they, as a group, have faced in the last three years (or whatever you decide is the correct period) within their fishery business. These are called Critical Incidents and it is important that there is a

degree of consensus on these. Obviously some people will try to dominate proceedings with their own personal list of problems. Therefore make sure that: - these CIs are clear - that there is a relative consensus (make note of the rough percentage agreeing, if you think this is useful. It often is when carrying out statistical analysis, over the whole zone) - people are comfortable to talk about them (ii) Attempt to assess what people did to overcome these problems. This could be in terms of social, technical or organisational responses. It is important that failed attempts to overcome are also noted. This forms the first part of the analysis and should include the reasons: - why did the response succeed - why did the response fail (iii) By now, both the facilitator and the group should be thinking logically, and assessing objectively. Try now to persuade people to think how they may have overcome their problems by using other methods, now that they have the experience to look back. These methods may cover anything at all. (iv) To employ these methods, what type of assistance do people within the group feel that they require. What skills/abilities do they feel they lack ? These should include: - individual and group skills - technical and organisational skills - abilities to link with others who may share the same views and experiences (v) How should these skills/abilities be modified to take account of the future. Specifically, in terms of: - what do people want to do with their business in the future - what opportunities do they see - what threats do they see - what do they perceive as their strengths - what do they perceive as their weaknesses It is important to note that the above three approaches, more often than not, stimulated far more questions than they provided answers. This is one of the pitfalls of any type of Rapid Rural Appraisal. However, the information generated was sufficient for our purpose, the information is still available, and will form a basis, a benchmark, for future Fishery Community Mobilisation. Such an integrated approach to community development will be able to refine and focus these findings. With public sector officers, a completely differing approach was required. Existing in a structured environment, they respond to more formal assessment, and have a well-defined sense of functions and responsibilities - missing at community level. Often, therefore, with this structured environment simple task analyses can be employed to identify weaknesses in performance (requiring training or otherwise). What is missing from this structured environment however, is a defined set of goals, programmes and services against which to measure performance. Many alternatives exist, but consensus was reached that no one single approach would offer the assessment data or identify weaknesses to a sufficient degree of accuracy to allow justified conclusions to be drawn. Hence a number of tools, as with the private sector, were used and the results compared. 1. **Self and Peer Analysis, SAPA 1 and 2** (or Assessment to some authors) is an approach to improving performance through individuals assessing their own strengths and weaknesses with the help of colleagues doing the same work and reaching a consensus on remedial actions. It is a process which can provide a structure for identifying key performance areas (within any job) and receiving feedback from peers on actual performance. This involved inviting, **in both group and individual sessions**, staff to firstly identify the functions of their jobs (including potential future functions). With a simplified criteria of performance being Strong/Weak (time-frames allowed no more detailed analysis), illuminating and parallel perceptions were generally resulting. This is no surprise when one examines the number of years these officers have shared a work environment. The outcome is a very well accepted image of an individual's strengths and weaknesses. One spin-off advantage of this result is that, contrary to expectations perhaps, a sense of team spirit is illustrated. 2. **Upward Appraisal, UA** was not always possible to conduct, mainly due to its potential to create conflict amongst working groups who already have an unstable relatioship. Being assessed by peers and subordinates can be a daunting process. It is also remarkably accurate. Within this exercise staff are invited, confidentially, to assess their senior's performance in terms of professional strengths and weaknesses. When aggregated, these comments give a strong indication of where address is required. 3. **Function Analysis, FA** and (to a much lesser extent) Task Analysis were employed to identify crucial steps in a given responsibility. Obviously, when a particular function is not being fulfilled, this adversely affects the overall performance of the individual, self-esteem, confidence and morale. Often it is not purely an individual's capacity to perform, but also the conditions in which that performance is expected. This type of "bottleneck" identification allows serious weak links in any particular chain to come to light and be addressed. The negative side of this type of analysis is that it can be subjective. To overcome this, it was necessary to have the views of numerous people, with differing perspectives, to reach consensus on the real need rather than the perceived need of any one commentator. 4. **Performance Deficiency Analysis, PDA,** following directly from the identification of functional responsibilities through Function Analysis above, allows the comparison between what skills are required to do a particular job, and what are available to do the job. Again objectivity is crucial, and is ensured only through a team approach. Similar to a functional analysis, it is more applicable to professional levels of staff who have multi-functions within their remit. Whereas functional analysis examines the requirements to fulfil a designated function, performance deficiency examines the skills and knowledge required to operate as a post-holder with many assigned

functions. 5. Given that the strategy of this programme is to maximise efficiency without requiring large staff recruitment levels (since these are extremely unlikely to be accepted), it is necessary to carry out a **Performance Budgeting, PB** exercise. By examining who and what are required and for how long to complete a particular aspect of a job satisfactorily, this generates a budget of requirements which cannot be undercut, if objectives are to be met. By comparing this bare minimum to what is available, the required personnel in terms of numbers, skills and time allocations can be uncovered. The really useful part of this technique is that it allows a framework around which calculations can be made to re-allocate staff, maximising efficiency. Different models can be drafted until the best compromise between efficiency ouputs, and the inputs of training and re-allocation of duties, is identified. 6. Within any professional body such as the Department itself or FTI, the technical skills and experiences [which will be identified through the above] required to perform adequately are only part of the picture. Based on a system developed for the internal HRD of the Commonwealth Secretariat, Competency Profiling, CF, identifies the more personal skills and attributes which are required within a particular post. The resulting framework, when all are aggregated, will indicate the organisation's requirements for differing skills in differing jobs. These competencies will reflect the values and strategies of the organisation. The tool can be used in the long term and for varying purposes including the preparation of job profiles, staff appraisals and the resulting identification of needs, career development benchmarks, and assessing the overall skills base of the organisation. For each key position, a joint approach will be adopted to identify the key competencies and at which level, are required. An individual's personal level in these competencies can then be assessed and any shortfall addressed. 7. Throughout the exercise of internal assessment, a final tool was employed. Rather this is not so much a separate tool but an overall approach. Dual Focus, DF, assessment takes into account the fact that performance will not only depend on an individual's skills base, but equally on the efficiency and clarity of purpose defined within the organisation. Therefore this tool continually assesses the individual, not only as an individual, but also as an operative within a particular system. In short, the system itself will be assessed and deficiencies identified.

ANNEX 5

A HUMAN RESOURCES DEVELOPMENT PROGRAMME

Prepared for the Ministry of Fisheries
Government of the Kingdom of Tonga

Commonwealth Secretariat

A. THE HUMAN RESOURCES DEVELOPMENT PROCESS

The process is a planned and systematic attempt to develop the people needed to do a job properly. This involves more than just training people and planning for employees, or just managing people. Rather, it combines three main components namely, **Planning, Training and Management.** It requires a close look at each of the three components and re-orienting each in order to make them complementary and to develop human resources in an effective manner.

(i) **HRD Appraisal and Planning Guide**. The purpose of using this approach is to detect the weaknesses in the organisation's HRD process.

For this approach to be effective, a check list of significant indicators in planning, training and management is used to detect current weaknesses and determine corrective actions.

Summary of Findings

The findings of the appraisal are summarised below.

STRENGTHS	WEAKNESSES
Planning · A draft HRD plan was drawn up by the South Pacific Commission for MOF. **Training** · The attitude towards training is very positive. It is seen as the solution to most problems. · MOF has always had the choice of training opportunities provided by overseas institutions under foreign aid. · MOF has a training centre which is adequately equipped to cater for in-country training of staff. **Management** · An organisation chart was approved in 1995. · All established posts in MOF have job descriptions.	**Planning** · The draft HRD plan was not approved for implementation. **Training** · Training is being implemented on an ad hoc basis. · Training of staff was never planned properly. Training was reactive in response to opportunities available outside the Ministry. **Management** · There is no training policy for the Ministry. · Job descriptions are not revised

· Staff see training as the only way to get promotion. · Staff acknowledge the low salaries afforded by Government.	regularly or performance-based. · There is no clear career structure for staff. · Inefficient human resource management, coupled with low salaries reduce morale, thus causing staff to seek employment elsewhere.

Corrective Actions

The preparation of this HRD plan takes into account the weaknesses identified in the above summary of findings and makes corrective actions accordingly.

(ii) **Dual Focus Approach**. This approach is used to analyse the performance of both the employee and the system.

This HRD plan recognises that the effectiveness of training can be greatly improved when programmes are developed using the **Dual Focus** approach. This means that solutions to performance problems are sought by focusing on both the individual and the system within which that individual works. It combines staff training and organisational development to meet the demands for improved performance.

When a performance problem is encountered, this approach is used to examine not only the performance of the employee concerned, but also the performance of the system. It involves careful consideration of the realities of the working situation. A training solution may be prescribed; or the employee already knows how to do his/her job and the system is causing the problem. In such cases, an innovative way may be found to remove the system barriers. Very often in situations like this, both employee and the system together need development.

The Dual Focus approach rejects the premise that employee training is the answer in every case and emphasises the importance of adopting a systems management point of view.

(iii) The **Systematic Approach to Training.** This approach is used first to ensure that there is a need for training and second, that all necessary training is based on the requirements of the job.

Training must be planned systematically in order to give results. It must address the following points:

- The training course should address the information and skills that the staff member really needs in order to do his/her job better and ideally it should be based on a task analysis and sound job descriptions;
- The trainees have the prerequisites to be able to grasp what is being taught;
- The training programme is designed so that the staff not only learns about something but he/she actually learns *how to do* something. The staff not only learns how to do it, but he/she is given ample opportunity to *practise* it;
- The trainee is then assigned to work where he/she will employ the new skill;
- The trained staff member is given reinforcement on the job.

To ensure all the above requirements for successful training are met, a systematic approach to training is suggested and presented as step 1 to step 7 below:

Step 1. **Determine Training Needs:** Study performance deficiencies within the organisation. Determine which are due to a lack of skills and/or knowledge and will respond to a training solution.

Step 2. **Analyse Task and Occupational Analysis:** Study the task. Determine precisely what skills are necessary for its accomplishment.

Step 3. **Develop Curriculum:** Determine precisely what the successful trainee must be able to do at the end of the proposed training in order to accomplish the task. Write objectives in terms of observable behaviour. Determine the necessary prerequisites, the proper sequences of instruction and the instructional system components.

Overseas Training: For training needs that could only be catered for by overseas training institutions, identification of institutions, the appropriate training programmes and sources of funds should be carried out at this stage. Processing of application for scholarships should follow the Civil Service established procedures or those set by donor agencies.

Step 4. **Prepare Environmental Support:** For in-country training programmes, ensure that adequate facilities and training aids will be available. Support staff should also be considered.

Step 5. **Conduct Training:** Observe training using activities that will enable the trainees to undertake the task described in the performance objectives.

Step 6. **Follow-up Training:** Observe trainees to determine if they have achieved the course objectives and are applying the new skills back to the job. Give reinforcement and feedback.

The same procedure should be applied to staff who have completed training abroad.

Step 7. **Evaluate and Adjust Training:** Assess the training course to determine if it is adequately designed to eliminate the intended performance problems.

This procedure could also be applied to regional/overseas training programmes.

B. PLANNING

Since this HRD plan is being prepared for the Ministry of Fisheries (MOF) which is only one stakeholder within the fisheries' sector, this chapter is prepared following a framework which is appropriate for determining the human resources requirements of MOF alone, and not the fisheries' sector as a whole. The planning framework consists of nine steps. They are:

(i) Inventory of existing human resources;
(ii) Human resources planning considerations;
(iii) Define baseline services;
(iv) Define programme targets;
(v) MOF occupational priority;

(vi) MOF staff training needs;
(vii) Summary of MOF's staff requirements for 1996 – 2000;
(viii) Determine the costs;
(ix) MOF's Human Resources Development Plan.

HRD planning also takes into account the requirements of the overall sectoral planning process as it would be fully integrated with the Five-Year Strategic Plan of the Ministry.

Human resources planning involves forecasting and planning for the following elements, and is successful to the extent that it properly matches each of these elements:

- the correct numbers of staff;
- the right kinds of staff;
- staff are employed at the key places and at the right times; and
- staff are employed at the right costs to perform activities that will benefit both the MOF and the individuals in it.

1. INVENTORY OF EXISTING HUMAN RESOURCES

An inventory of MOF's existing staff is a tabulation of human resources by post level and job title, assigned to the headquarters and operational centres in the outer islands. The approved current staff establishment is also provided for each post level. The age distribution of current staff is indicated to assist in forward planning for replacements due to retirements.

The staff inventory is an essential tool of personnel and HRD planners. It identifies the current staff requirements (vacancies), and provides an indication of the distribution of manpower between the headquarters and the operational centres in the outer islands. The data provided is then used to work out the manning ratios and staffing patterns, which can be used as a basis for determining future staff requirements and possible re-distribution of staff.

2. HUMAN RESOURCES PLANNING CONSIDERATIONS

Current issues of importance to human resources development planning for MOF are outlined below.

(a) Structure and Functions

As noted in Chapter II above, the organisation and management structures of MOF and section functions have now been defined and approved. This HRD plan is being prepared to match the new structure.

(b) Need for Work Programme Planning

The clarification of division and section functions, goals and objectives will facilitate more detailed work programme planning. The use of long-term work plans will assist in defining the skill requirements.

(c) Management/Administrative Problems

There are many administrative processes which are reducing the effectiveness of staff within MOF at present and hence of the duties and services they provide as a whole. They include the following:

(i) **Absence of human resource planning.** The projects and programmes are prepared without adequate human resources planning, with the result that planned services are either not delivered or are distorted due to the lack of key staff.

(ii) **Lack of manpower and personnel data** leads to great difficulty in planning.

(iii) **Lack of a human resource development policy.** The absence of a national policy on HRD in the national development plan has caused confusion as to the role of MOF with regard to HRD planning.

(iv) **Lack of Job Descriptions.** Lack of revised job descriptions inhibits the possibility of matching skills with needs, and leads to non-delivery of planned services. Adequate description of job requirements will allow for better definition of training and education requirements and work experience for each position.

(v) **Poor or undefined career prospects.** Some groups of staff have no career prospects, while others have poor prospects. For many staff the lack of career opportunity offers no incentive to good performance, and for others lack of clarity as to the extent of career possibilities is a source of discontent.

(vi) **Promotion is not related to ability.** Length of service has greater weight in the promotion system, and those with longer service tend to be promoted. While this practice is in line with government personnel policy, unless it is modified to allow for ability and performance, initiative in the service will be stifled and the more capable staff will leave for opportunities elsewhere.

(vii) **Lack of staff in personnel administration.** Although the number of technical staff within MOF has increased, the staff handling them has not increased, and this has led to unco-ordinated personnel servicing. The current practice is to use technical staff to undertake personnel tasks which not only causes personnel problems due to their lack of specific skills, but also takes them away from the duties which they know best.

(viii) **Lack of motivation** has not helped improve staff performance.

2.1 Management/Training problems

A lack of staff to deliver the planned services has arisen for the following reasons:

(a) **Shortage of trained staff** in the Ministry because of a lack of established positions at a time when there is increasing number of projects and programmes being implemented which require staff with advanced skills and experience.

(b) **Prolonged absence of staff** for training abroad, leaves a gap which is not built into the service plans and which even when filled by deputation, simply transfers the gap elsewhere.

(c) **Blocked posts** because staff filling vacant posts on deputation retain their original appointments as well, effectively stopping the recruitment or promotion of other staff.

(d) **Deterioration in skills and knowledge** of the more highly trained staff occurs because the work situation does not demand the regular use of these skills.

(e) **Mismatch of training needs and opportunities.** A key problem in staff training has always been the availability of training specific to needs. Since most training opportunities are financed by donor agencies, the arrangements and content of training programmes and selection of trainers are often decided on by donors rather than by the Ministry. There is an absence of proactive identification of training requirements.

2.2 Disadvantages of small administrations

Staff shortage, lack of expertise and lack of funds are real issues in small fisheries administrations including MOF. It is a fact that governments do not have adequate financial resources to be able to employ all the human resources needed to fulfil the functions of the Ministry. As such, when a small fisheries administration like MOF undertakes implementation of an ambitious management and development programme with little or no proper HRD planning, it should expect to encounter problems such as those listed below.

(a) **Inappropriate placement of personnel.** The demand to fill temporary vacancies left by skilled staff often results in some not being posted according to their training, expertise and capabilities. Unplanned recruitment or training often results in misplacement of skilled staff. At present, MOF has a problem of misplacement of staff.

(b) **Ad hoc nature of training awards** within MOF is almost inevitable but it results in staff undertaking training which is inappropriate to the areas in which they work.

(c) **Unsatisfactory performance of staff.** The few skilled staff available are often overworked or put under excessive pressure to provide high levels of service as demanded by excessive workloads. Unsuitable working systems and under-remuneration also result in unsatisfactory staff performance.

(d) **Loss of skilled staff.** Loss of a few skilled staff often has negative impact on the progress and outcome of work programmes. Loss of skilled staff is due mainly to either under-remuneration or personnel mismanagement.

3. DEFINE BASELINE SERVICES

The next step in planning is to define the baseline service data which includes a summary of existing programmes and sub-programmes and levels of service provided. It also helps in determining accepted manning ratios for certain sub-programmes. A manning ratio provides the right number and types of participants in the fisheries sector that could effectively be served by one member of staff. HRD planning uses this concept to ensure fair distribution of staff among sub-programmes that provide direct service to participants in the fisheries sector and to avoid overstaffing. What is required therefore is to have an overview of the programmes, programme staff and the population served.

Under the revised structure, current activities and service provided by MOF are allocated into three main programmes and 14 sub-programmes. The programmes and sub-programmes are implemented by operational sections in the operational centres throughout the island groups. Although the bulk of the MOF's activities is concentrated on Tongatapu, Ha'apai and Vava'u at present, the planned programme-based approach to development would ensure decentralisation of sub-programme activities to include the islands of 'Eua, Niuatoputapu and Niuafo'ou.

For the purpose of planning it is important to take stock of project/programme facilities, equipment and staff available in all the operational centres to assist in the review of current staffing patterns in relation to the existing activities involved and technologies employed, and to develop new staffing patterns. It is important to note that the concept of manning ratio applies only to the six sub-programmes under Programme 3 (FMD) because they all provide direct services to well-defined types of participants in the fisheries sector. The baseline information would therefore be useful in developing a workable manning ratio for these sub-programmes.

(a) Current Staffing Pattern of Operational Centres

The current staffing pattern of operational centres and participants in the fisheries sector is best presented based on staff distribution among the centres and as types of participants respectively. For ease of

reference, participants in the fisheries sector are grouped into four main types as outlined below. It is also important to note that MOF has not as yet developed reliable socio-economic databases on participants in the fisheries sector. Such databases are vital not only in HRD planning and management but also in project planning, etc. The data on participants that are used here are mainly estimations obtained from various sources, mainly the Agricultural Census of 1985.

(b) Types of participants in the fisheries sector

T1: Women (or households) involved in small-scale production, post-harvest processing for subsistence use and local marketing;
T2: Fishermen (or households) involved in subsistence and small-scale commercial operations;
T3: Full-time commercial fishermen involved in production, post-harvest processing and marketing (local and export);
T4: Exporters of fish and other marine products (live and processed products).

(c) Proposed manning ratios for MOF

It is proposed that different manning ratios are applied to different staff levels, where professional officers, at Technical Officer Grade II (L/11/9) level and above, provide service to more participants of all types than sub-professional/semi-skilled staff at Computer Operator Grade III (L/12) level and below. In a period of one year a professional officer is expected to serve a maximum number of 760 participants (400 x T1, 300 x T2, 50 x T3 and 10 x T4), whereas a sub-professional/semi-skilled staff is expected to serve a maximum of 530 participants (300 x T1, 200 x T2, 20 x T3 and 10 x T4) in the same period. Although the figures of 760 and 530 appear high, in reality, about 10 to 15 per cent of the total participants in the sector do not utilise the services provided by the Ministry for various reasons.

4. DEFINE PROGRAMME TARGETS

The next step in planning is to define future programme targets set for the strategic plan period 1996 – 2000. The programme targets would assist in the estimation of staff requirements. Programme targets have been identified in the strategic plan in terms of sub-programme goals and objectives.

5. MOF OCCUPATIONAL PRIORITY

(a) Executive Management and Administrative Programme

The personnel and human resource development sub-programme should be headed by the Deputy Secretary (Administration). The holder of the position should have specialised training in human resource development and management and personnel administration. Support staff should include two senior staff at Fisheries Officer level (L/9) to head the Vava'u and Ha'apai operational centres. It is essential to have these two support staff in these two key centres to manage the activities of the Personnel and Human Resources Development sub-programme and thus avoid the old practice of assigning personnel and administrative tasks to technical staff. Other operational centres with fewer staff like the Niuas and 'Eua only need a technical staff to take charge of the day-to-day activities.

The Policy and Planning sub-programme should be headed by a senior staff member at Principal Fisheries Officer (L/5) level. The holder of the post should have specialised skills in policy analysis, formulation and planning. The officer will be a key player in the preparation of plans, evaluation of projects, and formulation of policies. If the officer does not have these skills, then it will be necessary to undertake specialised training in fisheries policy and planning.

Support staff of one Technical Officer Grade II (L/11/9) and a Fisheries Trainee (L/14) are also required.

(b) Fisheries Management and Development Programme

There is a need to have a Deputy Secretary (Technical) (L/2) to head the two technical divisions namely, the Research and Fisheries Management and Development Divisions.

The FMD programme should be headed by a senior professional officer at Chief Fisheries Officer level (L/5) and attached to the Extension Services sub-programme. The post would contribute positively to the overall management and development of fisheries in the country. The holder of the post must have experience in policy analysis and formulation in addition to processing specialised skills in fisheries management and development, and should be able to advise the Secretary and Deputy Secretary on policy matters.

Support Services needs a Senior Fisheries Officer (L/7) to head the Engineering staff, and Boat-building needs to have a Naval Architect (L/9) to assist in the development of the future ship-building capacity of the Ministry.

The Marketing sub-programme is another key section that is required to be headed initially by a marketing specialist at Fisheries Officer level (L/9). The holder of the position should have specialist skills in post-harvest technology, processing, preservation, market development and marketing. This would require specialised training in the appropriate fields.

The Small-Scale Fisheries Management and Development sub-programme should be headed initially by a Fisheries Officer (L/9), and would also need an additional support staff at Fisheries Assistant level (L/14A/13A).

Similarly, the Extension Services sub-programme should be headed by a senior and experienced professional officer at Chief Fisheries Officer level (L/5). This is critical to the management of the FMD programme, as Extension Services is expected to serve all other sub-programmes in the transfer of services and technology to participants in the sector. There is also a need to have a senior staff member at Technical Officer Grade II level (L/11/9) to run the radio broadcasting and media programme within the Extension Services Section.

The Commercial Fisheries sub-programme should be headed initially by a Fisheries Officer (L/9), with experience in commercial fisheries and business management.

The Management and Regulation Enforcement sub-programme needs to have a senior staff at Technical Officer Grade I level (L/9) to assist the head of the sub-programme.

It is noted that duties and responsibilities of staff of both the Extension Services and the Management and Regulation Enforcement Sections do overlap. This situation has allowed the staff of both sections to work together and carry out the same activities. To a limited extent, the situation has caused confusion among staff. It is therefore suggested that the current practice should continue only until such time staff job descriptions are prepared and followed.

In the light of the planned move towards community participation in fisheries management and development in the near future, allocation of duties between staff of the two Sections must be carried out carefully to avoid over-staffing and duplication of efforts. The participation of the coastal community in fisheries management and development would lead to:

(i) greater involvement of extension staff and communities in management and development projects/programmes; and

(ii) less involvement of Management and Regulation Enforcement Section staff in the enforcement of fisheries regulations in the artisanal fisheries sub-sector.

(c) Fisheries Research Programme

This FR programme would play a key role in the sustainable development of the Kingdom's fisheries resources in the future. It would be the key contributor to the enhancement of natural resources in the in-shore waters and reefs and the advancement of mariculture development.

The programme should be headed by a senior technical staff at Principal Fisheries Officer (L/5) level. The position is of critical importance to the overall management and development of fisheries in the country. The holder of this position must firstly have experience in policy analysis and policy formulation and demonstrate previous planning experience in fisheries. In addition, there is a need for specialised skills in fisheries management and development, research management, and he must be able to advise the Secretary on policy matters related to fisheries research. If the officer does not have these skills, then it would be necessary for him/her to undertake specialised training in fisheries management and development, policy and planning, and research management.

Additional staff are required and should include a Fisheries Officer (L/9) to head the Oceanographic sub-programme initially, supported by one Technical Officer Grade II (L/11/9), one Fisheries Assistant (L/14A/13A) and one Fisheries Trainee (L/14). The Resource Assessment sub-programme would need additional staff of one Technical Officer Grade I (L/9) and one Technical Officer Grade II (L/11/9). The Aquaculture Research sub-programme would need additional staff of one Technical Officer Grade I (L/9), one Technical Officer Grade II (L/11/9) and four Fisheries Assistants (L/14A/13A). The FR programme also needs a Senior Fisheries Officer (L/7) to head the Fisheries Technology sub-programme and to be supported by one Technical Officer Grade II (L/11/9) and one Fisheries Assistant (L/14A/13A).

(d) Summary of Priority Staff Requirement

6. MOF STAFF TRAINING NEEDS

Having identified the priority staff requirement, the next step in planning is identification of staff training needs. Ideally, the identification process should begin by undertaking task and occupational analyses. A task analysis would be applicable to technical staff who are involved in mechanical/marine engineering and boat-building, whereas an occupational analysis would be suitable for determining the required skills of other technical and administrative staff.

The on-going restructuring of MOF has rendered it impossible to undertake these analyses. Time constraints were another contributing factor. However, an alternative approach was devised to ensure that staff training needs are identified. Senior staff were asked to participate directly in undertaking a performance deficiency analysis to determine the training needs of staff members under their supervision. The analysis involved the identification of the areas of work in which an individual staff member is not performing as effectively as desired, in particular, the areas where staff lack skill or knowledge or those that would respond to training. For each staff member, a form was completed by his/her immediate supervisor or the consultant in the absence of the supervisor. Additional information included in the form was the appropriate type of training to address the deficiency.

(a) Individual Staff Training Needs

7. SUMMARY OF ADDITIONAL MOF STAFF REQUIREMENTS FOR THE PERIOD 1996 – 2000

7.1 DETERMINING THE COSTS

The total additional staff requirements of MOF for the period 1996 – 2000 is 44 positions. It is assumed that most of these additional posts will be filled internally by promotion and the rest will be recruited from outside MOF. To estimate how much the additional posts will cost, assumptions on internal promotions and

external recruitment of staff to fill vacant posts have been made using MOF information. Estimated annual costs of staff salaries are given in the MOF Human Resources Development Plan for 1996/97 to 2000/2001.

C. TRAINING

This chapter further refines the Human Resources Development (HRD) Plan. This involves the identification of staff performance problems and the determination of whether training and development should be part of the solution for these problems. The Training and Development Plan (TDP) extends and amplifies the HRD plan. Using the information on MOF staff training needs identified in the HRD plan, the TDP should specify **which** staff need **how much** training in precisely **which skills** for the type of new services; **where** and **when** that training will take place; **who** will teach the course; and what the expected **cost** of the training will be. The more general HRD plan is therefore focused and specific actions can be recommended. The development part of the plan is complementary to the formal training programmes. It is that part which is concerned with the personal development of individuals and which tends to take place on the job and is thus more the responsibility of the supervisors.

This shows how planning and training are inter-dependent as neither of them can exist in isolation. They both require to be managed in an integrated way, together with all the other activities of the personnel function.

1. Who Should Develop the Training and Development Plan for MOF?

An annual TDP is quite a detailed document. Eliciting the information for the plan can be time-consuming. MOF at this stage contemplates a great deal of training taking place in the coming years. It is therefore unlikely that one person could or should have the entire responsibility for developing the plan. Preparing the plan should be a co-ordinated effort by a number of staff. They should include the Deputy Secretary (Administration), heads of division and sections, officer-in-charge of outer islands' operational centres and vessel Masters. All have areas of expertise which can help in the decision-making necessary in order to finalise the Training and Development Plan.

2. Preparation of an Annual Training and Development Plan

2.1 Determine training and development needs

The training needs of MOF staff have been identified through a Performance Deficiency analysis exercise. It clarified what and how much training and development is needed and appropriate for MOF. Training would assist MOF to meet its goals of extending the coverage and improving the quality of service. MOF's staff will have to be trained or re-trained to meet those goals.

The HRD plan presents information on the present and future staff requirements of MOF and the training needs of current staff. In identifying these needs, the analysis assumed that the cause of the performance problem was due to a lack of skill or knowledge and would be solved through training. Other causes of performance problems such as environmental and/or management, motivational, incentive or attitude are also important and efforts need to be made to address these, as they may not be solved through training alone.

Occupational Analysis

An occupational analysis is more relevant for determining the skills required of staff who are considered multi-purpose workers such as extension staff who are expected to know, for example, how to navigate a fishing vessel, prepare and repair fishing gear, operate and maintain an inboard engine, conduct village meetings, collect statistics, construct and deploy a fish aggregation device, etc. It is also useful for designing course content for longer-term training programmes. The analysis involves assembling a group of senior staff to identify the skills required of each staff level under different sub-programmes. Appropriate training subjects which would match these skills are then identified.

2.3 Select Trainees

MOF senior staff have identified the training needs for all staff working under their supervision as part of the performance deficiency analysis. What is required during the preparation process for the implementation of each training programme is to determine the prerequisites for each individual trainee to assist in the planning of training methods to be used. For example, the trainee's ability to read, write, analyse, recognise, evaluate, appraise, make arithmetic or mathematical calculations, etc. This is a task to be undertaken by the trainer/instructor.

2.4 The Appropriate Type of Training

The Manpower Development Plan identified the most appropriate types of training for MOF as listed below:

- On-the-job;
- Training within MOF (in-service);
- Training outside the Ministry (local)
- Training outside the Ministry (overseas);

The performance deficiency anaIysis results showed that the first three types of training would be the most appropriate for MOF staff. Therefore, most of MOF's staff need to undertake in-country short-term training (on-the-job and in-service), and overseas training should be the exception.

Regional training institutions such as the University of the South Pacific offer mainly long-term certificate, diploma and degree programmes in fisheries and marine affairs. Other institutions such as the South Pacific Commission (SPC) also offer regional training courses. The SPC also published a directory of training programmes in fisheries that are available in countries outside the region.

MOF's long-term training plans are aimed at any overseas institution that offers the required training programme and is acceptable to the potential donor.

2.5 Training Venues

Short-term training programmes within the Ministry would be best conducted in the trainee's workplace if it is an on-the-job training programme and in either one of the three main operational centres (Neiafu, Pangai or Sopu) if it is an in-service training programme. The training centre at Sopu is very well equipped for all in-country training programmes. Venues for training outside the Ministry could be decided on by the organiser of the programme.

A good venue must have some of the following characteristics:

- adequate space for working, laying out tools, equipment and teaching aids. It should be large enough so that all course participants have an unobstructed view when demonstrations are being given;

- it is away from distractions such as the trainee's or instructor's workplace, noisy crowds, traffic or machinery;

- lighting and ventilation are adequate.

The choice of venue should also take into consideration matters such as availability of accommodation, transportation, and programme cost.

For training programmes hosted by institutions outside the country, venues are normally chosen by the organisers or sponsors of the programmes.

2.5.1 Course Instructors. The ideal trainer is a supervisor. Within MOF, all middle and senior management staff who have supervisory roles should make good training instructors. This follows the HRD philosophy that **training is an integral component of management responsibility.** Instructors should ideally possess the following attributes:

- know the subject and practise the skills involved;
- have the personality to understand and sympathise with the trainees' difficulties;
- have the ability to organise and present the course material in a logical manner;
- effectiveness in meeting training objectives;
- deliver instructions in Tongan and/or English languages.

It would be necessary for MOF to take steps to encourage middle and senior management staff with supervisory roles to play their part, both individually and collectively, as part-time trainers/instructors of their own staff. This will allow them to make a contribution, based on their expertise, to the total training and development programme. It would also ensure that training becomes an integral component of management action.

Should MOF adopt such a policy, it must also have training programmes for trainers/ instructors.

2.6 Determining the Cost

It is obviously important to know the cost of a training programme in order to decide if it is affordable. It would also help management to compare the cost of the proposed training with the need and the likely benefits, and also enables the Ministry to include such a cost in the annual budget and project requests for donor assistance.

To estimate the cost of training the following items should be considered:

- trainee's and trainer's/instructor's entitlement and rate of subsistence allowance during the period of training;
- cost of transportation and accommodation;
- trainer's (consultants) fees, allowances and travel costs;
- training materials development;
- special training facilities, equipment, etc.
- other training costs (e.g. record-keeping, secretarial assistance, etc.).

From a management standpoint, it would be useful to do the following:

- Divide the total cost among the number of trainees in order to determine the cost of training per trainee.

- Examine the established estimated cost in view of the following questions:

  (i) Does this training make economic sense?
  (ii) Even if the training is effective, will the cost compare favourably with the benefits?
  (iii) Could the same result be obtained with less expenditure?

2.7 Preparation of MOF Training and Development Plans

The Annual Training Plan should emanate from decisions made about the training that would be offered throughout the year. It should provide enough information to make the organised and efficient development of human resources an on-going part of MOF's function.

The plan is prepared in order that both the human resources and the training resources of the sector can be utilised in the most efficient manner throughout the year. The plan is also a source of information to employees. It should also be publicly displayed, if possible, so that the staff is made aware of the Ministry's training intentions.

2.7.1 The Annual Training Plan is made up of 24 short-term in-country training courses, not including training outside MOF. Eleven of the training courses are for a combination of trainees from two or more divisions/sections. These courses address topics on work areas that overlap two or more sections as listed below. The other fifteen courses are planned for staff from specific sections or sub-programmes.

- Book-keeping and clerical work;
- Computing;
- Research and resource assessment techniques;
- Shellfish culture and pearl oyster farming;
- Scuba diving;
- Operation and maintenance of outboard motors;
- Operation and maintenance of refrigeration equipment;
- Fish processing and handling for export and local markets;
- Understanding of the Fisheries Acts, regulations and UNCLOS;
- Fisheries monitoring, control and surveillance;
- Provision of extension services.

Although it is important to state the estimated cost of individual courses, it is impossible to make any reasonable estimation of the costs at this stage. It becomes then a function of those who would manage the HRD programme to use the plan to work out the cost for individual courses. The plan also includes the number of trainees per training course, the likely venue, type of training and duration of each course.

2.7.2 The Long-Term Training Plan has been prepared according to staff occupational priority and are grouped into the type of qualification required, e.g. postgraduate degree, undergraduate degree, postgraduate diploma/certificate, diploma and certificate as shown in the following tables. Most, if not all, of the training programmes are offered by overseas institutions.

2.8 Developing and Implementing a Training Programme

The task of developing and implementing a training programme is complex and could easily be plagued with difficulties. It is therefore important to take a systematic approach to training where systematic training decisions could flow as demonstrated below:

2.8.1 Determine training needs. Study performance deficiencies and then determine which are due to a lack of skills and/or knowledge and will respond to a training solution. This stage of development has been completed in the HRD plan and section 2 above.

2.8.2 Analyse tasks. This topic is covered in section 2.2 above. However, task and occupational analyses would further prepare trainees for training and provide trainers with the necessary information required for the preparation of the curriculum and training courses.

2.8.3 Develop curricula. This would involve determining precisely what the successful trainee must be able to do at the end of the proposed training in order to accomplish the task. The first step is to write the performance objectives in terms of observable behaviour. The objectives would tell the trainer what to teach in the training programme and also guide him/her in the evaluation. The second step is to write the prerequisites necessary for the trainees, i.e. what the trainer wants potential trainees to know before they embark on the training course. The third step would be to decide on the proper sequence of instruction. This is to assist the trainer to avoid unnecessary confusion. The final step would be to design the instructional system components such as: time-frames; teaching methodologies; text materials and media; trainee assessment tools; evaluation scheme for training design, etc.

2.8.4 Prepare environmental support. It is essential to ensure that adequate facilities and training aids are available. It would always be handy to have support staff and secretarial support to assist in the running of the course.

2.8.5 Conduct training. Having completed the preceding steps, the course could now be started. It could be on-the-job, or it could be in a classroom. In conducting training, use activities that would enable the trainees to carry out the task described in the performance objectives. It is important that the staff who act as instructors must have had proper training to be able to carry out the role of trainer effectively.

2.8.6 Follow-up training. Training is not completed when the trainees leave the classroom. Rather, it is only completed when observations have been made on those trainees using the new skills at their workplaces. Follow-up training is the evaluation of on-the-job performance as a result of the training just given. Follow-up on the job is just as important for the employee returning from an overseas course as it is for the employee completing an internal workshop. If the trainee is observed to have learnt new skills, he/she should be encouraged to use them. This is termed as **reinforcement**. Without reinforcement the trained staff could forget or lose the new skills and go back to the older and more comfortable way of operation.

If, on the other hand, the staff concerned is not adopting the new skills despite reinforcement, he/she should be provided with some form of **feedback,** where the learner is simply informed of how well or not so well he/she is doing.

Reinforcement and feedback are important and on-going duties for all staff with management/supervisory roles.

2.8.7 Evaluate and adjust training. Every training course must be evaluated in order to obtain information that would be useful in the planning and conducting of future courses. The common method of evaluating short-term courses is by giving course participants a questionnaire to complete at the end of the course. The evaluation should provide answers to a number of important questions. However, the quality of information from questionnaires is doubtful and interviews are best if these can be arranged. Some questions are listed below:

- Was the course too long?
- Were some activities too long?
- Were some activities not necessary?
- Did the trainees find some of the work too easy? Too boring? Too complicated? Not relevant? Too short?
- Were the materials suitable? Can they be improved?
- How can training activities be changed to make the course more effective next time it is presented?
- What different methods could the instructor use in order to make the learning easier for the trainees?
- Could or should the venue be changed?
- Did the trainees have the proper prerequisites? Should the prerequisites be reconsidered?
- What should be added to the course to make it more responsive to the needs of MOF as an organisation?
- What should be deleted from the course to make it more compact and meaningful?

The evaluation results could then be used to adjust the training course if it is going to be offered again in the future.

3. What is next?

At present MOF does not have qualified HRD staff. It is therefore suggested that effort should be made to identify the staff that would become part-time trainers and have them trained to undertake the above tasks with the assistance of a specialist

trainer. It would be helpful to note that a specialist trainer does not necessarily have to have specialist skills and experience in fisheries or science, but should be experienced in training delivery, and planning.

D. MANAGEMENT

In section 4 of Chapter I, the inter-dependence of planning, training and management was highlighted. The following chapters on planning and training stressed that for HRD planning to be effective, it had to be integrated with MOF's other activities and within a strategic context. It was shown that planning and the training programmes that resulted could not occur in a vacuum and needed to be managed in a systematic way.

The efficiency with which MOF can be operated depends largely on how effectively its staff are managed. Since MOF must operate with and through people, its management is basically a process of managing people effectively.

Successful organisations throughout the world have found that:

(i) Human resources management embraces all middle and senior management staff who manage people whether they are designated as training, personnel, operational or general managers. It also embraces those who hold positions below middle-management level, but nevertheless manage people, e.g. Mate/Leading Fisherman, Officer-in-Charge, Nomuka.

(ii) All staff with management roles have a two-fold responsibility, for task management, on the one hand, and for people management, on the other. For MOF to be a successful organisation, its management must strive to strike a balance between these two responsibilities. It is a fair comment that in MOF there is too much emphasis placed on the task side, i.e. the staff who perform the task. While this is accepted on the grounds that MOF is a technical-oriented organisation, there is a need for a better balance to be achieved.

Therefore, what this means is balancing the needs of the organisation with the needs of the staff that make up the Ministry of Fisheries. To do this effectively requires individual management staff to understand not only the needs of MOF in a technical and operational sense but also the needs of the staff. Management staff would then discover that this is the way to obtain the involvement, commitment – the motivation – of their staff to their work and to MOF. This motivation is recognised as the prerequisite for enhanced performance. It pays for an organisation to be fair, consistent and balanced. It is also the experience of less successful organisations that if management does not achieve a balance between the needs of the organisation and the needs of the employees others, such as trade unions and staff associations, would normally attempt to do so. In a government organisation such as MOF, where there is no staff association or trade union to address the needs of civil servants, staff begin to lose their sense of commitment, dedication, and resort to the more relaxed and comfortable style of involvement.

(iii) It would not be possible, particularly in a government organisation, to achieve a balance in every action of every management staff. However, in the case of MOF, it is suggested that the need for a balance should be used as one of the major objectives to be achieved and applied as an overall guiding principle for MOF's management thinking.

(iv) The ability of MOF's management to put the Civil Service personnel policies into everyday operation could develop a culture based on this balance. If MOF is to be successful, it needs to collaborate with the Establishment Division of the Prime Minister's Office to clarify personnel policies which are applicable to the management of MOF staff and have these policies presented to staff and practised in a way that attracts good people to the Ministry, who wish to be retained by it, and who are motivated to help MOF achieve its goals. Policies must be presented and explained clearly to ensure that all staff understand what is intended. Then they need to be practised by all members of the management, not just personnel staff, in a fair and consistent way and with the minimum gap between policy and practice, between intention and actuality.

1. Training and Development

This subject has been fully covered in Chapter III. However, there are additional factors which affect and involve management that require emphasis and consideration.

1.1 Training and Development Policy

A training and development policy is a written statement outlining commitment and plans for enhancing skills, career opportunities and organisational performance through planned training and educational activities. For an MOF training and development policy to become effective it requires designated staff whose responsibility is to carry out the policy – in this case, the Personnel and HRD Section staff.

This policy would be of fundamental importance to the Ministry because it would:

- clarify the relationship between training and other activities;
- allocate the responsibilities for training correctly, thus minimising inter-departmental conflicts;
- carry out training logically within an agreed organisational framework rather than on a unilateral personal level; and
- assess the effectiveness of training in relation to MOF's objectives.

1.1.1 How a Training Policy is Developed. There are a number of factors that should be considered in a training and development policy. Some are listed below:

Need: The assessment of training needs was covered in Chapters II & III. However, the training policy should make clear the importance of needs assessment.

Objectives: In order to work towards MOF's goals, trained human resources are necessary. Usually, the training and development objectives are closely related to the organisational goals. The training and development policy should therefore reflect the relationship between the two.

Required Elements: There are important elements that should be included in MOF's training and development policy. Some of these are:

- the establishment of a personnel function;
- a personnel policy;
- a personnel budget;
- a human resources inventory;
- a human resources development plan;
- performance-oriented instructional materials;
- planned evaluation of training;
- performance reinforcement and feedback.

All these elements have been covered in previous chapters and it is not necessary to repeat these in detail here. However, the most effective way for MOF to draw all these elements together and to ensure that the ensuing training and development policy is put into effect is to set up its own Human Resources Development Committee and assign to it a regular monitoring and support role.

Such a committee could consist of the six senior-most staff in the Ministry, i.e. the Secretary for Fisheries, 2 x Deputy Secretary, and 3 x Heads of Division. The HRD Committee could meet regularly and be assigned the following functions:

- Analysis of training needs of the various operational sections.

- Planning of all training resources for both professional and non-professional staff and preparation of the corresponding programmes.

- Appraisal and upgrading of potential trainees for study grants and scholarships, determining the terms of leave to be granted, and recommending the utilisation thereof to Cabinet.

Staff: The responsibilities of MOF management for training, as well as the responsibilities of any other professional training staff, should be clarified in the training and development policy. The personnel statement should also include reference to how the selection and training of staff concerned with HRD would be carried out.

Procedures: The training and development policy may state the preferred methods of training, performance-oriented training versus theoretical learning in a classroom situation.

Evaluation: The training and development policy should clearly establish that review and follow-up procedures for evaluation of training and development are required as part of all programmes.

1.2 A Proposed Training and Development Policy for MOF

Based on the above information, a Training and Development Policy for the Ministry of Fisheries is proposed as follows:

BY DEFINITION: **A POLICY PRESENTS BROAD GUIDELINES ON WHICH A COURSE OF ACTION IS BASED.**

The Ministry of Fisheries (MOF) wishes to inform all staff of its commitment to planned, systematic training and that all management staff have a responsibility to effect this policy. The policy outlines a deliberate departure from traditional approaches to training with a view to developing a higher level of performance among MOF staff.

NEED

The long-term effectiveness of MOF to carry out its mission hinges largely on its capacity to attract, develop, suitably assign, and retain staff with the skills, knowledge and attitudes to satisfactorily perform their individual tasks. Further, it is recognised that as MOF goals are achieved through employee efforts, suitable career structures and opportunities must be provided for the individual to attain personal goals.

OBJECTIVES

The immediate objective is to implement appropriate training for fisheries staff in order to help MOF adapt to changing conditions while assisting the individual to attain his/her potential. Through such training the ultimate goal is to improve the quality of service, thereby raising the standard of living of the people of Tonga on an equitable basis while encouraging national self-reliance.

HUMAN RESOURCES DEVELOPMENT SYSTEM

To assist MOF in achieving its objectives and at the same time provide the mechanism by which staff members can realise their career goals, a Human Resources Development (HRD) System is required. As the HRD system is influenced by many inter-dependent factors related to MOF as well as individual needs, its design must include all the elements to meet these needs and at the same time to institutionalise training. Some of the essential elements of the HRD system are considered to be:

- personnel policy;

- establishment of staff posts with HRD responsibilities;
- training policy related to personnel policy;
- defined organisational structure indicating functions;
- budget;
- inventory of training resources;
- human resources inventory;
- Human Resources Development plan;
- definition of the training methodology;
- multi-disciplinary pool of instructors;
- performance-oriented instructional materials;
- evaluation of effectiveness.

PROCEDURES AND METHODOLOGY

The choice of training procedures will be on the basis of defined MOF and staff needs. In general terms four basic procedures will be followed:

- direct instruction of staff by their supervisors (on-the-job);
- delegated training within the Ministry (in-service);
- delegated training outside the Ministry (in-country);
- delegated training outside the Ministry (overseas).

Specific choices within the four procedures listed above will be defined by the officer responsible for training in consultation with management, for individual trainees as required.

To implement intelligent and creative training within each of the procedural options it is proposed to utilise the methodology illustrated below:

THE SYSTEMATIC APPROACH

1. TASK ANALYSIS
2. PRE-EVALUATION
3. PERFORMANCE OBJECTIVES
4. TRAINING ACTIVITIES
5. POST EVALUATION

If objectives not achieved, review and revise as required.

PERSONNEL

Training is not viewed as a separate specialisation which is added to the Ministry, but rather, **training is an integral component of management responsibility**. In support of this, MOF should take steps to encourage staff with supervisory responsibilities to play their part, both individually and collectively, as part-time trainers and instructors of their own subordinate staff.

Thus, it is contemplated that, if feasible, staff with supervisory responsibilities will implement training through in-service and on-the-job training activities. All staff selected to carry out training will have satisfactorily completed a training of trainers' programme. In-country training outside the Ministry will be co-ordinated by the Ministry in collaboration with host organisations. Overseas training will be co-ordinated by the Ministry following established government procedures.

EVALUATION

Generally, training activities are to bring about desired behaviour changes in the areas of attitudes, skills, and knowledge. The purpose of training evaluation therefore should be to determine if such changes did occur as a result of the training. In a sense it should be an **accountability** system for comparing demonstrated benefits to expenditures of efforts, time, and money.

Evaluation of training can provide accountability evidence, more specifically **quality** evidence, to demonstrate training effectiveness. It is suggested that all evaluations cover the following:

Reaction:	How well did the trainee react to training?
Learning:	What principles, facts, and techniques were learned?
Behaviour:	What changes in job performance resulted from training?
Results:	What were the tangible results of the training in terms of reduced cost, improved quality, improved quantity, etc.?

2. Training for MOF Management Staff

Training and development programmes based on the needs of staff are required to be drawn up each year as part of the annual training plan. There is also a need to have management programmes for a number of reasons. Most things that happen in an organisation stem from management action or indeed inaction. Management sets the tone and determines the priorities and the emphasis. MOF management need to fully understand what these are and be committed to them in order to effectively apply them. Moreover, by their participation in training and development programmes they indicate to other staff the importance of training and development. It would be a productive policy decision to require all the staff who have management responsibilities to spend one week per year on internal programmes devoted to people management and associated topics such as staff appraisal, etc. This would reinforce their commitment to the annual work plan and also gives them time to stop and think. It would also help take them away from the day-to-day pressures, recharge their internal batteries, mix and share each other's experience and so work together better as a result.

ANNEX 6

The Use of Fishery Statistics in the Management of Coastal and Subsistence Fisheries

by
Masanami Izumi
Fishery Officer
FAO Sub-Regional Office for the Pacific Islands
Samoa

1. Introduction:

The fisheries sector in Small Island Developing States (SIDS) assumes a role of critical important for social and economic reasons. The sector provides a basic and vital source of food; employment when commercial production is possible and population concentrations and markets exist; and important additions to government revenue from the sale of fishing rights (access fee payments). Exports of fish and fishery products produce much-needed foreign exchange.

The International Conference on the Sustainable Contribution of Fisheries to Food Security was organized by the Government of Japan in collaboration with FAO in 1995. The world community recognized the fundamental importance of the fisheries sector for SIDS and urged technical and financial assistance to fisheries in these island countries either directly or through regional, sub-regional and international organizations.

In addition, the 23rd Session of FAO's Committee on Fisheries (COFI) in 1999 recognised that further international assistance and co-operation would be needed to develop, manage, and conserve fishery resources in order to increase food security and the standard of living of SIDS. Further, the importance of fisheries sector was also emphasised at the Special Ministerial Conference on Agriculture in Small Island Developing States held in Rome in March 1999.

In the Pacific region, the Secretariat of the Pacific Community undertakes the long-term task of monitoring all aspects of tuna fishing activity in the region, and maintains this information in a Regional Tuna Fishery Database incorporating catch / effort data, size and species composition data, observer and tagging data. SPC's PROCFISH commenced its activities for reef resource assessment and monitoring. Also, SPC has been participating in the Co-ordinating Working Party on Fishery Statistics (CWP), which Secretariat is at the FAO Headquarters, and hosted the 19th CWP meeting in New Caledonia in July 2001. Beside the development of collection and analysis of tuna fishery data at regional and national level in the Pacific region, the further development efforts of data collection and analysis in coastal and subsistence fisheries and aquaculture are needed. Without reliable information, no supportable decisions can be reached, no diagnoses on the state of fisheries can be performed, and no prognoses on the effects of management control can be made.

2. FAO's Activities in Fishery Statistics in the Pacific Region:

Fishery managers in SIDS experience difficulties in conservation and management of coastal fish stocks and in exploitation of offshore resources. One of the reasons is that they have very little and scanty information about local fish stocks and the degree to which they are exploited. Article 7.4 (Data gathering and management advice) of the FAO's Code of Conduct for Responsible Fisheries states that data as well as data collection systems are basic requirements for the establishment of appropriate fisheries policies (FAO 1995). The needs for improvement of this area are very high in the Pacific Island countries.

In 1997, FAO carried out a study on "Status of Fishery Statistics in the South Pacific". In the study report (FAO 1997a), it is stated that the statistical basis of the data is weak in view of methodological and practical constraints. The coverage shows serious gaps and inaccuracies particularly in artisanal and subsistence sub-sector.

At the Second Meeting of South West Pacific Ministers of Agriculture held in Apia, Samoa, in June 1997 (FAO 1997b), the representative from Samoa elaborated on the difficulty in obtaining fish statistics from the subsistence / artisanal sector. It was recommended for consideration the method trailed in the country involving school children to collect fishery data from this sector. The trial referred to took place under the FAO's TCP project (TCP/SAM/8852). Further, a field trial of a subsistence fisheries student census was carried out by FAO in August 1999 (FAO 2000).

The Third Meeting of FAO's South West Pacific Ministers of Agriculture held in Tonga in April 1999 recognized the importance of reliable data and agreed to take necessary actions to further improve collection, dissemination and analysis of fishery statistical data (FAO 1999b). Further, the Fourth Meeting of South West Pacific Ministers of Agriculture held in Vanuatu in July 2001 recommended continuous efforts for improving fishery statistics in cooperation with regional organizations in the region (FAO 2001c). For the information, the fifth Meeting of South West Pacific Ministers of Agriculture will be hosted by the Government of Fiji in Suva, 31 March – 1 April 2003.

As recommended by the above-mentioned Ministers Meeting, in 2001 FAO formulated / commenced the 5 year regional project on fishery statistics titled "Support for Improvement of Statistics on Coastal and Subsistence Fisheries and Aquaculture (GCP/RAS/183/JPN)" trust-funded by the Government of Japan (FAO 2001b). Through the project activities, it will support fishery managers in the Pacific SIDS to further improve the statistical basis for their decision making by means of more reliable fishery databases through better data collection and management.

As the first major activities under the regional project, FAO organized the Pacific Islands Regional Workshops on Fishery Statistics in Noumea, New Caledonia, 16-18 July 2001 in co-operation with SPC (FAO 2001d). A summary report of the workshop is available at the FAO Office in Samoa. The following recommendations were made at the workshop for attention by the government.

(1) Limited national capacity to establish an independent unit that specially co-ordinates statistical issues for fisheries.
   - Central governments should recognize the importance of fishery statistics and should establish of a fishery statistical unit within the appropriate structure.
   - Incentives (financial or otherwise) to retain staff, especially qualified staff should be considered in order to maintain the quality of the statistical output.

(2) Weakness in national systems for fishery statistical co-ordination in a broader form.
- Central governments should consider developing committees or working groups in-country to address fisheries statistical issue.
- Area within government statistics departments and fisheries statistics that overlap each other should be identified to increase efficiency and cut cost due to duplication of effort.

(3) Limited resources allocated to support national fisheries data collection systems.
   - Public awareness campaigns should be considered in order to improve relation between the government sector and fishers and stakeholders.

(4) Lack of data for the subsistence fisheries sector.
   - Involvement of communities in data collection should be encouraged.

3. Collection of Fishery Data:

Typical flow of a data collection programme is shown as follows.

GENERAL POLICY DECISIONS

↓
Objectives of Data Collection
↓
Indicators and Data Variables
↓
Data Collection Strategy
↓
Data Collection Methods
↓
Data Management
↓
Planning and Implementation
↓
System Appraisal

3.1 The Uses of Information:

Fisheries policy and management objectives need to be based upon analyses of reliable data. Policy and management issues can be broadly divided into food security, socio-economic and environmental concerns, each of which need certain types of information for decision-making. While the precautionary approach could be used when information is insufficient, management in general should be based on the "best scientific information available" and this has important implications in terms of types, quantity and quality of data to be collected.

3.2 Objectives of Data Collection:

Data are needed to make rational decisions, evaluate the fisheries performance in relation to management objectives. The extent to which objectives are achieved is assessed using indicators, which are generated from data. There is no standard set of indicators, but must be tailored to each fishery dependent on which social, economic or environmental concerns are important. Appropriate indicators can be developed which measure the state of the resource, the performance of fishing controls, economic efficiency, socio-economic performance and social continuity.

3.3 Indicators, Data Types and Variables:

Once policy and management objectives are defined with their relative reference points, appropriate performance indicators can be identified, and so can the variables which are needed for their estimation. However, there is feedback between choice of indicator and data variables, since it is at this stage that logistics and costs have a significant influence on the data collection programme.

3.4 Data Collection Strategy:

Before looking at the details of the data collection methods, an overall strategy is required. The way in which different data variables are collected needs to be tailored to the structure of the fishery. A key element in design is the degree to which fishers and others co-operate, an issue which is most effectively addressed by using a co-management approach. Designers must choose which variables need to be collected through complete enumeration and which should be sampled. Complete enumeration is expensive for many variables, but must be carried out for some if totals are to be estimated for the fishery. Sampling is more cost effective, but care is required in designing the distribution of sampling effort in time and space. The strategy will be strongly influenced by the budget and personnel available.

3.5 Data Collection Methods:

The choice of method is influenced by the data collection strategy, the type of variables, the accuracy required, the collection point and the skill of the enumerator. Links between a variable, its source and practical methods for its collection can be help in choosing appropriate methods. The main data collection methods are registration, questionnaires, interviews, direct observations and reporting.

3.6 Data Management:

Fishery data must be stored securely, but made easily available for analysis. The design of a data management system should follow the basic data processing principles. The database should store the original raw data. The data management system should be integrated with the data collection system as far as possible. Database design and software development can vary in approach from adapting an existing system to designing a new system scratch.

3.7 Planning and Implementation:

The implementation of a data collection programme should follow a normal project cycle. During the planning phase, a legal and institutional framework needs to be put in place, and the current working practices and budget will need to be reviewed, so that appropriate resources can be secured for a sustainable programme.

4. Selected Reference on Fishery Statistics:

FAO (1995). Code of Conduct for Responsible Fisheries. 41 pp.
FAO (1997a). Status of Fishery Statistics in the South Pacific. FAO Regional Office for the Asia and the Pacific, Bangkok, Thailand, RAP Publication 1997/30.
FAO (1997b). Report of the Second Meeting of South West Pacific Ministers of Agriculture.
FAO (1999a). Guidelines for the routine collection of capture fishery data. FAO Fisheries Technical Paper, 382, 113 pp.
FAO (1999b). Report of the Third Meeting of South West Pacific Ministers of Agriculture.
FAO (2000). The Use of Students in Surveying Subsistence Fisheries – a Pacific Island case study. FAO Fisheries Circular, No. 962 (FIDI/C962), 104 pp.
FAO (2001a). What is the Code of Conduct for Responsible Fisheries ? 13 pp.
FAO (2001b). Project Document of GCP/RAS/183/JPN.
FAO (2001c). Report of the Fourth Meeting of South West Pacific Ministers of Agriculture.
FAO (2001d). Report of the Pacific Islands Regional Workshop on Fishery Statistics, Noumea, New Caledonia, 16-18 June 2001, 24 pp.
FAO (2002a). Inland capture fishery statistics of Southeast Asia: current status and information needs. FAO Regional Office for the Asia and the Pacific, Bangkok, Thailand, RAP Publication 2002/11, 114 pp.
FAO (2002b). Pacific Island Fisheries – regional and country information. FAO Regional Office for the Asia and the Pacific, Bangkok, Thailand, RAP Publication 2002/13, 168 pp.
FAO (2002c). The State of World Fisheries and Aquaculture, 2002. FAO Fisheries Department, 150 pp.
FAO (2003). New approaches for improvement of inland capture fishery statistics in the Mekong Basin. Ad-hoc expert consultation, Udon Thani, Thailand, 2-5 September 2002, FAO Regional Office for the Asia and the Pacific, Bangkok, Thailand, RAP Publication 2003/01, 145 pp.
FAO (undated). FIGIS – Fisheries Global Information System.

ANNEX 7

Activities on Data Collection and Fishery Statistics in the U.S. Pacific Islands

DAVID C. HAMM

NOAA FISHERIES

HONOLULU, HAWAII

The U.S. federal government and the U.S. Pacific islands local fisheries agencies have made significant investments in collecting data on the fisheries activities occurring around each island area and on the high seas from vessels fishing out of U.S. ports. The fisheries of the areas are quite diverse, ranging from individual fisherman conducting subsistence and recreational harvest in near shore waters to substantial large vessel fisheries operating in all areas of our EEZs and on the high seas. The methodologies used to monitor these fisheries are similarly diverse. This paper will present a brief overview of major fisheries monitoring programs and tools used to obtain data on our fisheries in support of management of those fisheries.

Background

The agency responsible for fisheries management within the U.S. EEZs is the U.S. Department of Commerce, National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries). The Western Pacific Regional Fisheries Management Council (Council) develops and NOAA Fisheries implements Fishery Management Plans for the U.S. Pacific EEZ areas. NOAA Fisheries' Honolulu Laboratory is the principle agency responsible for providing scientific advice, data, and information to the Council in developing the Fishery Management Plans. Historically, the Honolulu Laboratory has been a part of NOAA Fisheries' Southwest Fisheries Science Center in La Jolla, California, but later this year it will become part of the newly created Pacific Islands Fisheries Science Center and Region. This new organizational structure is being created in recognition of the significant growth and importance of fisheries in the Pacific. The Laboratory's major goals, responsibilities, and activities will continue under the new organizational entity.

In 1981, the Honolulu Laboratory established a program to focus specifically on improving fisheries monitoring programs in the U.S. Pacific island areas to enhance the quality, quantity, timeliness, and accessibility to data and information needed for fishery management purposes. This program is called the Western Pacific Fishery Information Network (WPacFIN) and its main goal is to assist U.S. Pacific islands fisheries agencies establish and maintain fisheries monitoring programs by providing technical support and assistance and some limited funding to enhance fisheries data programs. The WPacFIN central support staff provides a wide range of technical support to island fisheries agencies in Hawaii (Division of Aquatic Resources-HDAR), American Samoa (Department of Marine and Wildlife Resources-DMWR), Guam (Division of Aquatic and Wildlife Resources-DAWR and the Bureau of Statistics and Plans-BSP), and the Commonwealth of the Northern Mariana Islands (Division of Fish and Wildlife-DFW). The types of technical support include:

- Data collection system analysis and design
- Computer data processing system design, programming, and implementation
- Data analysis and report generation
- Training on all aspects of fisheries monitoring

The WPacFIN program also maintains a website with many summary fisheries statistics and graphs created from the data provided by the island fisheries agencies (http://wpacfin.nmfs.hawaii.edu).

Overview of Fisheries Monitoring

It is recognized that some of the most important decisions in fisheries management are about establishing fisheries monitoring programs that will be effective in providing the information needed for various types of management decisions. Some of the general questions that need to be answered include:

- What data are needed to understand and manage each of the fisheries resources within the area of jurisdiction?
- What types of data collection programs are appropriate?
- What types of programs can be executed successfully by local agencies?
- What personnel and financial resources are needed to develop and maintain long term monitoring programs?

Fisheries monitoring programs generally fall into some basic categories that define the methodology being employed and the source of the data. In selecting any fishery monitoring tool the method of implementation must be defined by asking:

Will it be…… Mandatory……. or……..Voluntary?
Will it be a ……..……... Census……... or…….. Sampling?
Data recorded by..…….. Scientists/staff….. or……... Fishers/industry
Will it be done…..…….. Long-term…… or……Short-term

Combinations of almost all of these categories are possible, useful, and appropriate under certain circumstances, but generally speaking, the most robust and reliable data systems are those using methodologies down the left hand column.

Some of the common fisheries monitoring systems include:

–Logbooks
–Observer Programs
–Dealer reports: "Trip Ticket" receipts: invoices of sales
–Fisherman reports for catch/effort/sales
–Market sampling
–Creel surveys: participation and catch/effort
–Tournament sampling
–Vessel classification/registration
–Transshipments/exports
–Imports
–Specialize biological sampling and research projects

Fisheries Monitoring Tools Used in the U.S. Pacific Islands

Every type of fisheries monitoring system listed above, and within nearly all of the categories of types of data collection listed above, have been used in the past or are currently being used in the U.S. Pacific island areas. The following table summarizes the matrix of tools used in the various island areas and by the NOAA Fisheries office for federally regulated limited access fisheries

Island Data Collection Systems

	NMFS	A.Samoa	Guam	CNMI	Hawaii
Logbooks	X				X
Observers	X				
Dealer Reports		X	X	X	X
Fisherman Reports					X
Market Sampling	X	X	X	X	X

Creel Surveys	X	X	X	X	X
Tournament Sampling		X	X	X	
Vessel Classification	X	X	X	X	X
Transshipments/Export		X	X	X	
Imports			X	X	
Research Projects	X	X	X	X	X

Logbooks: Mandatory reporting using fisherman-completed logbooks is currently used for all participants in the federally managed longline fishery and in the Northwest Hawaiian Islands (NWHI) bottomfish and lobster fisheries. A catch/effort logsheet is completed for each set of the gear or day of fishing. Electronic logsheets are also accepted from some vessels with computers on board which are typically interfaced with GPS systems which results in more accurate recording of location data. This is a long-term monitoring tool.

Observer Programs: Currently there is a mandatory observer-sampling program operated by NOAA Fisheries for the longline fishery operating out of Hawaii. Trained observers collect detailed catch and effort during all fishing operations and most significantly collect data on interactions with protected species and bycatch (discards). The data from the observer programs is also used to validate the accuracy of the logbook data submitted by the vessel captain. The NWHI bottomfish fishery has had voluntary observer coverage in the past and is currently being considered for a mandatory observer program.

Dealer reports: All island areas have some form of a long-term fish-dealer reporting system. This is one of the least expensive tools for monitoring commercial landings because it requires cooperation of a relatively small segment of industry. If done properly, it can provide very reliable data. Hawaii has a mandatory program that requires all dealers to report the details of each transaction and submit forms on a monthly basis to HDAR. Invoices or "Trip Tickets" are used in all other areas to document each purchase made by fish dealers, stores, restaurants, and hotels. Receipt books are provided by the fisheries agency to the businesses and the invoices are completed by the business for submission to the fisheries agency on a regular basis. American Samoa has a mandatory census program, whereas Guam and the CNMI have a voluntary sample program with participation ranging from 70-95% of the fish-purchase businesses in each area.

Fisherman reports are used only by the State of Hawaii to monitor their commercial fisheries. Hawaii law requires all fishermen who intend to sell fish to obtain a commercial fishing license and to report the details of all of their fishing activity. Detailed catch and effort data are required at the species level for each day or trip, depending on the fishery. This system has been in place for over 50 years and is the primary source for fisheries management data for Hawaii.

Market sampling programs are typically short-term sampling programs conducted by trained fisheries staff to obtain a large quantity of size frequency and other biological data for a wide range of species in a very efficient manner.

Creel surveys are used in all U.S. Pacific island areas and NOAA Fisheries. These surveys are always voluntary sampling programs conducted by trained fisheries staff and can be long-term, short-term, or intermittent. Methodologies for conducting creel surveys are quite varied and can provide a wide range of important fisheries data. Creel surveys can be implemented on almost any scale but work best for small coastal or artisanal fisheries. If designed and conducted properly the sample data can be expanded to estimate total catch and effort for many fisheries sectors and gears. Regardless of the specific methodologies used in creel surveys, they all have two major components; participation counts to estimate the amount of fishing that is occurring, and interviews of fishermen to obtain a wide variety of parameters about the catch.

Tournament sampling is done in most of the island areas on an intermittent basis, although some tournaments have been sampled every year for many years. Typically, fisheries agency staffs collect the data and attempt to record data for all fish landed during the tournament. In addition to obtaining biological data, tournament sampling is an excellent time to build rapport with fishermen, provide information to them about fisheries programs, and to enhance the political awareness of the importance of fisheries monitoring programs.

Vessel classification/registration systems are in place in all areas. Vessel registration is a mandatory census of vessels however information about fishing methods is missing or not robust in most systems. American

Samoa and the CNMI fisheries offices also do annual visual verification surveys of vessels to document the type of fishing activities used for each vessel. American Samoa has a nearly complete photo library of vessels fishing in their islands and this is posted on the WPacFIN website.

Transshipments/exports data are collected in Guam on a mandatory census basis from the primarily foreign longline fishery, which offloads and transships its catches at the commercial port. The agents for the fishing vessel are required to complete a total landings form, which includes some general measures of fishing effort and location in addition to landings details at the species level. The weights of each fish unloaded is also recorded individually and provided to Guam BSP. This has proven to be a valuable source of many thousands of size measurements for a variety of pelagic species.

Imports: The CNMI DFW office collects data on air import and export of fisheries products via airway bills collected from airline companies at the airport.

Specialized biological sampling and research projects are conducted by fisheries staffs of all fisheries agencies in the area. These are generally directed to answer specific scientific questions and fill information gaps and cover virtually all areas of fisheries science.

Data Quality and Cross-System Validation

Regardless of the types of fisheries monitoring tools used, the quality and quantity of the data collected is extremely important. The quality of data is critical for good management and the quantity of data is important for making sound decisions based on sufficient amounts of information. Whenever possible, comparing similar types of data from different sources and using different monitoring tools can:

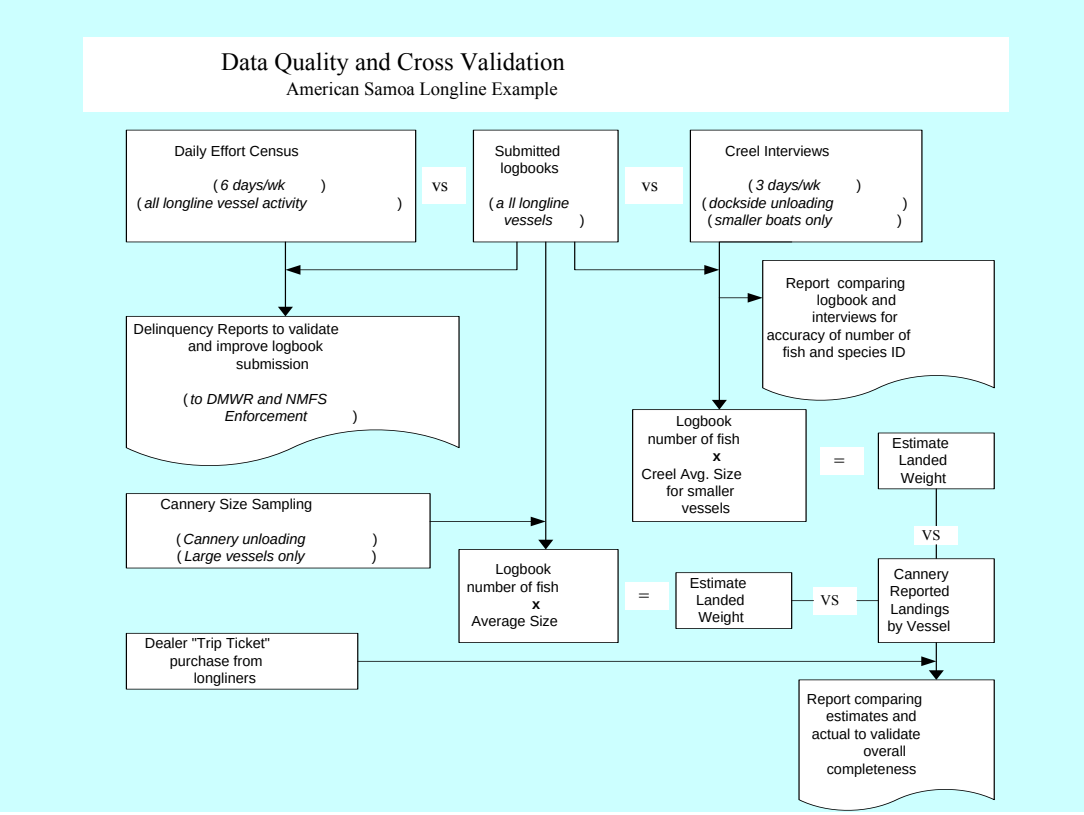
– Verify and validate the quality of the data in each monitoring system when the data are telling the same story

– Validate the fisheries monitoring programs themselves

– Identify problem areas and gaps in data systems when the data from different systems are telling different stories; and ultimately can be used to

– Improve fisheries monitoring programs

The following schematic demonstrates the type of cross-system data validation and checking that can be used to help validate data and data systems between various fisheries monitoring tools. It shows how data collected from six different monitoring tools for the American Samoa longline fishery are being used to validate and improve the system.



Summary

Collecting data and monitoring fisheries are vital aspects of fisheries management and the tools available to accomplish these tasks are as varied and diverse as the fisheries themselves. The agencies responsible for managing the fisheries within the respective EEZs of the U.S. Pacific island areas have invested heavily in creating and maintaining appropriate fisheries monitoring programs throughout the area. These data systems must evolve as the fisheries themselves evolve and new tools need to be continuously developed as the fisheries become more complex and the management issues that need to be address change over time.

ANNEX 8

SPC ROLE IN RELATION TO QUANTITATIVE INFORMATION ABOUT PACIFIC ISLAND FISHERIES

By Tim Adams
Director, SPC Marine Resources Division

This paper is to briefly introduce meeting participants to SPC's fisheries statistics and data-management role and activities.

SPC's longstanding work in tuna and other oceanic fishery statistics is well known to most of the participants. It will only be briefly mentioned here because this is a coastal fisheries meeting, however, it provides a good reference point for comparison.

The fundamental basis of the regional tuna database is the logsheets returned by tuna vessels fishing under access agreements or national licences – a data resource that is not available, or even possible, in most Pacific Island coastal fisheries. Other oceanic data sources include scientific observer reports, unloading reports by port samplers, tagging, and biological information on individual fish. The main aim of SPC members in establishing this tuna statistical system several decades ago was to provide regional assistance to countries in monitoring the foreign tuna fishing taking place in their waters, and to acquire and organise the information needed to help us answer questions about the status, resilience & capacity of these regional tuna stocks.

If the main driver behind the availability of fisheries statistics was the need to answer questions of sustainability, and conservation, then there would be much more data collected on coastal fisheries than on tuna, since we know much less about reef fisheries, and some are definitely in trouble..

The data coverage of the tuna database is relatively comprehensive because:

(a) there are relatively few industrial tuna fishers compared to coastal artisanal fisheries, most are under a legal obligation to report, and the skippers are already accustomed to the bureaucracy of reporting;
(b) there is strong political motivation, when foreign vessels are fishing in domestic waters, or distant water vessels are fishing in the region, to hold them fully accountable for their activity;
(c) it is an industrial fishery, and the standard management principles for such fisheries rely heavily on statistics

The tuna data is compiled mainly at the regional level not only because it has turned out to be more efficient for many SPC member countries to do it this way, but because it is a regional fishery – it is not only the fish which are highly migratory, but also many of the larger fishing vessels.

The fact that we have this major statistical effort going has enabled this region to contribute high quality data on tuna fisheries to FAO global fishery databases.

Inshore fisheries are a different story.

When I have had to address meetings of statisticians, oceanographers or environmentalists, it has always been difficult to explain that most Pacific Islands coastal fisheries are village fisheries, most have a degree of customary tenure, and there is usually quantitative data or analysis involved when villages or communities to manage their own fisheries. Most of the information used in management is oral. One of the main motivations for collecting statistics – government fisheries management decision-making – is thus not present in the case of many Pacific Island artisanal fisheries.

And since governments don't rigorously manage village level artisanal and subsistence fisheries in most of the Pacific, it is not cost-effective for most governments to quantitatively monitor these fisheries at a level of fine detail. Most of you rely, for indications of problems with coastal fisheries, not on fishery catch-effort statistics but on verbal reports, by people bringing issues to your attention (and complaints). And for indications of the scale of fisheries you look at export records, market surveys, or ask an agency like SPC or a university to do a survey. Very few of you are set up to monitor coastal fisheries in the way you monitor tuna fisheries.

Many of you have heard Bob Johannes' views on "dataless management" in fisheries like this (an explanation is available at http://www.spc.int/coastfish/Projects/eu/dataless.htm). Dataless management does not mean informationless management. It just means that for certain fisheries, governments can move away from trying to introduce data-hungry intensive fishery management models and towards something more appropriate to the fisheries in question, particularly models where decision-making is based on the oral information that normally exists at the local level in the Pacific. And of course, for decision making to be based on local information, the decision-making itself has to be local, or directly involve fishers.

However, we don't get away from statistics so easily in the modern world. Even if hard data is not strictly necessary for local management of inshore fisheries, there is still a need for quantitative information for other reasons.

One major need is for OVERVIEW information for local and national planning, and for national and regional policy-making. For example, how do you distribute infrastructure and government services if you don't know how fishing is distributed, and who is fishing for what?

And how do you keep track of whether fisheries management or conservation systems are healthy if you don't regularly ask people what is happening, and evaluate their responses against some known standards?

Another need is for answering SPECIFIC QUESTIONS - practical questions on how to handle fishery resource problems that fisheries departments are called upon to deal with - and more general questions on, say, the best design for MPAs, the optimum moratorium period for recovery of overfished trochus, or just what level of harvesting can be considered sustainable for a particular resource.

Thus, whilst oral information is often adequate for locally-managed and traditional fisheries (provided the mechanism has evolved to effectively act on such information), other levels of decision-making in modern societies require information to be recorded, validated and summarised. Once recorded, this same information can then be used at many levels. So what we are saying is that detailed written fisheries statistics are not necessary for *managing* many coastal fisheries – indeed, it is often preferable that decision-making rests at the local level. But decisions also have to be made at higher levels in the nation, or the region, or at the global level, and this does require robust summary statistics.

Scientific research of course prefers very detailed statistics and, as with all research the potential outputs are weighed against the cost. But the need by researchers for detailed exploratory statistics to answer specific scientific questions should not be confused with the need by decision-makers and fishery managers for routine monitoring statistics covering the whole management area.

As with tuna fisheries, it is the need to obtain information for national and regional policy-making that is driving SPC members, and SPC itself, into developing better inshore fisheries information systems.

We made a first[1] attempt to produce an overview of the status of Pacific Island Coastal fisheries in 1994 in a paper to the Heads of Fisheries Meeting (then called the Regional Technical Meeting on Fisheries), based on best available information at the time. This was later expanded and published in the Review of Oceanography and Marine Biology (Dalzell et al 1996).

[1] This is not strictly true. SPC has been producing broad overviews and opinions on the regional status of coastal fisheries for many years, starting in the 1950s, but there had never previously been an attempt to quantify current fishing activity, and make estimates to fill the probable information gaps.

Doing this helped us to realise how fragmented this information was - different people were carrying out surveys of very greatly differing scope, using totally different methodologies, with random timing and non-random geographical coverage. Many of these surveys were actually designed to answer specific scientific questions rather than to help monitor the status of fisheries.

In 1994 I was newly arrived at SPC and had a good idea of what I, as a former SPC Island member country fisheries head, wanted to see from SPC. It had been my plan to repeat this overview paper on the status of Pacific Island coastal fisheries at every Heads of Fisheries Meeting, in the same way as the OFP produces annuals reports on the status of tuna fisheries, but we quickly gave up this idea. There was just not enough new quantitative information coming to light on coastal fisheries to make an annual regional update useful.

Another significant finding from doing this overview was that many Pacific Island government central planning offices don't have the faintest idea what fish catch their country produces. Some national summaries don't take subsistence catches into account at all, even though they are by far the major proportion of production in many areas. This can sometimes lead to strange decisions and prioritisations of spending by central government.

We decided that a concerted approach was needed to produce a much better overview for each country - a broad-brush baseline. It would be most cost-effective to develop a regional team to do this, country by country. We produced a concept note for the project that later became PROCFISH/C in 1996 and the project finally got off the ground in March 2002.

Pierre Labrosse will provide more detail about this project later. Briefly - our aim is not to institute a detailed regional inshore fisheries database analogous to the SPC Oceanic Fisheries Programme's – which has what amounts virtually to a complete census of tuna fishing for the region, nor to persuade countries to develop intensive quantitative monitoring of all their coastal fisheries.

Instead, the model we are promoting is based on occasional scientific surveys (involving external expertise where necessary), and in the meantime encouraging regular community-based, or local government monitoring of certain "trigger" catch-rates or socially-relevant indicators. PROCFISH/C is itself carrying out the regional baseline survey, by applying the same methods at several sampling sites in each country, and will test various indicators, proxies or rules of thumb, for filling in the gaps, both spatial and temporal, between these basepoints. The project also provides hands-on training for those who decide to use these methods.

The project has several goals, all aimed at providing information for decision-making about coastal fisheries, but the fundamental aim in relation to fisheries statistics is to produce the first comparative overview of Pacific Island coastal fisheries, and to demonstrate cost-effective and achievable ways for fisheries decision-makers, whether in the community or in government, to keep information that is important to them updated.

A project-funded organisation like SPC cannot plan decades into the future, but it is our hope, and preferred strategy, to see this PROCFISH baseline updated, and the local indicators recalibrated, with rigorous scientific surveys in each area every three to five years, whether that work is done by SPC or not. One of the reasons we are interested in longer-term strategies for coastal fisheries management is to make sure that this need for occasional future update surveys is kept in mind, and not dropped out of the annual planning cycle.

This quantitative information strategy, of occasional intensive scientific surveys, with socially-relevant indicators monitored during the intervening period, is not entirely SPC’s idea. It also arose from a workshop of national representatives convened under the International Coral Reef Initiative in May 2000.

PROCFISH/C does not have the aim of producing management plans for inshore fisheries, but is aimed at producing rigorous basic information to inform management planning. The SPC Reef Fisheries Observatory will work with the Fisheries Management Section here.

The country-by-country survey activities of PROCFISH/C will also be an opportunity to take a more in-depth look at compiling existing information and to put together reef fisheries information profiles on a country by country basis. At the regional level the Reef Fisheries Observatory is setting up a reef fisheries

data repository. In this will be stored all the coastal fisheries information produced by SPC itself, as well as any other information that countries ask us to archive, either for safekeeping (it will use the same type of confidentiality agreement as the tuna fisheries database), or for contribution to regional and global summaries.

This time last year I was worried about the fact that the PROCFISH/C project funding only covered half our membership. However, it now appears likely that the next phase of EU funding can be programmed far more quickly than the last, and we can extend the project to the new ACP countries before the end of this year. The only SPC members that will not benefit from PROCFISH/C are the territories of the United States and New Zealand. However, the US territories are already advanced in coastal fisheries information compared to the rest of the region statistics and we hope, through appropriate collaboration, that we can develop analogous profiles for these areas as well.

Dalzell, P. J. , Adams T. J. H. , & Polunin, N. (1996) Coastal Fisheries of the Pacific Islands. *Oceanography and Marine Biology: An Annual Review* **34**, 395-531

ANNEX 9

Overview of Legislation Governing Coastal Fisheries Management in the Pacific Islands

Dr. Transform Aqorau, Legal Counsel, Forum Fisheries Agency

Introduction

The problem with fisheries management legislation in the Pacific Islands region is not the legislation, but more often than not, the inability to enforce them, and to bring those who have violated the fisheries laws to account. While sound fisheries legislation is imperative for effective management and conservation of fisheries resources, legislation in themselves do not provide the solution to all the problems that arise in a fishery. There is a plethora of fisheries legislation in the Pacific Islands region that regulate different aspects of a fishery, but the experiences of enforcement have varied between reasonably good to largely ineffective. The problem is perhaps even more acute with respect to regulation of coastal fisheries because of the nature of the fishery and the range of stakeholders involved. The problems of enforcement are in many instances exacerbated by the geographic circumstances of the islands. Despite these shortcomings, this has not precluded the Pacific Islands from enacting legislation to regulate their coastal fisheries. This paper will highlight some of the key aspects of the regulatory approaches of a select number of Pacific Islands. The paper will conclude by pointing out that careful consideration needs to be given to how a regulation can be enforced and implemented before it is promulgated.

COOK ISLANDS

Under the Marine Resources Act 1989, the Minister may by notice in the Cook, Islands Gazette authorise a fishery (ie. one or more stocks of fish) as a designated fishery if it is important in the national interest and requires management and development measures for "effective conservation and optimum utilisation". In designating a fishery such factors as scientific, economic, environmental and other relevant consideration must be taken into account (s.3(1)). Fish is defined to mean any aquatic plant or animal, whether piscine or not; and includes any oyster or other mollusc, crustacean, coral, sponge, holothurian (beche de mer), or other echinoderm, turtle and marine mammal and includes their eggs, spawn, spat and juvenile stages (s.2).

A fisheries plan for the management and development of any designated fishery is to be prepared and kept under review. The factors to be taken into account when developing a plan include the management objectives to be achieved; the development strategies to be adopted; the state of exploitation of the species and their characteristics; and the licensing programme to be followed. Account must also be taken of any relevant traditional fishery methods and principles (s.3(2)).

Where the plan directly affects fisheries in lagoons over which Island Councils exercise jurisdiction, the Act requires that consultations must be held with Island Councils, any Local Fisheries Committees, or local fishermen likely to be affected by the plan (s3(4)). All fisheries plans require Cabinet approval (s.3(5)).

Local Fisheries Committees are appointed by the Secretary for Marine Resources in outlying islands for the purpose of advising the Ministry on local management and development of fisheries (s.4). The Fisheries Committees may make recommendations to the Local Island Council to adopt by-laws in relation to any designated fishery but any recommendation made must be consistent with the fisheries plan (s.5(2)). It is mandatory under the fisheries plan to take into account any relevant traditional fishing methods and principles. .

Management Measures

The Island Councils have two primary' management strategies. The first is the power to declare:

(a) closed seasons, during which time fishing for particular species is prohibited and fishing in areas specified in the declaration is also prohibited; and

(b) open seasons, during which time fishing for the species or in the area or areas specified in the declaration is permitted (s.6).

The second is the power to issue licenses to any person engaged in fishing or any related activities. The Island Council may impose any conditions considered necessary for conservation and management but the conditions must be consistent with any by-laws or with the provisions of the Marine Resources Act (s.7).

Protection of Particular Species

The Outer Island (Aitutaki Paua) By-laws (20/88) prohibits the taking of paua (giant clam) of the species *Tridacna maxima* without a permit. The conditions imposed by the Council could relate to the number of pauas taken. Anyone acting in contravention of this by-law is liable to a fine and/or three months imprisonment (s.5).
The Aitutaki Fisheries Protection By-laws 1990 prohibits the taking and removal of shellfish named in the Schedule to these by-laws (ie. Paua, Kai and Ariri) or the selling of fish without a permit from the Aitutaki Island Council. The Council may impose conditions considered necessary to safeguard particular species from over exploitation.

The Manihiki Pearl and Pearl Shell By-laws 1991 (made pursuant to sections 15 and 16 of the Outer Island Local Government Act 1987 and section 5 of the Marine Resources Act 1989) allows for pearl shell fanning under a permit system. In granting the permit, the Council may impose conditions and may restrict the period in which pearl shell in the lagoon can be farmed (s.9). The method of taking pearl shell is also restricted under the by laws as a special pearl shell diving permit must first be obtained if diving for any naturally occurring pearl shells (s.4). If Island Councils consider that pearl shell stocks are likely to be over exploited, all or some of the pearl shell diving permits will be revoked by public notice (s.7(1)).

Under section 60 of the Marine Resources Act 1989, the Queen's Representative is empowered to make regulations on a number of matters and may prescribe measures for the conservation, management, development, licensing and regulation of fisheries; regulate or prohibit fishing within any lagoon; restrict the time of the year during which fishing may occur; prohibit, approve or restrict the equipment or methods which may be used.

FIJI

The Fisheries, Act 1942 protects the customary fishing rights of a Fijian mataqali (a subdivision of the Fijian people) provided the right of the mataqali has been registered by the Native Fisheries Commission in the Register of Native Customary Fishing Rights (s.13). Customary fishing right areas are generally regarded as extensions of the land boundaries of, right holding groups. Customary fishing rights in the reefs and shellfish beds are recognised. .

Fish is defined in the Act to mean any aquatic animal whether piscine or not or not and includes shellfish, sponges, holothurians (beche de mer), sea urchins, crustaceans, turtles and their eggs (s.2)

Management Measures

A fishing permit may be granted by the Divisional Commissioner (Government administrator of the Division) to others who are not members of the mataqali to take fish from a registered customary fishing area but such permits are not necessary in the case of persons taking fish with a hook and line, spear or portable fish trap that can be handled by one person. The, permit may however exclude fishing for particular species of fish, or exclude fishing in particular areas or by particular methods. The grant of the permit is at the discretion of the Commissioner but consultations with the local Fisheries officer and the mataqali whose fishing rights will be affected is mandatory before a permit is issued. .

The Minister has powers under section 3 of the Act to appoint honorary fish wardens whose functions are to detect and prevent offences and enforce the provisions of the Act. Section 9 of the Act gives the Minister power to make regulations to: prohibit any practices or the use of any method or equipment that is likely to injure the maintenance and development of fish stock; prescribe areas and seasons within which the taking of fish is prohibited; restrict the taking of fish either entirely or with reference to any particular species; prescribe limitations on the size and weight of fish to be taken; and prescribe limits on the size of nets and the mesh to be employed.

The Fisheries Regulations 1976 and amendments made to the Fisheries Regulations in 1990/91 provide in detail the conservation measures not only on the size and limits of fish to be taken and the equipment to be used but the restrictions applying to the taking of particular species such as crabs (r.9), turtle (r.20), trochus

(r.21), davui *(Charonia tritonis)* (r.22), giant helmet shell *(Cassis cornuta)* (r.23), giant clam (r.25A) and beche de mer (r.25b). The Regulations also prohibit the use of poison (r.8), the use of nets for fishing in estuaries (r.7) and fresh waters (r.10) and prohibit the taking of fish in restricted areas without permission (r.11).

FEDERATED STATES OF MICRONESIA

Title 24 of the Code of the Federated States of Micronesia dealing with marine resources provides in section 101, a Statement of Purpose which reads as follows:

> " The resources of the sea around the Federated States of Micronesia are a finite but renewable part of the physical heritage of our people. As the Federated States of Micronesia has only limited land based resources, the sea provides the primary means for the development of economic viability which is necessary to provide the primary means for the foundation of political stability. The resources of the sea must be managed, conserved, and developed for the benefit of the people living today and for the generations of citizens to come. For this reason the harvesting of this resource, both domestic and foreign, must be monitored, and when necessary, controlled. The purpose of this Title is to promote conservation, management and development of the marine resources of the Federated States of Micronesia, generate the maximum benefit for the nation from foreign fishing, and to promote the development of a domestic fishing industry."

Fish is defined to mean any living marine resource (16).

Management Measures

Section 301 of Title 24 establishes a Micronesian Maritime Authority and amongst its many functions the Authority is' required to adopt regulations for the conservation, management and exploitation of fish in the exclusive economic zone (s.1(a)) and to issue permits for fishing in the Territorial Sea or internal waters of a State (s.303(3)). The Authority may deny the issue of a permit for foreign or domestic based fishing within one nautical mile of the edge of a coral reef that is wholly submerged during high tide (s.111(4)(a)). Where the Authority permits fishing on or within one mile of the reef area within the EEZ, it is required to submit a copy of the application to the State concerned and to the customary inhabitants who have authority to control fishing over the reef areas. The State concerned would be-required within 30 days to communicate any objections to a permit being issued over the reef areas to which customary inhabitants have control (s.111(4)(b)).

The Authority also has the power to determine the levels of total allowable level of fishing in respect of any stock of fish and set levels in accordance with requirements of optimum sustainable yield determined by - scientific evidence, conservation, management and development measures contained in fishery management plans (s.108).

KIRIBATI

Kiribati has a highly developed system of regulations for traditional fisheries. Some of the principal traditional regulatory systems were codified and given legislative effect in the Island Regulations (Tuan Aonteaba) of 1950. These were abolished in 1967 when Local Government Councils were established under the Local Government Ordinance 1966. The 1966 Ordinance was in turn repealed and replaced by the Local Government Act 1984. Under the 1984 Act, Local Government Councils may be established by warrant. The warrant establishing the Council sets out the functions which the Council shall or may perform. These functions, which are set out in the Schedule to the Ordinance include the power:

- to provide for the improvement and control of fishing and related industries; and
- to prohibit, restrict, or regulate the hunting, capture, killing or sale of animals, reptiles, birds or fish of any specified kind of animal, reptile, bird or fish.

The 1984 Act empowers the Local Government Council to make by-laws for the carrying into effect and for the purposes of any of the functions conferred upon it (s.50(1)). Any proposed bylaws or amendments must be publicised, debated and discussed at public meetings convened by the Council for that purpose (s.51).

The Fisheries Ordinance 1946 provided for the recognition of customary "ownership" and fishing rights by the kainga (clan) and utu (family). The Ordinance established a procedure for the registration of these customary rights and for the adjudication and settlement of disputes. The Commission was charged with the duty to inquire into the title to all customary fishing rights and to record the boundaries and situations of such rights in a Register of Native Customary Fishing Rights. Unfortunately, it appears that little was done to implement the provisions of -the Ordinance. The Native Lands Commission, which was established to define and register rights of land tenure, dealt with certain types of marine tenure, including rights over fish traps, fish ponds, sea walls and reclaimed land. The ownership of such rights were vested in individuals**,** rather than the kainga or utu. Rights of individual ownership were given statutory recognition in the Gilbert and Phoenix Islands Lands Code 1963. The current Fisheries Ordinance 1977 pays particular attention to the development and exploitation of fisheries resources for the benefit of the country (s.3(1)). The Ordinance however, provides for regulations to be made in relation to the conservation and protection of all species of fish; the establishment of closed seasons; the designation of prohibited areas, the taking of coral and seaweed; the quantity of fish to be caught and the limits on the size of fish to be taken. Regulations may also be made to prohibit certain types of fishing practices and the use of equipment that is likely to damage fish stock (s.22).

"Fish" and "fishing" are defined broadly to include the taking or harvesting of any aquatic animal such as turtles and their eggs, molluscs, crustaceans, sea urchins and beche de mer as well as coral, sponge and seaweed.

Management Measures

Under the Fisheries Ordinance a special licence is required from the Minister responsible if outsiders wish to fish in any sea or lagoon area or on any reef forming part of the ancient customary fishing ground of any kainga (clan), utu (family) or other division or subdivision of the people (s.21(1)) giving recognition to the customary rights of the I-Kiribati.

Some of the main traditional fishing norms of all the islands from Makin to Arorae were incorporated as part of Island Regulations in 1950 but the regulations were abolished in 1967. Other by-laws which regulating certain fishing practices include:

- Te Ororo, where a crowbar is used in combination with a net to frighten the fish (Abaiang Island Council Fishing (Te Ororo) By-law 1988);
- Using lights other than coconut torches (Arorae Island Council (Fishing) By-laws 1990; Onotoa Island Council (Fishing) By-laws 1971); .
    - Breaking the alignment of canoes while fishing for flying fish (Arorae Island Council '(Fishing) By-laws 1990; Onotoa Island Council (Fishing) By-laws 1971);
    - Use of motor boats in areas normally used by canoes (proposed Onotoa Island Council (Fishing) (Amendment) By-Law 1991);

Certain fishing practices are prohibited at certain times:

- Using torches or any other methods of fishing than nets during the Kawariki season (Arorae Island Council (Fishing) By-laws 1990);
- Fishing between midnight and sunrise in certain areas (Arorae Island Council (Fishing) Bylaws 1990); and

Certain fishing practices are prohibited to types of fish, for example:

- catching flying fish or lobsters by certain methods (Arorae Island Council (Fishing) By-laws 1990; Marakei Island Council (Control of Flying Fish) By-laws 1976).

Some Island Councils provide for the registration and protection of stone fish traps by prohibiting fishing within a certain distance. (Teinainano Urban Council (Control of Fish Trap) By-laws 1982).

Protection of Particular Species and Prohibited Fishing Areas

Particular marine species are also given protection under the Fisheries Conservation and Protection (Rock Lobsters *Panulirus* Species) Regulations 1979 which prohibit the taking and selling of immature rock

lobsters and females bearing eggs (r.3). The Prohibited Fishing Areas (Designation) Regulations 1978 prohibits fishing in certain areas such as the Azur Lagoon, Pelican Lagoon, Isles Lagoon, the Tonga Channel and the adjoining Anemia Ponds (all in Kiritimati).

NIUE

The Niue Fish Protection Ordinance 1965 defines Niue waters to mean the sea adjacent to the coast of Niue within one mile of the external reef line and includes all waters between that line and the coast (s.3).

Fish is defined by this Ordinance to mean:

> "every description of fish or shell fish and their young or fry or spawn and includes every other marine animal, whether mammal, reptile, or crustacean, and any other organic marine product whatsoever. " (s.3).

Management Measures

Under section 6 of the Ordinance, a fono for fish (ie. a prohibition placed on a fishing area) can be declared by public notice over any part of the reef or Niue waters and the effect of the fono for fish is that whilst it is in force no one may enter the area over which the fono has been declared; take inorganic substance, material or matter from any part of the area or take or kill fish in any such area (s.7). Anyone committing an offence is liable to a fine but an exception is made if human life is at stake due to stress of weather:
The Ordinance, giving custom legal expression, prohibits the taking of bait fish known as "ulihega" except from a bait fish area recognised for that purpose according to local custom. The taking of bait fish from a particular area is confined to those periods as decided by local custom or by-law. The local custom or by-law shall be deemed to include a provision that all bait fishing groups proceeding to the same general area must depart from the shore for the bait fishing grounds simultaneously. No ground or line bait other than coconut may be used to lure or catch the bait fish (s.8).

PALAU

The Fishery Zones and Regulation of Foreign Fishing (Title 27) legislation was promulgated to manage, conserve and regulate the harvesting of fish, both within the reef areas of islands and atolls and in other areas within the jurisdictional competence of the Republic.

Fish is defined to mean any living resources (s.102).

Management Measures

Section 121 establishes the Palau Maritime Authority. One of the functions of the Authority is to adopt regulations for the conservation, management and exploitation of all living resources in the extended and exclusive fishery zones (s.123(a)). Traditionally recognised fishing rights in submerged reef areas within the fishery zone are preserved and respected in accordance with the regulations of the Authority (s.146). The Palau Constitution also preserves traditional fishing rights and practices under Article 1(2)). This subsection gives each State exclusive ownership of all living and non-living resources, except highly migratory fish, from the land to twelve (12) nautical miles seaward from the traditional baselines; provided that traditional fishing rights and practices are not impaired.

Foreign fishing vessels are only permitted to fish in waters under national jurisdiction through a permit system. In any review of permit applications, the Authority is required to solicit views of appropriate persons in the Republic and hold public hearings where necessary. The application may be approved on such terms and conditions and, with such restrictions as the Authority deems appropriate (s.168(c)). A special bait fishing permit is issued to foreign fishing vessels at the sole discretion of the Authority. The Authority may include such terms and conditions (which could include conservation conditions) as considered appropriate for proper management (s.172).

CONCLUSION

The approaches to fisheries legislation in the Pacific Islands region are similar. For instance, the details of conservation and management measures are generally promulgated by way of regulations and by-laws and in some jurisdictions customary practices are taken into account.. The powers to make regulations and by-laws are generally wide enough in some jurisdictions to permit traditions and customs to be part of the range of marine resource management strategies but the inclusion of customary practices is at the discretion of persons authorised by law.

The challenge facing the Pacific Islands is to reconcile the need for effective application of both traditional laws and modern contemporary laws in a way that addresses fisheries management concerns. Customary tenets must be flexible enough to accommodate changes in values, lifestyles and consumption patterns, while constitutional laws must be simple and broad so as to be readily understood and applicable. Baines characterises the problem as follows:

> .. the extent to which tradition is to be accommodated in contemporary development, and the way in which this is to be done, has not been clearly defined. Without clear guidelines for matching tradition to economic development, tradition is likely to be overwhelmed by development pressures. The risk that this may happen is increased because Islander elite which makes policy decisions has been educated in a foreign mode, leaving some with limited understanding of their own people's tradition.[2]

The need to better regulate human behavioural patterns is underscored in Chapter IV paragraph (24) of the *Plan of Implementation of the World Summit on Sustainable Development*. It states:

Human activities are having an increasing impact on the integrity of ecosystems that provide essential resources and services for human well being and economic activities. Managing the natural resource base in a sustainable and integrated manner is essential for sustainable development. In this regard, to reverse the current trend in natural resource degradation as soon as possible, it is necessary to implement strategies which should include targets adopted at the national and, where appropriate, regional levels to protect ecosystems and to achieve integrated management of land, water and living resources, while strengthening region, national and local capacities.[3]

Careful thought must be given to developing regulations. Before a Regulation is promulgated, fisheries managers must ask themselves; does the capacity exist to enforce the regulations; how can the regulations be implemented; what are the costs involved in enforcing such a regulation; are administrative and institutional processes in place to enforce the legislation. All these issues need to be thought through carefully before a regulation is enacted.

---

[2] G. Baines, "A Traditional Base for Inshore Fisheries Development in the Solomon Islands", in K. Ruddle and R.E. Johannes (eds.), *Traditional Marine Resource Management in the Pacific Basin: An Anthology*, (Jakarta: UNESCO/ROSTSEA, 1983), p. 287

[3] United Nations, *Report of the World Summit on Sustainable Development, Johannesburg, South Africa, 26 August – 4 September 2002*, A/CONF. 199/20, (New York: United Nations, 1992), p. 20

ANNEX 10

The application and enforcement of fisheries regulations in Pacific island countries

Michael King, Fisheries Consultant

Fisheries regulations

Fisheries regulations are imposed on a fishery to support a strategy designed to achieve predefined goal. If the goal is "to rebuild fish stocks," for example, one particular strategy may be to "reduce fishing effort." In practice, it is unlikely that any single management measure will produce the desired results, and a combination of several regulations may be needed. National governments in Pacific islands have imposed a variety of conventional regulations that either restrict fishing (input controls), restrict the catch (output controls) or protect the marine environment.

In the case of national fisheries regulations, government staff, often fisheries or police officers, have the task of enforcing fisheries regulations. For a number of reasons the enforcement of national regulations is rarely successful. Although fisheries regulations may be applied in urban areas, they are rarely enforced in village areas. Indeed, because of the traditional governing structures of some communities, it would take a brave fisheries officer to enter some villages to enforce national laws. Effective national regulations rely on strong government enforcement around the entire country and this is both time consuming, expensive and sometimes traditionally impossible. Often, there is little stake-holder input into the formation of national regulations. The community is given no ownership of either the resource or the problem and therefore feels no responsibility or accountability. An alternative, discussed later at this meeting, is for fishing communities themselves to devise and enforce their own fisheries regulations.

The following sections describe some types of fisheries regulations and controls used in Pacific countries.

Limiting the number of fishers

Limiting the numbers of fishers is usually done by issuing a set number of fishing licenses. In the Cook Islands, for example, a set number of licenses is issued for people to collect trochus. In Samoa, a number of licenses is issued for fishers to participate in the tuna long-line fishery. Some village communities in Samoa have limited the number of fishers permitted to construct and use fence traps. In the past, numbers of fishers were controlled, in effect, by restrictions in access to a community fishing area. Trespassers who fished without permission in an area would be stopped and punished by clan leaders.

Limiting the efficiency and types of fishing gear

The use of some highly efficient fishing methods may be restricted in the interests of conserving fish stocks and allowing more people to use the resource. Limitations on gear types may include banning a specific fishing method in particular areas and on a particular species. For example, the use of gill nets may be prohibited in lagoons, and the use of SCUBA diving to catch lobsters may be banned.

Commercial gillnetting has been banned by communities in parts of Fiji and this is supported by the government. In Tuvalu, net fishing in the lagoons is also banned or strictly controlled by chiefs in some of the outer islands. In Samoa some communities have placed restrictions on the use of underwater torches for spearfishing at night. In some subsistence fisheries, the survival of the resource depends on inefficient exploitation!

Banning destructive fishing

Highly destructive methods of fishing, such as those involving the use of chemicals, bleaches or explosives are illegal, even though widely used, in many Pacific island countries. Some village communities have banned the use of traditional plant-based fish poisons *(Derris)* even though this is not banned under national law. In Samoa, some communities have banned the traditional smashing of coral to catch small sheltering fish. Local clans of Marovo lagoon in the Solomon Islands enforce prohibitions on the use of dynamite and plant poisons.

Closed areas and seasons

Closed areas can be used to protect juveniles and the spawning stock. Shallow water mangrove habitats, for instance, are known to be nursery areas for many species and are permanently closed to fishing in some coastal areas. In some countries known breeding areas for species such as trochus are permanently closed to fishing.

Fishing can be banned either during particular seasons, or in particular areas, or both. If the spawning season of a particular species is known from traditional community knowledge, for example, a closed season at the time of spawning may allow adults to breed without interference. Turtles, for example, are protected in some countries during the egg-laying months of November to February. Closures can also be used to prevent stocks being overfished.

Villages in Vanuatu have periodically banned the collection of trochus and green snails for specific periods. The closures were similar to customary taboos in design and enforcement but were also based on biological information provided by government fisheries staff. The exploitation of sea cucumbers for the export market in the atoll of Ontong Java in the Solomon islands was high until village leaders closed the fishery during alternate years. In the years closed to sea cucumber fishing, the lagoon is open to trochus diving.

In Samoa, a large number of village communities have chosen to establish small areas closed to fishing in part of their traditional fishing areas. Although these community-owned marine protected areas are small, their large number, often with small separating distances, forms a network of shelters for fish around the coast. Such a network may provide the means under which adjacent fishing areas are eventually replenished with marine species through reproduction and migration.

Minimum mesh sizes.

Minimum mesh sizes in nets, and escape gaps in traps are applied in many fisheries to allow small individuals to escape and grow to a size at which they can reproduce at least once before capture. In many island countries, governments have imposed mesh size regulations, and rules set by local fishing communities can support and enforce these regulations. Some communities may set their own larger mesh sizes, to further reduce the catch of small fish.

Size limits (minimum legal lengths)

Limiting the size of individuals caught involves returning captured individuals smaller than a prescribed minimum size to the sea. Traditionally, size limits have been to applied to allow individual fish to spawn at least once before capture.

Minimum legal sizes are perhaps the most ubiquitous of fisheries regulations and have been applied by national governments in Pacific Islands to many species including sea cucumbers, trochus, pearl-oysters, giant clams, spiny lobsters, mangrove crabs and many species of fish.

Size limits are only useful in fisheries where individuals are not harmed by the catching method, such as molluscs gathered by hand, or crustaceans caught in traps. Although some shallow-water fish caught on hooks may survive well if returned to the water immediately, this type of regulation has little application to spear-caught and deepwater fish species. Fish caught in deep water are unlikely to survive after being hauled to the surface and released.

Some village communities in Samoa have set their own minimum size limits, which are larger than those set under national regulations.

Rejection of females, or spawning females

Regulations making it illegal to retain females, or females bearing eggs, can only be applied sensibly to species in which the sexes can be distinguished easily and where the catching method does not harm the individuals caught.

Regulations making it illegal to retain egg-bearing, or "berried", lobsters and crabs are commonly used in Pacific Islands. The regulation is useful in cases where lobsters and crabs are caught in traps, and females bearing eggs can be returned to the sea. However, in cases where these crustaceans are caught by spearing, the regulation is of little use.

Catch Quotas

Fisheries agencies may determine that, in order to protect fish stocks, total catches should not exceed a certain amount called a quota. In the trochus fishery in the Cook Islands, for example, fisheries scientists have estimated that fishermen should be allowed to catch about 30% of the total trochus stock each year. Once this quota has been reached the fishery is closed.

Enforcement of regulations

Education rather than prosecution

Fisheries management strategies usually require one or more regulations, which, to be effective, must be enforced. However, the first and most important aspect of enforcement is education, and prosecution should be regarded as a measure of last resort. Users of a resource, or managed area, should be made familiar with any regulations, and the reason for their imposition. Public meetings, radio talks, press articles, and poster displays may be all used to publicise regulations, and to provide the public with an appreciation of the need to have regulations. If the majority of users support the aims of the regulations, peer pressure becomes a strong deterrent to those disregarding the law.

Indeed, in some cases, education is the only practical way to change attitudes towards overexploitation and environmentally damaging practices. An extreme example is where explosives and commercial poisons are used by members of coastal communities. The use of commercially available poisons such as bleaches (Sodium hydrochlorite) and insecticides, as well as explosives represent a serious threat to coral reef ecosystems and the long-term viability of fisheries in many part of the world.

Fishers using such destructive fishing methods are often tolerated, and sometimes highly regarded, in the community, as the catches are usually shared. Because of the isolated fishing locations, as well as lack of public sympathy, enforcement staff have difficulty in apprehending and prosecuting offenders. Public education appears to be the only method of ensuring that the use of such methods is seen as contrary to the long-term interests of the community. If public attitudes are turned against illegal fishing, the practice will be self-policing at the community level. A public education campaign could include short term measures, such as a series of talks given to community groups, and the distribution of posters emphasising the antisocial nature of using explosives and industrial chemicals for fishing. Regulations could enforce the inclusion of warning labels on certain chemicals sold. All bleaching agents, for instance, could include an adhesive label with a message warning against its use in fishing and emphasising the long-term damaging effects to the environment and fish production. Longer term methods include teachers introducing aspects of the marine environment and conservation into high school curicula.

The need for strong enforcement

Although prosecution should be regarded as a measure of last resort, necessary regulations must be rigorously enforced. Regulations which are imposed but unenforced, either due to insufficient enforcement staff, or to overly complex and impractical rules, will fall into disrepute. If regulations are unenforced, benefits will accrue to those who ignore the regulations at the expense of those who fish according to the rules.

The relevance of penalties

Penalties applied should be significant to the offender, and relevant to the offence. Although a small fine may be appropriate in the case of an individual taking undersize fish, the commercial fishing of high value species, such as lobster, should attract a large fine and gear confiscation to act as an effective deterrent. Enforcement staff should receive training in public relations, fisheries management, evidence collecting, and court procedures. If an infringement cannot be dealt with by education, cases taken to court should have a high probability that the prosecution will be successful.

The public cost of enforcement

Enforcement costs often account for a substantial proportion of the total costs of managing a fishery or marine protected area. The cost of transport for enforcement staff using vehicles and boats is high. This is particularly so in the case of open sea fisheries (involving fisheries patrol vessels), and in coastal fisheries where there are a large number of fish landing sites. Enforcement staff usually work in pairs, for safety reasons, and in order that corroborative evidence is available in the case of prosecutions. In addition, the preparation of documents for prosecution is expensive in terms of non-field time. In the worst case, the cost of policing regulations which are intended to maximise profits in a fishery could be greater than the benefits gained.

The application of regulations

The cost and practicality of enforcing regulations should be considered when any alternative management strategies are proposed. In some cases, it may be preferable to apply a less direct regulation which is cheaper to police, than a more direct one that is expensive.

Beside applying regulations to the fishing operation itself, controls can be applied at any convenient point in the post-harvest chain. It may be easier, for example, to prevent small sea cucumbers (below a legal minimum size) being purchased by a few processors than it is to inspect and regulate the catches of a large number of fishers working over an extensive geographic area. In this case, a regulation making it illegal to buy rather than to catch undersize species would be easier to enforce. Although some undersize fish may still be caught, fishers would soon avoid taking smaller individuals which are legally unmarketable.

The need for, and public support, for controls

The main problem is not so much in enforcing fisheries regulations, but in convincing the community that they are necessary. In the past, when populations were small, and fishing methods were less efficient, catches made by one person had very little effect on catches made by others.

But the human population and its demand for seafood have grown beyond that which can be supported by finite resources. In addition, there are other claims on the marine environment from development and industry. The dilemma is, that as demand for fisheries resources is increasing, the ability of the marine environment to sustain them may be decreasing. The freedom to catch fish, or to use the marine environment, without control is now, more than ever, likely to be at the expense of someone else's freedom to do the same thing. Some of these freedoms must be sacrificed to allow the continuing use of the marine environment and its resources by present and future generations. The renewability of fisheries resources depends on accepting controls which not only protect fish stocks, but ensure that the environment in which they live does not deteriorate.

What should we consider at this meeting? This, of course, is up to participants but I offer the following as starting points.

a) Difficulties of enforcement

- Are there alternatives to costly government enforcement? CBFM is one and this will be discussed later today.

b) Are there ways of simplifying enforcement?

- Is there value in concentrating enforcement on those marketing fish rather than on those catching them, for example.

c) Application of minimum size limits

- Would it assist countries to have a register and guide to recommended minimum sizes for say the 30 most important inshore species?

d) Public awareness

- What can be done in this area? Could an outside agency such as SPC assist with publicity material on the need to manage inshore fisheries?

ANNEX 11

The difficulties of centralised fisheries management in Pacific island countries; involving communities and fishers in management.

Michael King, Fisheries Consultant

In Pacific islands, as elsewhere, government agencies or departments are responsible for managing and conserving fish stocks and protecting the marine environment. And as discussed earlier, regulations are used either to control the amount of fishing, to control the amount caught, or to protect the marine environment.

Most countries have national fisheries regulations and, although these may be applied in urban areas, they are rarely enforced in village areas. Indeed, because of the traditional governing structures of some communities, it would take a brave fisheries officer to enter some villages to enforce national laws.

Subsistence fisheries, those which provide food for local people, are difficult to manage. They are made up of a large number of fishers using many different fishing methods to make small individual catches of a great variety of species from around the entire country. In summary the difficulties are;

- Large coastlines
- Many fishing communities
- Many fishers (sometimes everyone in the community)
- Many different fishing methods
- Technology creep
- Traditional management in village areas
- Resentment of outside "interference"

Effective national regulations rely on strong government enforcement around the entire country and this is both time consuming, expensive and sometimes traditionally impossible. In most countries, there is little stake-holder input into the formation of national regulations. The community is given no ownership of either the resource or the problem and therefore feels no responsibility or accountability in managing fish stocks.

One way to ensure that subsistence or village fisheries are sustainable is for fisheries agencies to encourage and support fishing communities to manage their own fisheries resources. In this case, the community is encouraged to define its own problems with fish stocks and the marine environment and propose solutions to these problems. The community sets its own conservation rules, and it (rather than the government) has a responsibility to enforce them. Because communities play the key role, this type of management is referred to as community-based fisheries management.

Community involvement results in the ownership of fisheries management actions and regulations. If communities make their own conservation laws, as they have historically done in the past, they are more likely to respect them. Under community ownership, fisheries management measures are enforced by communities themselves.

What community-based fisheries management can do

Community-based fisheries management programme has the potential to create communities that have set their own fishing regulations and conservation rules and are abiding by them. If communities make their own conservation laws, as they have historically done so in the past, they are more likely to respect them. Because communities are regulating fisheries for which they see themselves responsible there is a considerable saving on enforcement costs which may otherwise fall on government agencies.

However, it is unrealistic to expect all communities to do equally well in managing their marine resources and some assessment of individual villages in the programme must be made. Some villages will do poorly for a variety of reasons including intra-village disputes and unrealistic expectations.

Communities taking stringent management actions will almost certainly suffer a short-term decrease in catches of seafood. The hope of better catches lies some way off in the future, and communities may become impatient. However, the management and conservation activities of communities, particularly if they include the setting up of community-owned marine protected areas, are likely to eventually result in increased catches in fishable areas.

A household survey in Samoa revealed that fishers in villages with community-based fisheries management plans made average catch rates of 2.8 kg per person per hour whereas fishers in villages without such plans made average catch rates of 1.8 kg. Although this difference is highly significant, care must be taken in drawing conclusions as there is the possibility that people in villages joining the community-based extension programme were already better and more aware fishers.

Involvement in CBFM also inevitably results in government fisheries staff knowing more about concerns and problems with inshore fish stocks.

What community-based management cannot do

Community-imposed fisheries rules and regulations cannot replace (or even compromise) national fisheries regulations. For example, if a minimum size limit is imposed on a particular species under national regulations, communities may be allowed to locally enforce a higher but not a lower size limit.

It must be recognised that there are many things that a local community cannot do. Some environmental problems are complex and involve activities and areas beyond the control of a local community. For example, fish catches may be falling in a particular village because silt from a nearby river is killing the corals in its lagoon. Mangroves may be dying because a sea-front road has been built without proper planning. These effects may be caused by decisions and actions taken some distance from the village. Siltation, for example, may be the result of poor farming techniques or the logging of timber in hills many kilometres away from the village.

Such problems can only be addressed by an integrated effort by government agencies and community groups working together. Integrated Coastal Management (ICM) takes into account the inter-dependence of ecosystems, and the involvement of many different agencies (for example, those responsible for agriculture, forestry, fisheries, public works and water supply) and other stake-holders.

Although such problems are beyond the power of individual small communities to solve it may be possible for extension staff to provide the necessary link between communities and government to begin to address the issues.

Skills required for promoting community-based fisheries management

The involvement of fishing communities in the management of fisheries and the marine environment is possibly the only way of ensuring the sustainability of seafood stocks. The task of promoting this involvement requires a wide range of interdisciplinary skills. Studies of the traditions and culture of target groups are required. In many cases legal assistance is required to assign ownership of resources and to give communities the ability to prosecute wrong-doers from outside their communities (eg the bylaws applied in Samoa). Sociological and financial data are needed to make governments aware of the intrinsic value of subsistence fisheries. And, self-interest aside, advice is required on matters relating to fisheries biology.

The training of local people to facilitate community-based fisheries management reflects the wide range of skills required. Conventionally, extension officers in the fields of both fisheries and agriculture are technical people. However, a community-based extension officer requires a balance of both basic scientific knowledge and community facilitating and motivating skills; in the latter, listening skills, cultural knowledge and sensitivity are key requirements.

Today, we are going to hear of the experiences of several countries on the involvement of communities in fisheries management.

ANNEX 12

COMMUNITY-BASED FISHERIES MANAGEMENT PROGRAM IN THE MARSHALL ISLANDS: PRESENATION FOR COASTAL FISHERIES MANAGEMENT MEETING, NADI- March 17-21, 2003

INTRODUCTION

Catches of fish and shellfish are believed to have been declining in lagoons and inshore reefs of many island countries in the Pacific region including RMI. Reasons for this decline are know to include:

a) Overexploitation and the use of destructive fishing methods: eg. population increased and use of dynamite and chemicals such as bleaching agents)
b) Use of modern materials such as monofilament nylon for gill nets, which has made fishing effort more effective***.(slide for fish degradation in RMI)***

With this in regards, there was an urgent need/concerns for the Marshall Islands Marine Resources Authority to address the issue mentioned above. Therefore, the RMI Government, had taken an initiative in requesting assistance from SPC to assist us in introducing this program. (2001). MIMRA, then, received favorable response from SPC and a Community Fisheries Adviser from SPC was sent to Majuro in facilitating a management study of coastal fisheries in the RMI.
Under the MIMRA Act 1997, MIMRA has the power to delegate its authority to each Local Government Councils so that they can manage their own marine resources within their 5 miles zone jurisdiction***.(slide for Danny Wase)***

The result of the study in 2002 is that the Fisheries Adviser has produced a project design for the Community-based Fisheries Management Plan
Program. This is to ensure that the Local Government Councils can be facilitated in the formulation of their fisheries management plans and fisheries management ordinances. (***slide for Ueta Fa'saili***)

Furthermore, Marshall Islands Marine Resources Authority hosted a national workshop on Community-based Fisheries Management Program inviting respective govn't agencies, NGO's, And Local Government Mayors. SPC Community Fisheries Adviser and two Community Fisheries Facilitators from Western Samoa and America Samoa were the team leaders in facilitating a weekly workshop. The result of the workshop was that it drew urgent interest for many of the local mayors to implement this project in their respective communities.

In this presentation, I will briefly discuss the process of this program. Secondly, I will discuss a case study with one of the communities that we have been involved. In doing, we will look at how we implemented, monitored and evaluated this project. Thirdly, I will discuss some of the lessons learned such as the issues, success, challenges and difficulties that we have encountered during our implementation. In the conclusion, I will then summarize how this project is heading for next year and onwards.

Community-based Fisheries Management Program-Working Group

I) MEIC-Working Group
   1) MIMRA-facilitating the fisheries matters
   2) EPA-facilitating the environmental awareness
   3) IA- facilitating the land and marine issues
   4) CMI-assessing and surveying the MPA's

   -2 or 3 times meetings before the fisheries facilitators leave Majuro to respective communities. Basically, the purpose of the meeting includes the followings: to develop and formulate action

plans and strategies on how to carry out the requirements need for the project such as community workshops, surveying and assessing the MPA's, logistic planning and arrangements to work with next community and such.

(Slide for the Working Group)
Note: SPC Fisheries Adviser had studied the RMI legislations and recommended the respective agencies to collaborate and incorporate their works in order to carry-out this project. This is to ensure that as each agency and ministry could work toward in conjunction with the needs and requirements that this project is required.

II) Community Workshop-MEIC Group

a) Men's Group
b) Women's Group
c) Youth Group
d) Stroll thru Survey/Baseline Survey

III) Fisheries Management Advisory Committee

This is group selected from the different group above to represent the community in drafting their Fisheries Management Plan. This group will also nominate any members from this committee to be in the enforcement and monitoring committee. MIMRA, on the other hand, will provide technical and advisory assistance to this group in drafting their Fisheries Management Plans.

IV) F-MAC Group will submit the Fisheries Management Plan to the Local Government Councils for review and endorsement

V) If the Fisheries Management Plan is approved by the Local Government Council, then the Local Government Council will endorse this and submit the Fisheries Management Plan to the Director of MIMRA for approval.

VI) If it is approved by the Director, then it becomes the Fisheries Management Plan. The role of the Director is to review all the undertakings consist in the Fisheries Management Plan to ensure that MIMRA will fulfill all the Community Undertakings as stipulated in the Fisheries Management Plan.

VII) MIMRA and the Working Group will then work on the undertakings (MPA's, Restocking, beach clean up, etc) as proposed by the Community Undertakings In the Fisheries Management Plan.

VIII) Monitoring and Enforcement will be done by the Community & MIMRA

a) Community- every day
b) MIMRA- will monitor and evaluate the MPA's and other undertakings in every six- months while the project proceeds.

<u>Issues</u>

a) Protocol Process- Local Government/Landowners Chiefs

Initially, while the respective local government requested our assistance in implementing the CBFMP in their community, there are some cases where the landowners do not want this project to implement in their island. Although, the Chief of the island endorsed this project to implement this program as per requested from the Rongelap Local Government Mayor but there still occurred a few frictions in that the Landowners do not support the Mayor to introduce this project to their island.

b) College of the Marshall Island- Surveying and Assessing the Marine Protected Area. The schedule for the marine scientists to conduct the marine protected area, in particular, the surveying process is

sometimes clashed with time availability. For instance, Summer break and Spring Break will be only available time for the marine scientists to go out to the Community and assess the marine resources as stipulated under the Community Undertaking in the Fisheries Management Plan.

c) Transportation- Marshall Islands is a very remote island and we have to fly on the mini airplane to reach the community. There's only one weekly flight to almost all the outer islands community. Sometimes the airplane is not reliable enough to meet our timing schedule as being plan from the working group.

d) Resources- We have a limited budget to work with all the 24 atolls. We only can work with 4 atolls given the current financial status we have.

Lessons Learned

e) Need donors support for funding

f) Need capacity building For MIMRA Staff

g) Need Reliable Transportation

h) Need to have more support from the landowners and perhaps communicate more with them including the Local Mayors.

Conclusion

It is one the best effective and efficient management tools for sustainalby manage, conserve, and protect the RMI marine resources for the future generation of the young Marshallese.

ANNEX 13

Government Of Niue

THE NIUE EXPERIENCE IN THE INVOLVEMENT OF COMMUNITIES

Strategic Action Programme for the International Waters of the Pacific Small Island Developing States (IWP)

Sione Leolahi
Niue IWP National Coordinator
Department of Agriculture Forestry and Fisheries

Introduction

The International Waters Programme (IWP) is a 5-year programme 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).

IWP 14 Participating island countries are Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.

IWP involves two main components: an oceanic component executed by SPC and FFA, focuses on the management and conservation of tuna stocks in the western central Pacific (SPC and FFA) and national coastal component focuses on integrated coastal watershed management. The coastal component involves the implementation of pilot projects that address sustainable resource management and conservation issues in the coastal zone. Concerns related should be towards four focal areas namely; Marine Protected Areas, Sustainable Coastal Fisheries, Protection of freshwater resources and Community-based waste reduction.

National commitment involved forming a decision-making committee referring to, as the National Task Committee (NTC) in which is mandated by the Niue and SPREP signed Memorandum of Understanding (MOU signed in Nov 2001). NTC Chairmanship is responsible to by the Political Focal Point/Premiers Office whilst the Department of Agriculture Forestry (DAFF) acts as the Leading Agency.

Under the International Waters Program (IWP), Niue has selected sustainable coastal fisheries as the focal area of a future pilot project in community based environmental management. Where possible, this pilot project will integrate other important environmental issues related to sustainable coastal fisheries. For example, the pilot project may also incorporate issues associated with waste management and/or the preservation of freshwater quality through land-based sources of pollutions. Alternatives may also involve consideration of marine protected area as a tool to manage coastal fisheries.

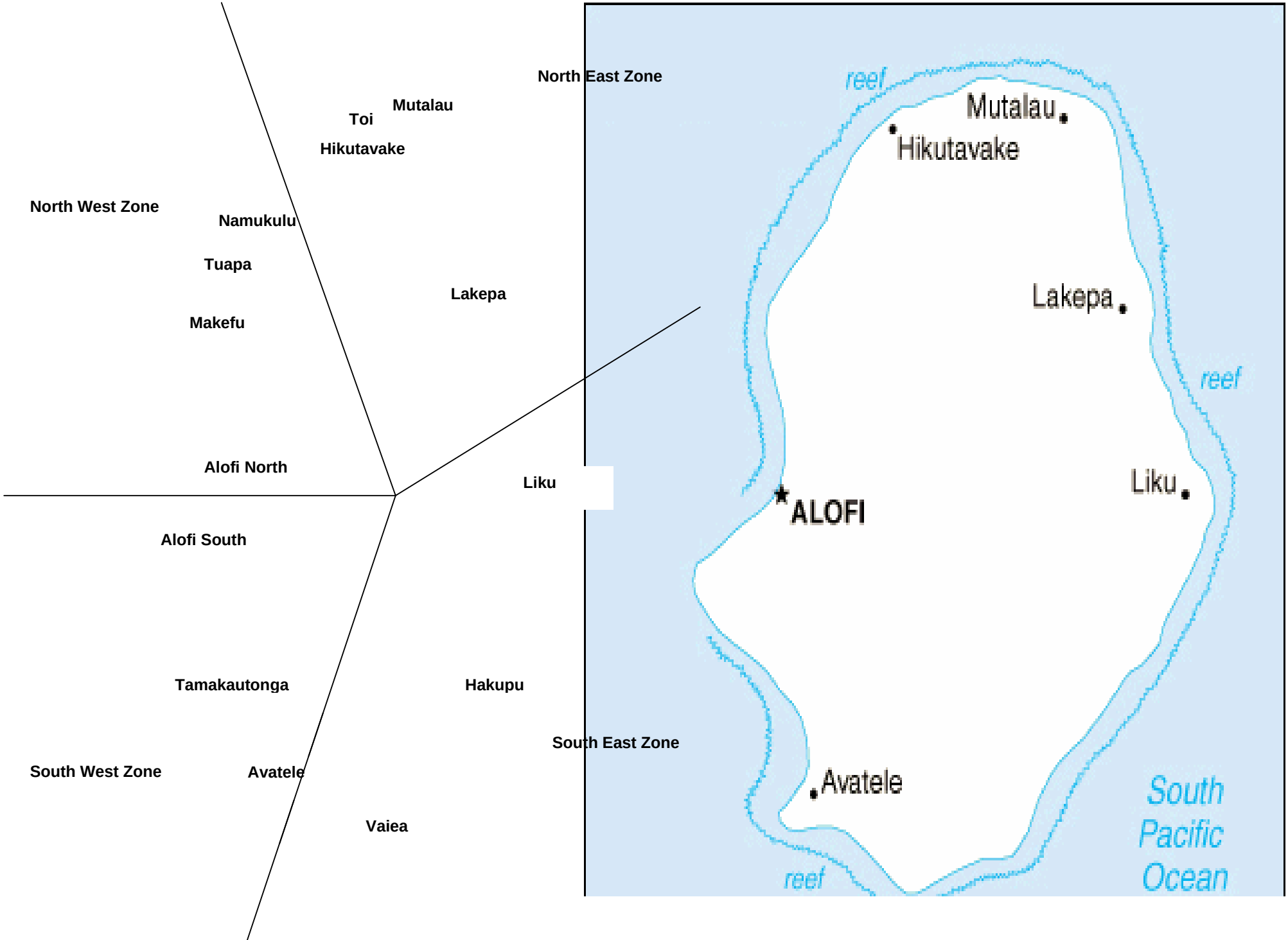
This report refers to the coastal component of the IWP in Niue and the involvement of the communities. To prepare for the selection of the pilot project and site, community engagements or more of a bottom up approach occurred in Niue in late 2002. These consultations were focused around village-based participatory situations designed to address the root causes to coastal resource degradation and watershed management.

Fourteen village communities within Niue took part in the island wide participatory problem analysis (PPA), and solution mapping over a period of two months (Nov-Dec 2002). Prime part of the facilitation process required training and certification of eight local Facilitators.

Zoning the 14 villages around the island into four zones enabled to not only form the representatives for the village councils into the National Task Committee, but also select the 2 Facilitators for each of the 4 zones to engage the community.

Villages to Four Zones

South East Zone	South West Zone	North West Zone	North East Zone
Vaiea Hakupu Liku	Avatele Tamakautonga Alofi South	Alofi North Makefu Tuapa Namukulu	Hikutavake Tpoi Mutalau Lakepa
Represented by Hakupu Village Council- (VC associated with the Huvalu Conservation area)	Represented by Tamakautonga Village Council (VC Waste Collector)	Represented by Makefu Village Council (VC associated with the Anono Marine Protected Area)	Represented by Mutalau Village Council (VC member of parliament)


North East Zone
Mutalau
Toi
Hikutavake
North West Zone
Namukulu
Tuapa
Lakepa
Makefu
Alofi North
Liku
Alofi South
Tamakautonga
Hakupu
South East Zone
South West Zone
Avatele
Vaiea
reef
Mutalau
Hikutavake
Lakepa
reef
Liku
ALOFI
Avatele
South
Pacific
Ocean
reef

Preparation For Community Consultations

Review of initial overall process

1. How villages are going to be approached,
2. Contact of village councils,
3. Use of brochures,
4. Use of invitations,
5. Use of radio and TV announcements,
6. How meeting dates are to establish.

Review of meeting sequence and sequence of activities

- Number and type of meetings,
- Sequence of activities,
- Ensure that facilitators are reading the toolkit activity instructions.

Translation of activity instructions

- Check uniform translation of key words and questions.

Meeting Materials

a. Review of materials required,
b. System for allocating materials.

Clarify financial arrangements

1. Transport,
2. Refreshments,
3. Meeting hall cost,
4. Time sheets,
5. System of advance and reimbursement.

Programme schedule

- Establish calendar or target dates and community events,
- Establish weekly group meetings to review progress and share learning and difficulties,

Managing of Results

- Review forms that will be completed,
- Inform the facilitators that they need to keep the forms up to date,
- Review how results are to be kept with facilitators,
- Review when results due into office and storage.

Review role of National Coordinator (NC) and Assistant National Coordinator (ANC) in monitoring

1. What and how NC and ANC should monitor consultations,
2. Review regular participation statistics to be compiled weekly,
3. Review method for tracking village process (to be done in weekly Meeting)

Community Participatory Activities

Facilitators undertook several activities during the village based participatory situation analysis. Noted in order, these were:

1. Collection of background information on the village;

2. Collection of background information on village organisations;
3. Public Awareness;
4. Brainstorming community resource issues;
5. Undertaking of a stakeholders analysis;
6. Production of village and resource maps;
7. Production of a transect;
8. Production of seasonal fishing calendar;
9. Participatory problem analysis;
10. Finalising and ranking the list of environmental concerns; and
11. Discussions with sub-groups

Materials and Instructions

1. Materials lists;
2. Check list for venue preparation;
3. Activity summary for Niue International Waters Programme;
4. Timeline and Participatory Project Planning Cycle;
5. Contacts for the International Waters Programme;
6. Census Data.

1. Background information on the village

Activities involved compiling a broad description of the village and the people in it. This is a prime activity conducted by the Facilitators before starting the actual village meetings.

Data of the current village population, gender and age, village location, and infrastructure was obtained from the most recent Niue census in 2001. Useful village information related to the resource users is essential and if available compile any resource composition data.

2. Background information on village organisations

Purpose of this activity was to describe organisations that operate within the village. Prior to the community engagements the information on the village organisations was received through approaching the village councils and community leaders.

Village organisational information was also achieved from consulting Government agencies responsible to village affairs, in Niue's case the Department of Community Affairs. A Non Government Organisation Profile was recently developed by IWP to backup activities.

Most villages incurred similar organisational structure with the more populated villages forming a range of organisational groups whilst the least populated village is limited to the common type of organisations. Organisations ranged from village councils, sports group, religious groups, women, and youth groups.

3. Awareness Campaigns

Village background information and description of the existing organisations enables a preparation for public awareness campaigns for the community consultations. Several awareness methods were conducted;

1. Media coverage T.V/Radio announcements,
2. Village public notice boards,
3. Invitations to village people with influential status or organisations e.g. Members of Parliament, village councils, religious elders, women and youth,
4. National Coordinator and Facilitators undertook talkback radio programs and,
5. Household invitation approach.

Household invitation approaches were found to be more effective however this method may not be practical for a larger populated community. English and Niuean translated leaflets outlining the most Frequently Asked Questions about the International Waters Programme were distributed during this stage.

A T.V advertisement was also developed to back up the facilitation process.

4. Brainstorming community resource issues

This activity was conducted at all of the first community meetings in large groups, after the introductory session on IWP. The purpose is to identify the environmental problems of greatest concern to the local communities. Materials were flip charts and colored markers. Ground rules were also set to ensure optimum continuous flow of this activity. Time allowed can be 1 hour.

All sessions started by reminding the community members that one of the important objectives of this stage of the IWP consultations was to identify community concerns about the environment or resource degradation issues. When the participants stops listing their concerns, review the list with them. Go through and clarify the meaning or wording of each of the concerns to ensure it was accurately recorded.
The list was sorted so that resource degradation issues within the focal area of the IWP are highlighted. Some of the problems listed may not be addressed within the IWP pilot project (for example if they are not 'water related' issues). At the final community meeting this list will again be reviewed and the community will have a chance to rank and ascertain their priority concerns to be address by the IWP pilot project.

5. Stakeholder identification and analysis

These activities were conducted at a large community meeting, after brainstorming and categorizing of the community resource issues and problems. Purpose of this activity was to introduce a visual approach for identifying stakeholders, analysing their interests, identify and
discuss the relative power of different stakeholders to influence a resource issue. For example, issues related to degradation of the marine species would have a higher influence and impact on the fishers and policy makers but less impact and influence on the farmers.

6. **Village maps and resource maps**

This activity was conducted with different sub-groups (youth/women) of stakeholders after the community meeting.

Purposes of the 2 mapping exercises is to show where resources, activities and issues of concern are located, and stimulate discussion of the layout and organisations of their village and its infrastructure and how to access to the use of the resources being organised in relation to the village. Although marine resources will be the main focus of discussions, land based issues can also be discussed, since there may be a connection with marine resource use.
Basic village maps outlined in the main access roads/sea tracks, village house settings, storage areas, farms, burial grounds, hunting grounds and historical areas.

7. Marine transects

Marine transects were used to identify and discuss:

- How the community sees and uses their coastal areas,
- Where individual marine resources are harvested,
- What the different uses of coastal resources are for (food, craft, custom, income or medicine),
- How the abundance of resources varies over a coastal area,

- Traditional or past management practices,
- Existing management regulations or actions,
- Changes in resource abundance, or other environmental problems,
- What opportunities might exist for improving the coastal area or to meet development needs.

- Allows for discussions with stakeholders to be combined with direct observation.
- Transect walks were a highly participatory technique and can generate a large amount of information.
- Transects may be useful in validating information collected in mapping activities.

8. Seasonal fishing calendars

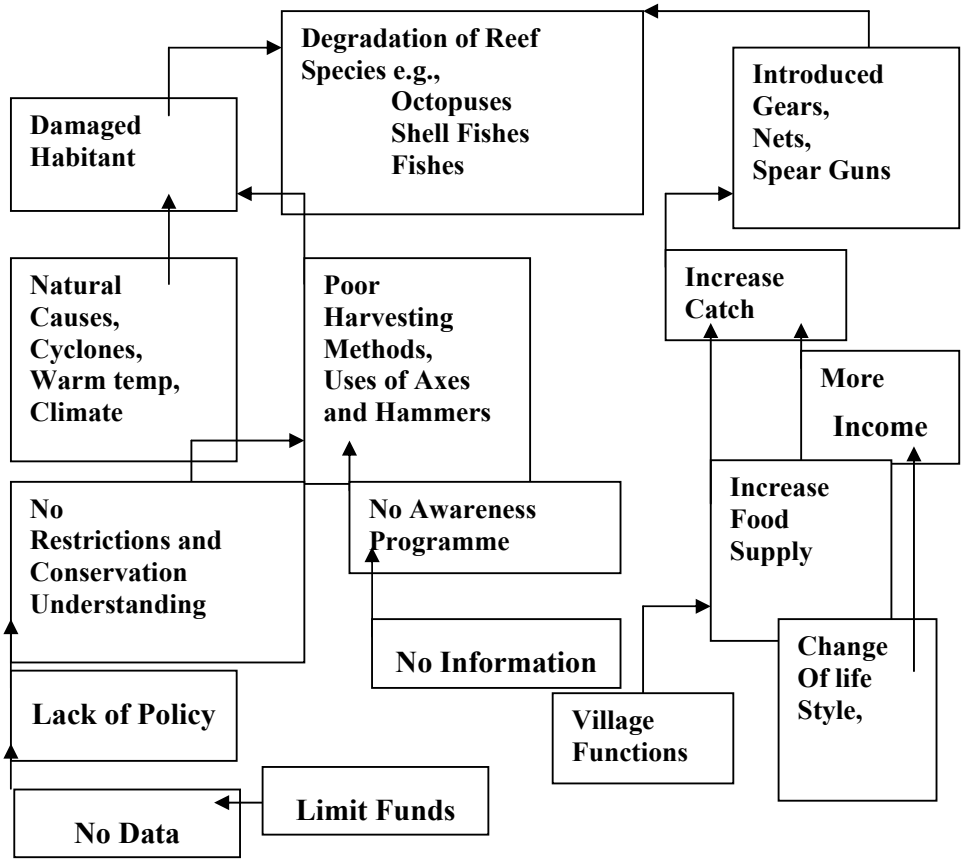
This activity was undertaken with different sub-groups of stakeholders after the community meeting. The purpose of the seasonal fishing calendars are used to identify:

- Important seasonal factors that influence the abundance or harvest of marine resources (for example cyclones, seasonal winds, tides, moon phases)
- When individual marine resources are harvested and how the level of harvest varies over the harvesting period (for example, times of the greatest or lowest fish catch),
- Variation in harvesting practices (for example if people's harvesting method for a specific species change during the year),
- Existing management regulations that influence harvest periods (for example, prohibitions on fish catch at certain times of the year),
- Local knowledge about the resource (for example, spawning times, fish migration, etc.)

9. Participatory problem analysis

This activity is conducted after all the activities are completed. Purpose is to help stakeholders examine the origins and underlying causes of natural resource issues or problems. Participants were divided into groups of 4-5. Groups will select one of the resource degradation issues that they have identified earlier during the brainstorming sessions within the community meeting. Participants should then ask themselves 'why' the problem has occurred, and identify the immediate causes of the problem.

e.g. ALOFI NORTH VILLAGE Participatory Problem Analysis



10. Finalising and ranking the list of environment concerns

Ranking is carried out with the main group. The main priority concern should be highlighted to the least concerns impacting on the lives of that particular community.

Concerns identified in each village categorised under four IWP focal areas.

11. Discussion questions for sub-groups

Sub-groups should discuss with the main group their group's work. Discussions in sub-groups activities would provide a better understanding of the activities prepared by the participants.

CHECKLIST FOR MONITORING QUALITY OF MEETING PROCESS

Village_____Facilitators_____
Date_____Time Start_____Time Finish_____

• Pre-meeting checklist completed, • Facilitators clear on roles and activity sequence, • Refreshments organised.	
• Clear introduction of meeting purpose, • Post and review of agenda and logistics, • Group agreement on process, • Explanation of how information is to be used & community ownership of outputs.	
• Activities instructions clear and complete, • Use of clear samples PPA and SA, • Small groups divided by stakeholders, • All participants interested and involved in small groups work, • Full presentation back of each groups work, • All participants interested and involved in large group discussions, • Facilitators content neutral, • Participants able to express ideas and concerns in their own words (no correcting or judging by facilitators).	

Managing Participatory Processes on Niue

1. Preparing for community consultations

2. Monitoring participation
    - Qualitative
    - Quantitative

3. Periodic team review and learning

4. Compilation of results

Feedback Issues

- Young aged groups noted very low to no input during the village consultations,
- Majority of the village communities stated that participation should be compensated,
- Sunday evenings were considered best timing for main group meetings compared to weekdays.

National Forum

A National Forum is planned to take place in order for the community to have an opportunity to discuss the village reports prepared during the consultations.

Pilot Project and Site Selection

Ranking the priority concerns identified by the villages would be highlighted for the National Task Committee to select the pilot project and community site.

Selection process by the National Task Committee will be based on a designed criterion that justifies the selection of the pilot project and community site.

ANNEX 14

COMMUNITY-BASED FISHERIES MANAGEMENT PROGRAM IN AMERICAN SAMOA

By

Fatima S. Sauafea

Department of Marine & Wildlife Resources
P.O. Box 3730 Pago Pago
96799 American Samoa
Email: fsauafea@hotmail.com

8.2 Abstract

As the population in American Samoa expanded, the demand for fishery resources increased similarly. The people have used the most effective but often destructive methods of fishing. These destructive fishing methods include the use of bleaching agents, dynamite, and *avaniukini* (a local plant-derived poison). In addition, outside fishermen, who were often reported to be from other Pacific Islands, have entered the village reefs and used bleaching agents to make their fish catch. There have also been various reports of fishing nets, which are left on the reef and eventually trap and kill many marine species. From these problems identified and recommendations from village communities obtained through carefully designed surveys, the need to establish a program to improve fishing and marine resources in villages became apparent.

The Community-based Fisheries Management project assists the villages to manage and conserve their inshore fishery resources by a voluntary scheme of co-management with the Territory that enhance ownership and stewardship by the village community. Its aim is to improve fishing and sustainable development of marine resources in the participating villages as well as the Territory. For this, identification of village sites to establish traditionally oriented management regimes is featured with well-developed village fisheries management plans. In addition, monitoring and regular reef checks by the village communities and fisheries staff are conducted.

Introduction:

American Samoa is the only U.S. territory south of the equator that consists of five rugged, highly eroded volcanic islands and two coral atolls. It is composed of the main island of Tutuila, Aunu'u, the Manu'a islands of Ofu, Olosega, and Tau, Swains Island, and the uninhabited Rose Atoll. The land area of the territory is about 76.7 square miles with a population of approximately 63,000 (Census 2000). Tuna fishing and canning are the major industries, and many native Samoans practice subsistence fishing and farming.

The population in American Samoa is rapidly increasing, which places an increase pressure on its marine environment. Catches of fish and shellfish have been declined in the lagoons and inshore reefs of American Samoa for many years (fig. 1). Reasons for this decline include probable overexploitation, the use of destructive fishing methods such as dynamites, clorox, and traditional plant-derived poison (*avaniukini*), and environmental disturbances. These activities also include the destruction of nursery areas such as the mangrove areas by road construction and land reclamation. In addition, poor land management have resulted in erosion and the siltation of lagoons.

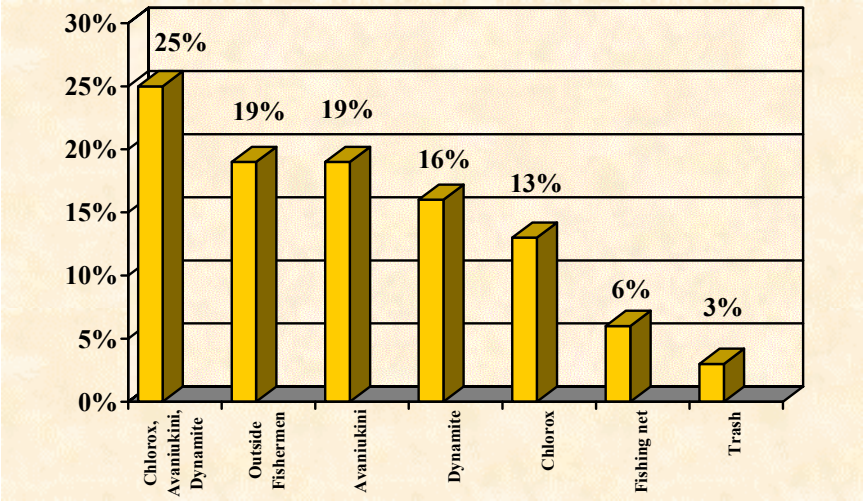


Fig. 1: Fishing Methods Damaging the Village Reefs

The extent of the problems was determined through a carefully designed survey conducted by the Department of Marine and Wildlife Resources (DMWR) in 11 selected villages. The participating villages were randomly selected based on their geographical locations on the main island of Tutuila and the Manu'a islands. The survey was implemented in both Samoan and English versions to accommodate village communities. Its purpose was to determine the fishing problems and recommendations as well as the needs from the community on ways to improve fishing in their village.

Fishing in American Samoa, either on the reef or in the open ocean, can be accomplished using careful and discrete fishing practices. However, a high percentage of respondents, were of the opinion, that the use of destructive fishing methods such as dynamites, Clorox, and plant-derived poison are practiced in their waters. In addition, outside fishermen from other villages have lurked in the village and used destructive fishing methods to make their fish catch. There have also been various reports of fishing nets, which are left on the reef and eventually trapped and killed many marine species.

The survey report along with previous studies by the department on the Territory's reef area justifies the need to include communities in improving the sustainable development of the resources. The Community-Based Fisheries Management Program was implemented in 2001 and at the moment there are seven villages in the program (fig. 2), five with established Marine Protected Areas and Fisheries Management Plans (Poloa, Alofau, Vatia, Aua, and Masausi) and one who is in the process of drafting their Fisheries Management Plan (Amaua and Auto).

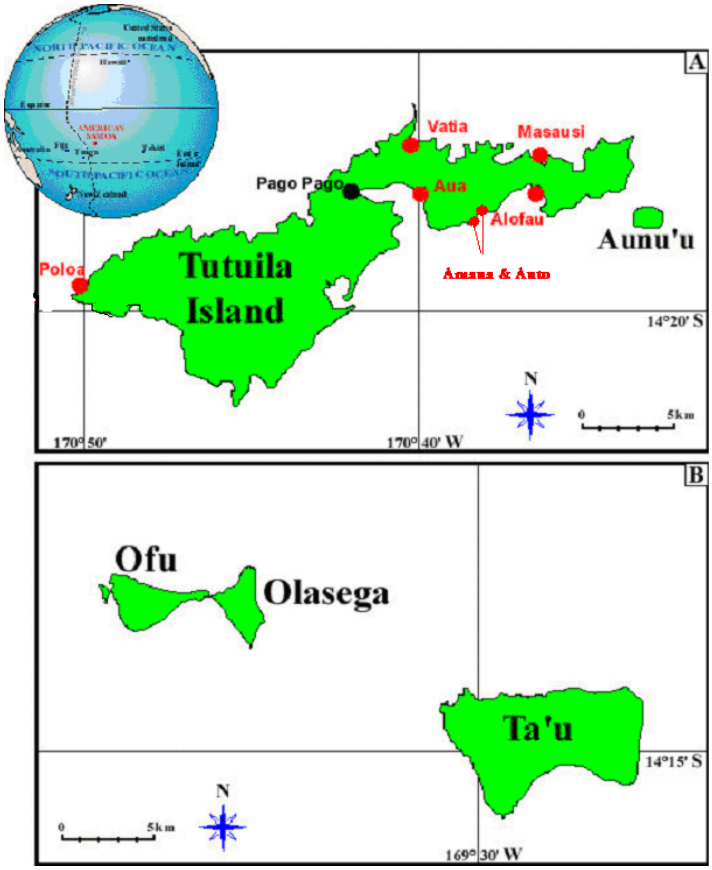


Fig. 2. Location of American Samoa (A: Tutuila Island; B: Manu'a Islands) and Villages participated in the Community-Based Fisheries Management Program.

Co-Management of the resources at the village level:
The Community-Based Fisheries Management Program is installed to assist villages in managing and conserving their inshore fishery resources by a voluntary scheme of co-management with the government, its goal is to enhance ownership and stewardship of the marine resources by the village community. The program aims toward improving fishing and sustainable development of marine resources in the villages. For this, identification of village sites to establish Marine Reserves or Marine Protected Areas (MPA) is featured. In addition, restocking of giant clams in the MPA, as part of DMWR's assistance in the program, enhances the development of good fisheries practice and management approaches.

The Community-Based Fisheries Management Program in American Samoa was adopted from a similar program in Samoa under the Fisheries Office. Although the two Samoas practice the same tradition and culture, the difference in life styles and economies play a difference in the manner the programs are being implemented. Thus, the program development process is essentially the same with few exceptions to meet the system and regulations organized in American Samoa.

Extension Process of the Program:
The first step in the process is to conduct an initial contact with the village's chiefs to set a date for a First Meeting with the village council. The program's cultural officer, who is a representative from the Office of Samoan Affairs, makes the contact with the village mayor and leaders for the arrangement of a meeting with the village council. The First Meeting, which is a formal traditional meeting with the council of chiefs, highly requires the presence of the department's director, cultural officer and the head of the program. This important meeting provides DMWR with an opportunity to explain and introduce the program in a manner to gain the village's support and their permission to start the program. If the village accepts the program, then a date is set to conduct group meetings. The cooperative agreement is given to the village during this first meeting for their signature of cooperation with DMWR in the program. The agreements provide assurance

from both the government (DMWR) and village of the tasks and obligations to the program, and the endorsement and cooperate support from the village.
The purpose of the group meetings is to identify the problems in village reefs and fisheries, and to identify the solutions by using a problem-solution tree. The group meetings are carried out in 3 groups – the chiefs group, women's group, and the young men's group, because different people fish the reef area using different fishing methods. After the group meetings, selected members from each group will then work as the Fisheries Management Advisory Committee to put together a Fisheries Management Plan with the assistance from DMWR.

Summary of the Extension Process of the Program:

1) Initial Contact in the Village

2) First Meeting with the village council
(to explain the program for village's acceptance)

3) Group Meetings – 3 Groups
- Chiefs
- Women
- Young men

4) Fisheries Management Advisory Committee
(FMAC – to draft a Fisheries Management Plan)

5) Village Fisheries Management Plan
(agreed to at the village council meeting)

6) Monitoring and Enforcement Committee
(to oversee, monitor, and enforce the undertakings agreed to in the management plan)

Village Fisheries Management Plans:
Villages with MPAs have Fisheries Management Plans, which includes a description of the village, village rules and regulations, information on village MPA and map, information about their fisheries, the concerns and recommendations gathered from group meetings, additional information necessary for the protecting and monitoring of village MPA, and a Cooperative Agreement. A draft of the Management Plan will go to the village council for their approval before the final draft is given out to different government agencies and the general public. The rules and regulations and other actions written in the Fisheries Management Plan will be enforced and implemented by the village's Monitoring and Enforcement Committee with the assistance from DMWR.

In the program, the village and DMWR worked together in co-managing the marine protected areas. In working together, each party takes on its own undertakings in the program. The village works in establishing rules and regulations to be written in their Fisheries Management Plan, ban the use of destructive fishing methods, monitor and protect the reef area, and implement other actions to protect the environment. On the other hand, DMWR provides technical assistance and advice, workshops and training, and other appropriate fishery support such as restocking of clams in the MPA and assist villages with their Fisheries Management Plans.

Criteria for selecting a village:
There are at least 3 criteria for selecting a village for the project. The first is to look at how well organized the village is in regards to its matai system, women's group, and the young men's group. The second is to informally meet with the village mayor and leaders to briefly explain about the project. The third is to assess carefully the village's potential to be a target village for the program by estimating the following: a) the significance of the marine environment to the village; b) the extent of any problems with the marine

environment, fish catches, etc.; c) the level of concern and willingness to do something about the existing problems. The extension staff will review the assessment of a village's potential for inclusion in the program.

As the program progresses, some villages have requested the need to have the program started in their village because of the condition the reef area is in and just the need to improve their fisheries. In addition, the media awareness programs about the ongoing progress and work done in villages in the Community-Based Fisheries Management Program have enticed many villages to participate in the program.

Ways to increase participation and support from the communities:
Getting the program started in a community and working with the community is a difficult task, however these are the ways that we have formulated in the program to gain people's motivation, support, and understanding of why there's a need to improve the resources. We have put together some information sheets about the program and other fisheries issues, brochures about the program, and workshops for the community and government agencies. We also have press releases about the activities done in village on local newspaper, radio advertisements, interviews on TV, and panel discussion with village representatives about the program.

In the starting of the Community Program, a series of three 1-day workshops were held to present and discuss the program to three different groups. The first workshop was with government officials working on conservation or management of inshore marine and coastal resources. The second workshop was with the legislature (Fono) to gain their support and recommendation on the implementation of the program. The third workshop was with the mayors in the territory. The fundamental purpose of the workshops was to present the project to different stakeholders and achieve from them significant recommendations to aid the implementations of the program in American Samoa. In addition, the workshops were held to inform island leaders about the benefits and limitations of co-management of fisheries at the village level.

Summary:
The end result of the Community-based Fisheries Management Program will be a village with a Fisheries Management Plan with guidelines and regulations to monitor and protect its reef area, a productive and healthier reef area, improved fisheries, and an increase in awareness, motivation, consultation, and participation from different stakeholders.

The Community-Based Fisheries Management Program in American Samoa will increase conservation awareness in government, community, and the private sectors. It will aid in recovering the reefs and improving fish catch. In addition, the program allows the community to keep a close watch on the marine resources and their condition, and address management needs so that the resources will continue to be healthy and productive for its people and future generations to come.

References:
Curren Flinn and Sauafea Fatima S. (2000) *Village Survey on Fishing Problems in American Samoa* Fisheries Division, Department of Marine and Wildlife Resources-ASG. 8 pp.

Fa'asili Ueta and Sauafea Fatima S. (2001) *Technical input into the Community Fisheries Management Program of American Samoa*. SPC technical assistant to the Department of Marine and Wildlife Resources' program. Downloadable in
http://www.spc.int/coastfish/Sections/Community/english/publications/amsam6.pdf`

ANNEX 15

THE RAUI SYSTEM IN THE COOK ISLANDS

INTRODUCTION

Marine conservation approaches vary throughout the Islands in the Cook Islands. On the main island Rarotonga, the state of marine environment and in particular the seafood resources found on reef slope and the lagoon has been a concern for some time. In an effort to address the problem to the public, traditional management systems (The Ra'ui) were introduced by the KOUTU NUI, this is a formalised group of traditional leaders. The definition of the word Ra'ui means *"a sign set in place by the owner of a piece of land or water reserving it or its produce for his/her own or some special use, the second meaning is simply a prohibition."* This method of a seasonal closure or Ra'ui was considered the most appropriate form of reserve to be initiated, as it had some historical links to the way Polynesian people had conserved their resources in the past. The main advantage of this traditional system in its modern context is that it is community initiated and managed. Also the Ra'ui system is unique in that it is not legislated for, rather it relies on community trust or peer pressure for enforcement.

The Ra'ui system was once routinely adopted and fell into disuse over the past decades. It was revived in February 1998 and applied to particular marine areas identified by the community to allow marine species to rejuvenate, as the reef ecosystem was perceived to be under threat by over harvesting.

On other islands of the Cook Islands marine management approaches are legislated (for example Aitutaki Trochus Management Guidelines) or are customary. Although they serve similar purpose as the Ra'ui on Rarotonga they are more diverse and complicated because they employ a number of restrictions in the reserve area. For example, although not exhaustive, they use quotas, permits/licenses, gear restrictions (ban on SCUBA equipment, length of gill nets), limits on the size of organisms caught and area restrictions.

Education and awareness

Prior to the placement of these MPA areas

The Ministry of Marine Resources works closely with traditional leaders and the community to increase awareness of the Ra'ui areas.

Pamphlets outlining the purposes of the Ra'ui have been published by MMR. Meeting were held in villages, schools were visited to promote The Ra'uis.

Several non-government organizations such as the Cook Islands Natural Heritage Project, World Wide Fund for Nature (Cook Islands) and Taku Ipukarea Society have through various means contributed to the promotion of nature conservation.

In November 1997, five sites around the island of Rarotonga were recommended by the traditional leaders in consultation with the community to be designated as a Ra'ui Area (MPA). To launch this project, Each Groups and Organizations was allocated varies tasks to undertake prior to the placement and blessing of these MPAs in February 1998.

(1) The Ministry of Marine Resources will conduct the baseline surveys in these 5 areas. The invertebrate resources were identified as a key indicator species for the monitoring process at a later stage.
(2) The traditional leaders will source of financial assistance for the purchase, construction and placement of sign poles on roadside, on the beach, the reef edge and in the lagoon.

The whole community including visitors on the islands were invited to be part and witness this event. The Ra'ui were declared in the traditional manner, with church services around the island on Sunday. An official launch at each of the sites the following day to declare the start of the Ra'ui.

The total lagoon and reef area on the island of Rarotonga is 8.2 km². The total Ra'ui area is 3.74 km². The Ra'ui area, on Rarotonga comprises 46% of the total lagoon and reef habitat.

Some conditions putted in place for these Ra'ui area by the Traditional Leaders are as follows:

Aroko Ra'ui - Harvesting or taking of all resources within this area is banned was opened for a days harvesting (February 2000) after a two-year period. It was subsequently closed for a five-year period, however, with the permission of the traditional leaders, the Ra'ui may be briefly lifted for varying duration during that period to allow the harvesting of marine resources such as trochus, sea slugs (patito), sea cucumbers (matu rori) and mackerel scad (ature).

Rutaki Ra'ui - Was established for nine-months only. No harvest of any resources and also No one or the public is allowed to enter in this area.

Pouara Ra'ui – 1/3 of the Ra'ui area was opened for a day for harvesting of all seafood in February 2000 and has now closed for about two years.

Tikioki Ra'ui was opened in February 2000 after a two-year period. The initial Ra'ui area is reduced from 4700 m^2 to 1570 m^2. This new Ra'ui area Tikioki Ra'ui has been made permanent, i.e. it is closed to any form of harvesting.

Nikao Ra'ui was opened for two weeks in February 2000 after a two-year period. Harvesting of all seafood was allowed during this period; however, certain restrictions (net fishing and night fishing i.e., from dusk till dawn) were introduced to protect vulnerable species.

A follow-up survey was undertaken ten months after the baseline study. Ten months thereafter, a second follow-up survey was undertaken.

The results suggest that the diversity of the invertebrate species at the reef has increased at all of the Ra'ui sites. This suggests that perhaps as a result of the Ra'ui some species previously being over harvested or uncommon are now enhanced.

New Ra'ui areas declared in 2000

Assessing the impacts of Ra'ui (i.e., noted increase in certain marine species) in the original Ra'ui areas, traditional and community leaders on Rarotonga felt that it was necessary to establish new marine Ra'ui areas to allow vulnerable species the opportunity to enhance. The new Ra'ui areas are discussed in the following table format.

Ra'ui area	Area (m²)	Comments
Parliament/ Turamatuitui Ra'ui	2, 000	Commenced March 2000 for a two-year period. No take status of all seafood. Opened in 2003 for a period of 1 month, to harvest trochus shells and fishing is allowed, and gillnet is banned in the Ra'ui.
Rua'au trochus Ra'ui	6, 400	Commenced March 2000, this is a trochus reserve zone; the community is allowed to harvest all other seafood.
Aroa Ra'ui	1, 720	Commenced April 2000 for a two-year period. Harvesting of all seafoods is banned.
Vaimaanga Ra'ui	6, 600	Commenced March 2000 for a nine-month period and will be lifted in November 2000. This is no longer a Ra'ui area.
Akapou'ao	3, 560	Commenced February-March 2000 for a five-year period. No

Ra'ui		take status of all seafood.
Tikioki Ra'ui	1, 570	This Ra'ui area will be in place forever "Ra'ui motukore".
Puaikura trochus Ra'ui	15, 700	Following the commencement of the Rua'au Ra'ui in March 2000, the vaka Puaikura decided to place trochus on a Ra'ui system of management. Fishing for all other seafood is allowed.

The Benefits of the Ra'ui ?

Question that will be asked by many in this meeting, We want to know, Did your Ra'ui System worked? Any benefit or what sort of benefits from you system? Were the community satisfied with this type of management.

The Ra'ui did and has worked for us when it was implemented, reports received from the community and regular visitors to the Cook Islands that they noticed an increase of fish numbers in Ra'ui areas around the island and adjacent areas, some also reported seeing fish species which once thought have disappeared have been spotted and seen back in these areas, As a results of all this positive changes happening. It was decided by the traditional leaders that one of the Ra'ui area on the eastern side of the islands to be declared and made permanent. Today this permanent MPA has additional benefit of promoting this area as a tourist attraction bringing opportunities for additional revenue to the people. Shops and Cafes are build around this area, snorkelling gears is available for hire, this Ra'ui is very popular to tourist and the locals too and it is the only area you can hand feed and swimming among different types of fish.

Current Status of the Ra'ui Area

Two Ra'ui area has been declared open last month (in Feburary) for 2 weeks. The community were allowed to harvest the resources (netting and spear fishing was not allowed). Later in the year, all of this MPA areas will be opened to carry out the second trochus harvesting on the mainland, Rarotonga. The first harvest was in 2000 with 18 tons, now another 18 tons will be harvested.

ANNEX 16

Solomon Islands Experience in Community and Related Coastal Fisheries Management

Kenneth Bulehite
National Coordinator,
International Waters Programme – Solomon Islands

Introduction

This report is prepared for SPC / FAO / ComSec / WPRFMC Coastal Fisheries Management Meeting held in Nadi, Fiji 17 – 21 March 2003. The information provided in this document is based on the experience on community related development and consultation made with various stakeholders in community based coastal fisheries management in Solomon Islands.

The purpose of consultation with various stakeholders is to increase my understanding about community involvement and participation on coastal related programme.

Types of Coastal Fisheries Management Related Activities in Solomon Islands

The following were some of the Coastal Fisheries Management related programme in Solomon Islands.

- Arnavon Marine Conservation Area – TNC / DFEC
- Gizo Marine Conservation Area – WWF
- Rural Fisheries Enterprise Projects – DFMR
- Rural Fisheries Centers – DFMR
- Coral Gardening - SIDT / ECANSI
- Sea Weed Farming - DFMR

Community Based Coastal Fisheries Management

The information and lesson gathered and learned respectively was obtained through consultation conducted with the personnel of some of the above stated projects.

Lesson Learned from other Community Coastal fisheries management Projects

- Community
  - Community in Solomon Islands is somewhat loose conglomerate of various groups or clans.
- Customary Land Tenure System
  - Communities are not necessarily the landowner.
- Marine Tenure System
  - Marine Resources harvesting is an overlapping activities.
  - Recognition of ownership and community partnership and involvement will encourage sustainable management of resources
- Community – Level of Involvement
  - Initial Involvement – involvement from the early stages of the programme, increase feeling of ownership and partnerships
  - Level of Involvement – Participation in all stages of the development encourage sustainability on resources
  - Rural dweller are often busy with own schedules, such should be respected.
- Involvement
  - Community must be involved from the initial stages. [This meant not just the community leaders "Big Men" this can affect sustainable management of resources]
  - Informing communities will encourage involvement and build partnership
- Awareness & Education
  - Awareness and Education must be part of the implementation of the project.
- Land Disputes

    - If doing a pilot project, the area should be free from Land Disputes, best if area is disputed; the matter should be resolved prior to engagement. Encourage community to resolve their differences.
- Benefits from Conservation Projects
    - Must be perceived and tangible

Status of International Waters Programme Pilot Project in Solomon Islands

- MOU signed April 2002
- Recruitment done in August 2002
- PEC Report endorsed December 2002
- Expression of Interest closed January 2003
- Process of selection of community to host IWP pilot project
    - Short listing done March 2003
    - Community Visit to done by April 2003
    - Final Selection to done by April 2003
- Community Strategy and Design Phase commences May 2003

Priority Environment Concerns

Late 2002, IWP Solomon Islands supported a review of priority environmental concerns for the country. The main idea of the review is to identify concerns that will be addressed by IWP in its pilot project.

To seek an overall and representative assessment, key stakeholders were approached for their views and perceptions; relevant publications and literatures regarding the status of environmental degradation in the country have also been consulted.

The review develops a comprehensive list and ranking of the priority environmental concerns and issues in Solomon Islands using a cause-impact matrix.

The priority environmental issues faced by Solomon Islanders are related to agricultural and logging activities, land clearing and waste disposal as well as aquaculture, among other concerns. Issues such as loss of species, loss of biodiversity, ecosystem loss, reduced water quality and changes in biological community structure clearly need immediate attention. Additionally fishery depletion, loss of natural protection, land degradation and coastal degradation are equally serious.

The deteriorating conditions of habitat and community structures and the degradation of coastal environment and water quality are so evident that intensified efforts are required to protect the freshwater resources and manage the coastal fisheries in a way that is sustainable, ideally through establishing marine protected area or integrated coastal zone management systems.

SELECTION OF FOCAL AREA

Through analyses and appreciation of relationships between the priority environmental concerns on the PEC report and discussion during its development, NTF consensually agreed that Sustainable Coastal Fisheries will be addressed by the IWP in Solomon Islands.

As highlighted in the PEC report; NTF also agrees that the pilot project must integrate with the other focal areas of the International Waters Programme.

Media Campaign Programme

The choice of target audience is essential component for any media campaign. For this Programme rural communities and their respective leaders were the main focus. The only radio service that reaches the rural

areas is the Solomon Islands Broadcasting Corporation [National Radio Service]. Therefore the choice of which medium be used to increase awareness of conservation and sustainable management was simple. However, with choice radio as medium; time is important. The radio time was selected based on some previous radio programme experience from some of the NGO groups and the general understanding that most rural people tends listen to Radio at Sunday evening during the Christian Music programme. The information was adequate for the selection of time slot on Sunday to air the radio campaign. The invitation for Expressions of Interest was advertised nation- wide, however maintaining the limitation highlighted below as the principle and practical consideration for selecting the pilot project. The other piece of information is during the festival season most of the educated people generally went home. The radio programme and expression of interest was aired and advertised respectively during the festival season.

Principal and Practical Consideration

The following consideration was used as the criteria for selection of community to host IWP pilot project:

Principal considerations:

- Addresses the sustainable coastal fisheries and should integrate possibly at least two of the other focal area.
- Consistency with national or sectoral goals and strategies,
- Proponent community have demonstrated past concern;
- Demonstrated commitment of potential project partners;
- Demonstrated community-wide support;
- Evidence of consultation among landowners and community / ies.

Practical considerations:

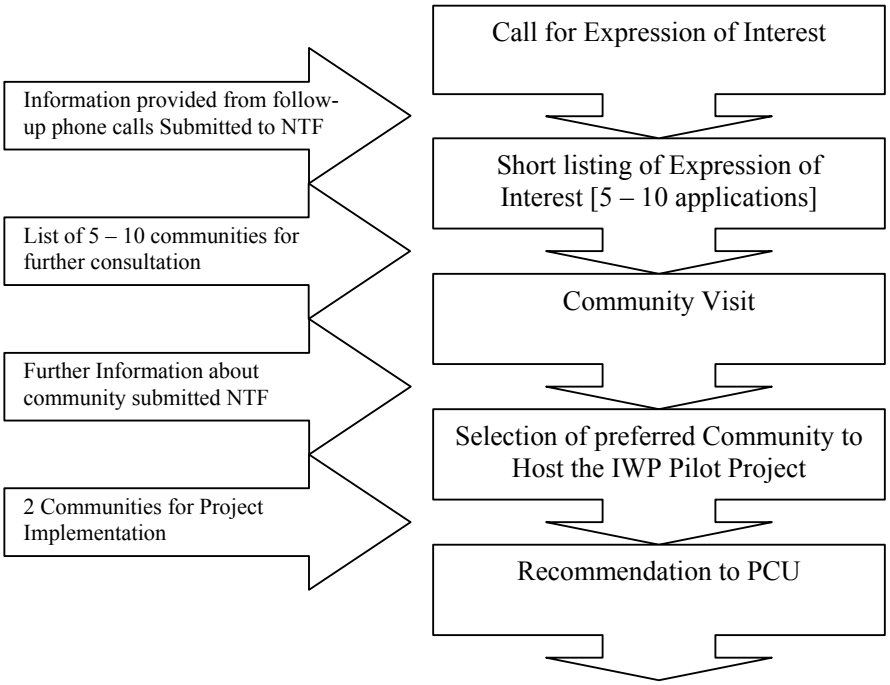
- Geographic location
  Since this is a demonstration projects the following factors must be considered as part of the location: accessibility; expense;
- Ethnic issues, such as conflicts or tensions
  Areas where guns and conflicts are present and likely to erupt and will affect the programme and the project. Such areas should be avoided to reduce risk of failure.
- Complementarity / duplication of past, present or proposed programs or activities

Other considerations:

- Conformity with the broad IWP criteria:
  - High island/low island issues
  - Potential for replication
  - Probably achievable with available project resources.

Process for Selecting Communities to Host IWP – SI pilot Project

Following lesson learned from previous projects. The process below outlined the approach taken by IWP – Solomon Islands. The process of short listing check various information provided by the applicant of the Expression of Interest; assess the level of involvement and participation of the communities and other relevant information to reduce the risk of failure during the implementation of the pilot project.



Assessment of Expression of Interest

The following information was very clear from the Expression of Interest received:

- Conservation and sustainable management of marine resources is not a new; several applicants stated very some kind of traditional system on conservation and sustainable management of resources. The purpose of imposing restriction varies considerably but one common case is for festival or celebration activities.
- Over harvesting of resources due to cash commercial economy and increase population.
- Increase knowledge of fishing technique and availability of equipments seems to encourage unsustainable harvesting and management of resources.
- Increase number of application of Expression of Interest received shows high level of concern amongst community leaders about the scarcity of resources.
- Availability of outboard motor; allow people to travel at distances thus increases poaching of marine resources

Conclusion

This presentation briefly summarized the experience so far in implementing the International Waters Programme in Solomon Islands.

Problem
Over and unsustainable harvesting of resources; Increase population; Poaching of resources by nearing communities.
Reduction of Marines Resources
Decline of marine resources
Social problem; Lack of Facilities
Pollution due to waste; Coral bleaching; Over harvesting of marine resources; Coastal erosion
Over harvesting and unsustainable management of resources
Lack of logistic supports, awareness programme and finance; Over harvesting of all Species of beche-de-mer
Depletion of Resources; Lack of know -how of sustainable management of marine resources
Unsustainable management of Marine Resources; Depletion of Marines Resources; Lost of traditional pattern of sustainable resources management
Increase demand of marine resources as alternative source of income; Harvesting of coral reef for wharfs etc.; Increase population thus increase demand for protein diets.
Lack of legal supports, awareness programme and sound technical information;
Unsustainable Management of Marine Resources
Unsustainable harvesting marine resources; Harvest of fishes during spawning period
Over harvesting of Fishes due to income generating activities and Solomon Taiyo over harvesting of baitfish. Depletion of Marines Resources such as trochus, beche de mer, clam shell; mother of pearl shells; Insufficient coordination and regulatory control on resources and fishermen
No sustainable management procedures or regulation that warrants the acceptable practices of harvesting coastal fisheries resources
Increase demand of marine resources as alternative source of income; ; Increase population thus increase demand for protein diets and income generating activities
Dead Coral Reefs; Depletion of fishes
Depletion of Marine Resources; Dolphin hunting; Coral harvesting for Artificial Islands; Harvesting of juvenile rabbit fish; Trochus; Clamshell, grayfish
Depletion of Marine Resources; Dolphin hunting; Over harvesting of Mud Crabs
Lack of fishing facilities and equipment
Lack of Income generating activities
Depletion of Mud Crabs
Over harvesting of mud crabs
Depletion of Marines Resources; Over harvesting of all Species of beche-de-mer; Lack of awareness and supports

Depletion of Marines Resources; Dynamiting of fishes; Premature harvesting of resources; Fishing Methods
Unsustainable harvesting of resources; Destructive fishing methods; Lack of understanding of marine resources
Increase population; Intensive fishing activity both for subsistence and cash; Over harvesting of marine resources; Unsustainable utilization of our coastal fisheries resources.
Over harvesting of fishes and other marine resources; Inappropriate fishing techniques; Destruction of Mangroves; Removal of coral for construction of new island.
Over harvesting of Beche de mer, crabs and seashells; Depletion of Fishes;
Over harvesting of Beche de mer, crabs and seashells; Depletion of Fishes; Sea level rise
Lack legal control and monitoring of resources etc.
Over harvesting, Lack of awareness of value of resources; Lack of facilities; Fishing technique not suitable

ANNEX 17

Gender Issues in Fisheries Management

Aliti Vunisea

In most Pacific island countries fishing is a complimentary activity of both men and women. Differences in the participation of men and women in the fisheries sector depend significantly on the social context of the different countries, the culture, social institutions and associated practices and expectations. In addition to this, geographical differences, population dynamics, development patterns and the market economy are major influences on fishing participation and change that affect gender participation in the fisheries sector.

Often there has been the attempt to generalise gender issues and concerns depending on cases or examples from some countries, without taking into account the cultural and social diversity that exist between and within countries. This has resulted in certain characteristics or social norms of a society not being taken into account and the undermining of different gender expectations and roles. This consequently leads to misunderstandings of situations and misinterpretation of women and gender issues as a foreign concept, and one that counters social orders and norms in Pacific island countries. In fact there existed many different ways of protecting women, or treating women favourably in many parts of the Pacific.

A factor commonly used to differentiate fishing activities of men and women in the past was fishing areas. Women dominate the mangroves, sand flats and mudflats, and inshore reef and lagoonal areas while men ventured out to the deeper ocean and sailed out in dugout canoes to fish. In many countries of the Pacific such a differentiation was usually on initial observation, but on more in-depth assessment, an overlap of these roles was taking place on many instances. Mitchell (1994) in her study of women's fishing and marine participation in Kiribati questioned the validity of this existing mode of differentiation. In many areas of Fiji for example, women no longer only dominate the subsistence sector, as there is an obvious shift of this participation into the village semi-commercial sector (Vunisea, 1996). With this shift in emphasis in fishing focus, there is overlap in roles and participation in the harvest, post harvest and marketing sectors. Thus the dominant thinking of "women in the subsistence sector" could in itself be an oversight on women's changing roles and the changing face of the fisheries sector, thus their being always seen as unacknowledged fishers or "not seen as doing any fishing". A re-definition of the fishing sectors to take these changes into account may take into account these changes in fishing trend and emphasis in rural coastal locations today. An outcome of all these misinterpretations is the continued fight for recognition of women's participation in the fisheries sector, when the real need is to take that approach a step further and look at ways of furthering women's existing fishing roles and participation.

More recently there has been a recognition of the need to re-look the "Women fishers approach" to one where women's activities are seen in conjunction to men's fishing activities and with all other activities within the community, thus the current gender approach. Communities comprise many different sectors, with diverse roles and characteristics which need to be considered when dealing with gender concerns in the fisheries sector.

With changing needs at the community and household level women have taken on new fishing roles, straddling modern market defined roles with traditional roles and expectations. Involvement in the market sector has not meant a complete change in roles but additional roles to existing ones.
Because of this women have in most cases taken on dual and triple day programmes. This means that on typical fishing days for example, necessary family chores are attended to before women go out fishing. After spending the most part of the day at sea, they return to perform unfinished household tasks. On normal marketing days, household tasks are again performed with food for the family prepared before women travel to town to sell their products. In some of these instances men have taken on new roles, conducting family chores in the absence of their wives but in most instances women's roles have become more complex with the pressure of increased fishing participation and involvement in the marketing of goods.

The Challenges

Hindering women's full involvement in fisheries development and management are perceptions and description of their fishing participation as collection or just gleaning. In the Pacific, fishing is primarily associated with capture of finfish, usually defined as men's fishing. Thus both the method of fishing (gleaning- collecting, gathering, etc) and the species targeted (shellfish, molluscs, crustaceans) by women are understood to be foraging food items only. Women's fishing activities therefore do not match the more challenging activities of venturing beyond the near-shore reefs nor are the species gathered as important as finfish.

The expansion of women's fishing activities to post-harvest, distribution and selling activities has again been dominantly associated with basic food provision and obligations. This is despite the fact that women's fishing participation is in most cases more regular, and contributes significantly to household food security. The non-recognition of women's fishing activities consequently result in the non-enumeration of major subsistence catches, lack of quantitative data on women's fishing activities and target species, and the lack of monitoring of their fishing activities.

The minimal acknowledgement of women's fishing participation is widespread and has not changed much in Pacific island countries although there has been substantial effort at including women. Technological improvement and advanced fishing technology has largely centred on commercial, beyond the reef pursuits that over time have served to firmly establish the notion of women's activities as "non-fishing" participation. This non-recognition of women's fisheries participation can lead to several factors:

- The non-recognition of women's traditional fishing methods and skills.
- The undermining of the different ecosystems, uses and users and how activities within the immediate coastal area can affect other fisheries.
- Women's non-inclusion in fisheries development and management initiatives.
- The long-term loss of intimate knowledge of coastal fisheries known only to women.
- The undermining of a basic source of food security which women is largely responsible for.

Generalities that prevail

Women in Pacific island countries perform a diverse range of fishing and related activities. Fishing participation in this context include all necessary work of preparation of fishing gear, post harvest activities, distribution and selling and support work for husbands and other family members.. Women involvement has largely been in the subsistence sector and has increasingly shifted to the semi--commercial sector. Monetary needs have been the major determiner in the shift in focus from fishing for consumption to fishing for selling with the consumption of the surplus.

A woman's fishing participation and their involvement in management initiatives have largely been inhibited by social attitudes and hindrances. These mostly include customary practices and traditionally accepted roles, which govern society regulations. One of the more challenging changes that community decision makers face is the need to include gender in modern decision making and resource management approaches. Sometimes given the many outside influences and changes that affect communities and their traditional lifestyle, people are sometimes not ready to take account of necessary gender role changes that are required. But because women are regular uses of the coastal zone, their familiarity with habitats, species, and their characteristics, and occurrences, women's involvement in decision making is very important. With changes currently undergoing community structures, modes of governance and work routines, task sharing or complimentary roles of men and women are in a lot of cases maximised by communities.

Women's fishing activities are generally confined to the immediate coastal area and methods dominantly traditional or highly reliant on traditional understanding of the weather, moons, tides and seasonality of species. In the recent past women have expanded fishing participation to include post-harvest acts and marketing off seafood. Most of women's activities though still lack the appropriate means of production in the sense that most improved equipment are used by men while they spend hours travelling to fishing areas and using traditional methods of fishing. Likewise, post harvest activities in the post-harvest sector are still

performed using traditional techniques and technologies. In spite of modernisation and associated monetisation affecting people's livelihood, there remain commonalities in women's fishing participation.

These are as follows:

- With the high demand for food and money, women are increasingly participating in fishing and marketing activities.
- Decisions making relating to fisheries resource use and management usually do not involve women, some of the major users of coastal resources.
- Increasing participation in the artisanal sector with an overlap in gender roles in most harvest and post harvest sectors.
- The high use of technology has resulted in the marginalisation of women.
- Many fishing activities that women conduct are with other women, in family units or with children.

There however are differences in gender fishing participation and these are largely determined by:

- Customary status, roles and expectations of men and women in communities influence the many differences in fishing participation.
- Societal and geographical set up within which men and women fishers work. Affect their participation and species targeted.
- Education and awareness of gender issues in communities contribute to women's participation in decision making.

Community-based approaches to management

With the current community-based approaches to fisheries management, there has been marked effort at including both men and women. Non-government organizations, agencies and government departments working with communities have recognized the need to include women in discussions and work. The use of Participatory Learning Tools (PLA or PRA) in information gathering and ground work before the planning and development stages of management stages in outside interventions to communities have been a major step towards involving women in decision making. Through PLA women are involved in group discussions and participate more freely in activities, group work and field work that are used. These activities cut through gender, social or cultural biases that may exist.

Community-based fisheries management work implemented in Fiji for example have included women in all stages from initial discussions, planning, development, implementation, monitoring and evaluation. In the Verata District and Ono in Kadavu where community-based management projects have been set up in the last six years there has been equal participation at all these stages, with women performing remarkably well. Also obvious in all these instances is men's acceptance of women's changing roles and the need for their contribution to management initiatives.

On a more general level, these sort of participation is still to a large extent successful only in areas where such activities are taking place, where they has been outside intervention and where elders in the community are educated and aware of gender issues. Thus there remains a gap in management attempts at the village or community level with women not fully involved and not included in some major areas of decision making that relate to resource use and management.

Needs

Gender responsive policies targeting women's involvement in fisheries development and management.

Need for more support for organizations, agencies, government attempts at community-based management approaches.

Move to gender in fisheries which takes all sectors into account and the impacts of fishing on other sectors of the community.

Awareness work has to be moved to a point beyond just the conduct of workshops and people acknowledging the different gender roles but to a more practical –solution analysis. This can only be best decided by different communities and the outside bodies working with them.

Gender sensitive approaches to training, workshops and awareness work should be adopted.

Youths and children should be included in discussions, training and awareness work on management initiatives to allow for continuity of work introduced and an early understanding to users and owners of resources.

Existing traditional institutions, roles and expectations in different communities and societal set ups should be considered and taken into account when introducing work which require a gender approach.

Communities are undergoing a lot of changes and gender orientation and involvement should be introduced and only implemented at the community's pace.

ANNEX 18

INDIGENOUS RIGHTS AND ITS ROLE IN FISHERIES MANAGEMENT IN THE PACIFIC ISLANDS-

by

U. FA'ASILI
Fisheries Management Adviser

SECRETARIAT OF THE PACIFIC COMMUNITY

NOUMEA, NEW CALEDONIA

1. INTRODUCTION

1.1. Community Structures and Indigenous Rights over the Fisheries Resources

People of the Pacific Islands have lived in close knit communities for many years. Traditionally, they live either in extended families, villages, tribes, or in collections of villages under the leadership of traditional chiefs or kings. Community activities include hunting, planting, fishing and defending themselves from enemies. Village activities are largely community driven and controlled for the purpose of survival.

Pacific Island community structures are often hierarchical and sometimes elaborate. For example in Samoa, communal activities of the untitled men ("aumaga") are dictated and organised by middle-level chiefs ("matai"). In Kiribati, community decisions are made in the *Kaotibai* (island occasion/gathering). Many communities have traditional methods of protecting their natural resources. In the Cook Islands, for example, the *te koutu nui* (traditional chiefs) used, and have now reintroduced, *ra'ui* or traditional prohibitions on the taking of natural resources.

For many years, Pacific Islanders have lived subsistence lives where they regard fisheries resources as a vital part of their livelihood. As a consequence, they have come to claim indigenous rights over these fisheries resources.

Fishing is often a communal activity and very little individual fishing occurs. Canoes are used in groups. Fish drives and palm frond sweeps may involve men, women and children. Reef gleaning is normally carried out by groups of women and children working together. In some cultures, the catch is shared with the whole community as in the *inati* system in Tokelau (Passfield 1998)..

These are a few of the many examples of island community structures, groupings and traditions, which must be respected and taken into account when encouraging the use of indigenous rights in the management of fisheries resources.

1.2. Customary Marine Tenure (CMT)

In many Pacific Islands, villages are located in coastal areas where there is easy access to near-shore fish stocks that provide them with a vital source of protein. These fisheries resources are so important to their livelihood that many villages have claimed ownership of their adjacent waters, even if this is contrary to current national legislation. Some villages claim ownership of their adjacent sea areas and resources that extend from the land to reefs, while others' claims such as that of the *qoliqoli* in Fiji may be more extensive.

Alternatively, some countries allow open access to all fishing areas – fishers are free to fish anywhere along the coastline. Although superficially attractive on equity grounds, open access systems, where anyone who

wishes has the right to exploit a resource, are resulting in severe cases of overexploitation around the world (FAO, 1997). A resource that is for everyone's use, it seems, is no one's responsibility.

And relevant to the present context, open access fisheries provide no basis for indigenous right-based fisheries management.

However in order to facilitate indigenous right-based management, some countries without customary marine tenure are assigning property rights to communities. In Tonga, for example, where community-based management is being planned, the Government is considering allowing villages to set up "Special Management Areas" over which communities have control.

2. THE USE OF VILLAGE FISHERIES BY-LAWS IN SAMOA AS A RIGHTS-BASED FISHERIES MANAGEMENT TOOL

2.1 Background

Over the past thirty years, most of the waters surrounding the islands of Samoa were untouched and the beauty of the underwater world was seen as a major attraction. Corals of different forms had provided a naturally arranged beauty of different structures. Reef fish of many types added color to this beauty. Reefs and lagoons were rich in food resources and were able to sustain the demands of coastal dwellers.

As years pass and as coastal population expand, the demand for fisheries resources has similarly increased. People have been attracted to employing the most effective but often destructive ways of catching fish. These include breaking corals, fish poisoning, the use of explosives and many others. It has now been realized that many of these methods are very destructive to the marine environment. The Division of Fisheries through its extension programme has introduced a community-based approach in order to assist village communities to manage and conserve their inshore fisheries resources. This approach recognises that Samoan village communities have indigenous rights over their adjacent waters and fisheries resources and also recognises that the *fono* (village council of chiefs) has the authority to make rules over all village affairs including their fisheries resources. It is also through this approach that village by-laws become an important tool for the management of inshore fisheries resources.

2.2. Inception of Village Fisheries By-laws

In the mid 1980s, it was realised that the inshore fisheries of almost all villages along the coast of Samoa were experiencing serious declines in catches. The identified causes include over-exploitation, the use of destructive fishing methods and environmental disturbance. The situation has caused concern not only to the Government, but to a large number of village communities. As a result, village communities through their village *fono* began to use local media to advertise village rules to prevent further decline of their inshore fisheries resources. Advertisements reiterated the ban on the use of explosives, chemicals and other destructive fishing techniques and expressly prohibited nearby villages from fishing in their respective lagoon areas. They also indicated penalties to be paid to the *fono* for any breach of their village rules by their own residents. For breach by outside villages, advertisements included threats to taking legal action against them. While the enforcement of village rules was relatively easy within the individual communities that made them, problems were experienced with enforcement against outside communities.

The Fisheries Division recognized that actions of the *fono,* in setting village rules designed to manage and conserve their marine resources, provided an excellent avenue to introduce effective management regimes for the inshore fisheries. However, there were some village rules designed to manage and conserve fisheries resources that contradicted existing Government laws. Also, village rules on their own do not have legal recognition. This has resulted in several *fono* not being able to pursue court action against breaches by neighboring villages. For this reason, the Fisheries Division felt that the village *fono* should be given assistance through legalizing village rules that facilitate the conservation and management of their inshore

fisheries. Therefore when the Fisheries Act was formulated in 1988, the Fisheries Division made sure that the rules set by the village *fono* were given legal recognition. To this end, the Fisheries Act was specifically designed to include provisions that deal with procedures upon which a village *fono* could declare its own rules as by-laws. These in essence are village rules that have legal recognition; hence the inception of village fisheries by-laws.

2.3. What are Village Fisheries By-laws?

Village Fisheries By-laws are village rules that have been prepared in accordance with relevant provisions of national Fisheries Legislation and are accorded legal recognition in the court of laws.

By-laws can cover any measure that assists the management and conservation of the fisheries resources. These may include restrictions on the sizes of fish and shellfish (provided they are not smaller than the sizes set out in the Fisheries Regulations 1996), bans on certain types of fishing gears and methods, allocation of fish quotas, restrictions on mesh sizes for nets and fish traps (again provided they are not smaller than the sizes set out in the Fisheries Regulations 1996) and closure of fishing seasons or areas to allow fish to reproduce. Importantly, they must apply to all citizens equally and not just to those people from outside the village making the by-laws. Table 1 lists some of the common national fisheries regulations which have now been taken over by villages as their own by-laws.

TABLE 1: REGULATIONS THAT HAVE BECOME VILLAGE ACTIONS OR BY-LAWS IN SAMOA

(Figures in the right-hand column indicate the percentage of villages using the particular fisheries regulation as their own by-laws).

ACTION/REGULATION	PERCENTAGE
• Banning the use of chemicals and dynamite to kill fish.	100%
• Banning the use of traditional plant-derived fish poisons.	100%
• Establishing small protected areas in which fishing is banned. *	86%
• Banning other traditional destructive fishing methods (e.g. smashing coral).	80%
• Organizing collections of crown-of-thorns starfish.	80%
• Enforce (national) mesh size limits on nets.	75%
• Banning the dumping of rubbish in lagoon waters.	71%
• Banning the commercial collection of sea cucumbers (Holothuroidea).	41%
• Banning the capture of fish less than a minimum size.	41%
• Banning removal of mangroves (in villages with mangroves).	27%
• Restricting the use of underwater torches for spear fishing at night.	21%
• Banning the removal of beach sand.	14%
• Placing controls or limits on the number of fish fences or traps.	<10%
• Prohibiting the collection of live corals for the overseas aquarium trade.	<10%
• Banning the coral-damaging collection of edible anemones (Actinaria).	<10%

2.4. The By-law Formulation Process

<u>Step 1: Forming of village rules</u>

In all Samoan village communities, the highest village authority is referred to as the *fono* or the council of chiefs. This is the authority that determines village rules, sets village policies and imposes traditional punishments on village residents when they do not abide by village rules and polices. So if a village *fono* decides to promulgate village by-laws, the chiefs will consult among themselves first on the rules they would

like to introduce, bearing in mind that those rules must be related to the conservation and management of the fisheries resources. This may be referred to as village rules.

Step 2: Consultation process

Once the chiefs have agreed upon the rules, they would then send their representatives to the Fisheries Division for consultation as to the appropriateness of their proposed rules as by-laws. This process is essential because the village *fono* may decide on rules that contradict some existing Government legislation. Sometimes the *fono* may wish to introduce rules that apply to outside villages but which exempt their own residents. So this process allows the *fono* to have a better understanding of the limitations of by-laws and why they should apply equally to everyone. Through this process, the Fisheries Division may suggest improvements, alterations, and in extreme cases, recommend complete deletion of the proposed by-law. It is also during this process that the Fisheries Division undertakes redrafting of the proposed by-laws to reflect the wish of the *fono*.

Step 3: Final checking and clearance by the Office of the Attorney General

When an agreement is reached on the changes made during the consultation process, the proposed by-laws are then submitted to the Office of the Attorney General for final checking and clearance. It is during this step that the by-laws are written into their legal and proper forms.

Step 4: Signing

When every by-law is checked and finalized, they are then returned to the Fisheries Division for the signature of the Director of the Ministry of Agriculture, Forests, Fisheries and Meteorology

Step 5: Gazetting, publishing and distribution process

After the by-laws are signed, they are then passed to the Legislative Assembly to be gazetted. At the same time, they will be published by the Fisheries Division in the local newspaper and copies will be distributed to *pulenuu* (nominated Government representatives) of neighboring villages. The distribution of the by-laws to neighboring villages is necessary because they are the ones who are most likely to breach the by-laws if they are not dully informed. The by-laws will then come into force on a date fixed in the by-laws but they can not enter into force until 14 days after the date of publication in the Government Gazette. Until this time, the respective villages sponsoring the by-laws will not be able to enforce them. The by-laws may be altered or revoked as required from time to time by the village *fono*.

Step 6: Monitoring and enforcement

The last and most important part of the process is the monitoring and enforcement of the by-laws by village communities. Villages normally put signboards along roadsides and beaches to inform the public of the areas to which their respective by-laws apply. Some villages also build watch houses, have patrol canoes and routine use of watchmen to monitor illegal activities in their coastal zones and marine protected areas.

Once the by-laws come into effect, breaches by individuals from the village sponsoring the by-laws can be dealt with by the village *fono* using traditional fines such as the provision of pigs, taro and others. For breaches by members of outside village communities, they are handled through the court of law. Anyone found breaching a by-law is liable for a fine not exceeding $100 and not more than $20 for each day if the breach continues. The village *fono* is the enforcement body and any breach of the by-laws should be reported by the *fono* to the police. If the offence involves an existing Government law or Fisheries legislation, applicable fines under those laws will apply.

2.5. Advantages of Village By-Laws over Village Rules and Government Laws

While most of the rules set by the *fono* of a village community to govern the management and conservation of their fisheries resources receive full support from the Fisheries Division, these rules are only applicable to members of that particular community itself. In cases where people from outside villages come into local

waters, the community may be powerless to insist that visitors obey their local rules. Village rules do not receive legal recognition and therefore cannot be used to base a court action. Unlike by-laws, village rules pertaining to the management of their fisheries resources do not have to go through the Fisheries Division and the Office of the Attorney General. As such, it is not unusual to find a village rule that contradicts or is inconsistent with a national law. An example of this would be a rule by one village banning outside villagers from fishing in its Marine Protected Area. Under the Lands, Survey and Environment Act 1989, all land lying below the high water mark shall be public land. Therefore this gives the authority to any person from outside the village making the rule to fish in the area designated as Marine Protected Area.

As for Government, various legislations have been passed to prohibit harmful fishing practices. Fisheries Regulations have also been put in place to restrict the harvest of small fish. However, such national measures have not proven effective in ensuring the proper management and conservation of Samoa's fisheries resources. The basic reason is that Samoa, like many other island countries, does not have adequate resources (both in terms of funds and manpower) to monitor and enforce its national laws.

In contrast, village fisheries by-laws are village rules with legal recognition that can be monitored and enforced by the village *fono*. Quite often, village *fonos* take existing Fisheries regulations to form major parts of their by-laws. Customary fines are imposed on residents of villages that own the by-laws. For breaches by outsiders, the village *fono* can take legal action in the court of law.

One very important aspect that has been noticed is that village communities, through the guidance of the village *fono,* are more active and committed to observing and enforcing the laws when they belong to them. By-laws form an important part of village community management plans. The main advantage of village by-laws over other national laws concerning fisheries is that by-laws are monitored more effectively. Given the limited national resources available, many laws set by Government where the Police is the enforcement authority are hard to police and so can not be effectively monitored. By-laws on the other hand are created by people with real interest in the management and conservation of their fisheries resources. In cases of by-laws set by the *fono*, the *fono* itself is inclined to ensure that the by-laws are properly monitored. Within the six year period since the Samoa Fisheries first introduced its Community-based program to manage the inshore fisheries resources of Samoa, 72 villages have established their own by-laws.

2.6. Problems

While the by-laws are seen to work very effectively, there have been problems identified within both the village communities and Government agencies involved.
In some village communities, village *fonos* are subject to disruption due to internal differences amongst the chiefs themselves. When this happens, the *fono* can no longer function properly and enforcement is not effective. Two such cases have been reported to the Fisheries Division since the inception of village by-laws.

On the Government side, parts of the by-law process which involve other Government agencies apart from the Fisheries Division have not been prompt enough to meet the expectation of village communities. When there is a delay in the process, the village *fono* will often go ahead and enforce its by-laws before the legal procedure is completed. While the by-laws can be enforced at this point amongst the residents of the village that owns them, enforcement against nearby villages is difficult and quite often involves the use of physical force. So there is a potential for inter-village physical battles as a result of delays in the process.

Another problem the Fisheries Division has realized is the cost involved in advertising the by-laws. If Fisheries is targeting 17 village communities for its annual work program, it will cost over $5,000 tala in advertising. This is quite a large amount for one line item in a Divisional budget for Samoa. However, this is not expensive relative to the expected long-term beneficial impact on the marine environment. Quite often, it is difficult to convince finance authorities of the importance of this benefit.

3. CONCLUSION

The success of village fisheries by-laws in Samoa relates to the indigenous rights of village communities to claim ownership of their fisheries resources and the right of the *fono* to make village rules, which become by-laws, to manage and protect those resources. In short, the success relates to the consequent ownership of the by-laws by the *fono* and the village communities themselves. Despite legislation and national enforcement mechanisms, the responsible management of marine resources in Samoan village communities could only be achieved when village communities are accorded their indigenous rights so that they see it as their responsibility to manage and conserve their marine environment. Village communities with legally recognised indigenous rights to set their own village rules, which become by-laws, are more likely to respect and abide by them than to abide by laws set by a government authority. Village fisheries by-laws therefore represent a fisheries management tool, which has great potential for solving many problems involving the management of the fisheries resources. This tool has not been taken advantage of by authorities in most Pacific Islands. The fisheries by-laws, having been derived from the indigenous rights of village communities over their adjacent waters and fisheries resources, have become a key part of Village Fisheries Management Plans created under the community based Fisheries Extension program operated by the Fisheries Division in Samoa.

4. REFERENCES

Amos M. 1993. Traditionally based marine management systems in Vanuatu. Traditional Marine Resource Management and Knowledge Information Bulletin 2, 14-17.

Dalzell P., Adams T.J.H. & Polunin N.V.C. 1996. Coastal Fisheries in the Pacific Islands. Oceanography and Marine Biology: an Annual Review. 34 395–531.

Faasili U. 1997. The use of village by-laws in marine conservation and fisheries management. Pacific Science Association Intercongress, July 1997, Fiji.

Faasili, U and King, M.G. 1998. A network of small, community-owned fish reserves in Samoa. PARKS 8, 11-16.

Falanruw M.V.C. 1994. Traditional Fishing on Yap. In: Science of Pacific Island Peoples: Ocean and Coastal Studies. Volume 1. Institute of Pacific Studies, University of the South Pacific.

FAO. 1997. Technical guidelines for responsible fisheries. Number 4. Rome, FAO. 82 p.

Fingleton G,Toailoa S & Winsterstein H 1993. Village Participation in Fisheries Law-Making and Implementation.

Horsman N. & Mulipola A. 1995. Catch data and collection from market surveys in Western Samoa. South Pacific Commission and Forum Fisheries Agency Workshop on the management of South Pacific Inshore Fisheries. Integrated Coastal Fisheries Management Project Technical Document. South Pacific Commission, New Caledonia. 17 p.

Johannes R.E. 1981. Words of the Lagoon: Fishing and Marine Lore in the Palau District of Micronesia. University of California Press, USA. 245 p.

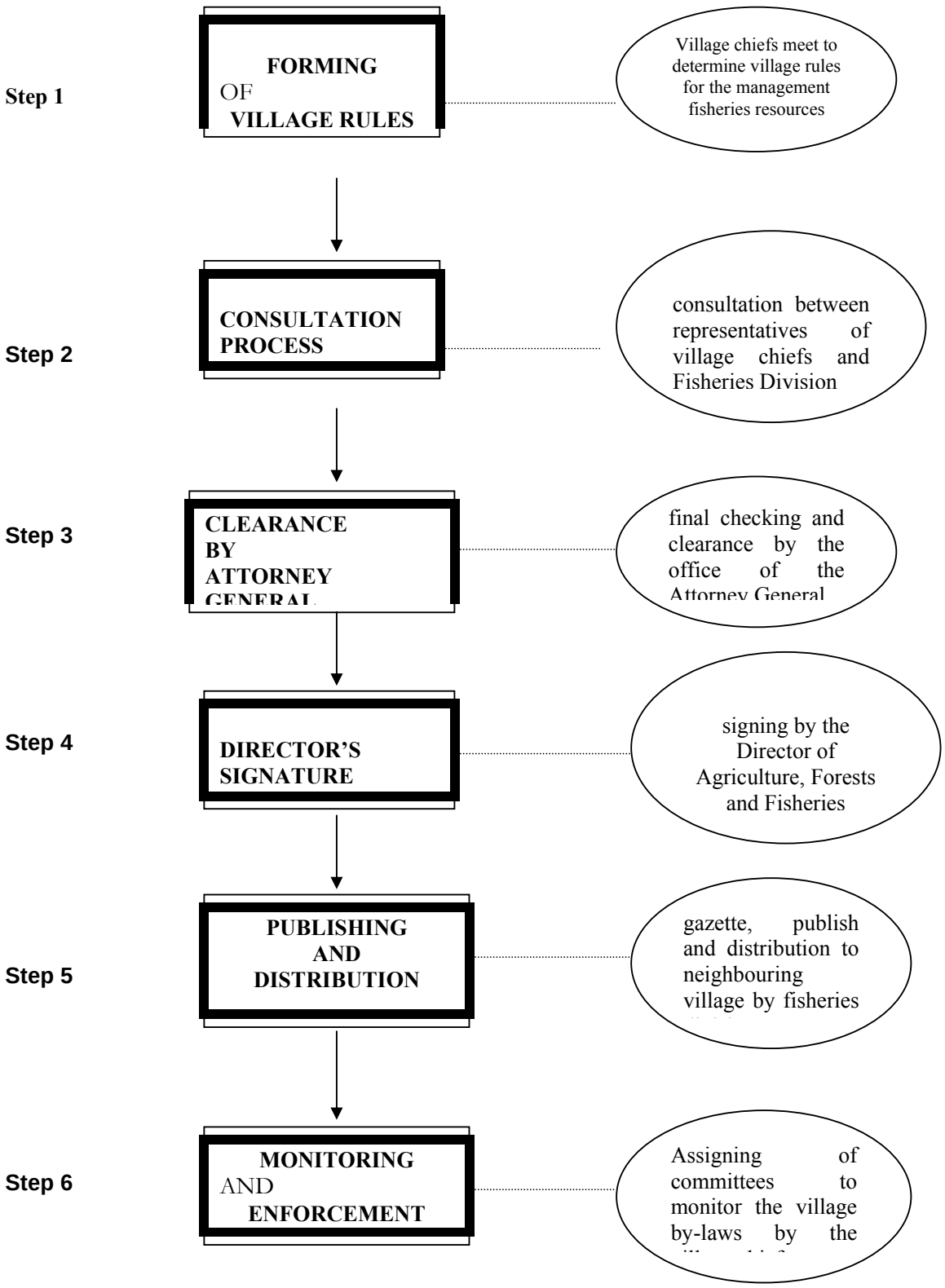
King, M.G. and Faasili, U. 1999. Community-based management of subsistence fisheries in Samoa. Fisheries Management and Ecology, UK, 6, 133-144.

King, M.G. & Lambeth, L. 2000. Fisheries Management by Communities; a manual on promoting the management of subsistence fisheries by Pacific Island communities. Secretariat of the Pacific Community. New Caledonia. 87 p.

Passfield, K. 1998. A report of a survey of the marine resources of Fakaofo Atoll, Tokelau. SPC, New Caledonia.

Saucerman S. & Kinsolving A. 1995. Fisheries management and conservation in American Samoa. Country Paper 6. Joint FFA/SPC Workshop on the Management of South Pacific Inshore Fisheries. South Pacific Commission, Noumea 7 p.

Annex :By-law formulation process



ANNEX 19

Customary Marine Tenure: Implications on Community-Based Fisheries Management in Fiji.

Alifereti Bogiva, Fijian Affairs Board, Fiji.

SPC Regional policy meeting on coastal fisheries management .

Nadi, Fiji. 17-21 March, 2003.

1. Fisheries are an integral part of our traditional lifestyle in Fiji. The development and exploitation of fish stocks are subject to the Fisheries Act Cap 158, the Marine Species Act Cap 158A and subsidiary legislation. The Fisheries Act addresses fishing within traditional customary fishing areas. The policy on catching fish within customary fishing rights areas is that no commercial fishing activities are undertaken unless by consent of the traditional owners. There also exist customary management strategies in the different communities in Fiji.

2. Fiji is blessed with abundance of freshwater (surface and underground). All freshwater areas are traditional customary fishing rights. There is no commercial freshwater fishing accept aquaculture trials.

3. The Fiji Islands consisting of more than 300 islands is divided into 14 provinces, or 189 Tikina, or 1169 villages, with a total landmass of 1.8 million hectares, is scattered over 1.3 million square kilometres of the South Pacific Ocean. A breakdown of Tikina and villages is provided herewith accept Rotuma and Rabi. Note that there is a total of 1169 villages councils to discuss and decide on resource use and allocation.

No.	**Province**	**Tikina**	**Villages**	**Division**
1	Ba	21	107	Western
2	Bua	9	54	Northern
3	Cakaudrove	15	133	Northern
4	Kadavu	9	75	Eastern
5	Lau	13	72	Eastern
6	Lomaiviti	12	72	Eastern
7	Macuata	17	106	Northern
8	Nadroga/Navosa	22	122	Western
9	Naitasiri	16	91	Central
10	Namosi	5	26	Central
11	Ra	20	93	Western
12	Rewa	9	54	Central
13	Serua	4	24	Central
14	Tailevu	22	140	central
	TOTAL	**189**	**1169**	

4. A Fijian village community is made up of clans and sub-clans called Tokatoka, Mataqali, Yavusa. Land and qoliqoli boundary is surveyed and mataqali membership is registered at the Native Lands and Fisheries Commission. Membership of Mataqali cannot be transferred or loaned. Fiji has a patrilineal lineage.

These are the forums that should be consulted prior to supporting a fishing application before the same is submitted to government for licensing.

No	Province	# of Vanua	# of Yavusa	# of Mataqali	# of Tokatoka	Matanitu Vanua
1	Ba	22	141	402	1050	Kubuna & Burebasaga
2	Bua	10	74	333	469	Tovata
3	Cakaudrove	20	110	414	797	Tovata
4	Kadavu	14	88	291	655	Burebasaga
5	Lau	13	73	228	465	Tovata
6	Lomaiviti	12	122	438	943	Kubuna
7	Macuata	15	108	413	657	Tovata
8	Nadroga/Navosa	25	110	346	679	Burebasaga
9	Naitasiri	22	22	147	579	Kubuna
10	Namosi	3	21	72	134	Burebasaga
11	Ra	22	142	670	1245	Kubuna
12	Rewa	8	64	290	590	Burebasaga
13	Serua	2	21	63	180	Burebasaga
14	Tailevu	29	178	741	1340	Kubuna
	Total	**215**	**1390**	**5280**	**9979**	

5. About 49% of Fiji's village is located along the coastal zone and islands, this exclude settlements and farming communities.

6. Each Mataqali has a unique traditional role and responsibility within a Vanua. One is born and die into this family and membership is not a matter of choice or preference. There are 7 traditional roles of the Mataqali in a Vanua namely;

   - Turaga - chief
   - Sauturaga - talking chief
   - Matanivanua - spokesman
   - Bete - priest
   - Bati - warrior
   - Mataisau - craftsmen
   - Gonedau - fishermen

7. Resources belonging to a Mataqali or Yavusa (eg Land, qoliqoli, totems and responsibilities), are permanent heritage values, whereas for one to be a custodian would depend on his/her life span and the collective decision under a leadership on how resources are allocated or used.

8. Concern has been raised over the years as to the status of qoliqoli and fisheries coastal zones. Damage to marine ecosystems are related to government and community infrastructure development projects. Tikina council meetings continuously discuss these problems without arriving at permanent solutions. Evidenced are available that the problems are Fiji wide and it is advisable to develop adaptation measures as soon as possible.

   An example of reported problems is tabulated below;

	Province	Tikina	Problems	Causes
1	Ba	Votua	Siltation	Logging and cane development
2	Bua	Vuya	Foreshore erosion and	Gravel extraction for

			wharf damages	road repairs ad berthing of boats
3	Cakaudrove	Wainikeli	Foreshore erosion	Gravel extraction for road repairs
4	Kadavu	Nabukelevu	Foreshore erosion	Government road alignment
5	Lau	Lomaloma	Foreshore erosion and rubbish	Government road alignment and berthing of boats
6	Lomaiviti	Sawaieke	Flooding and damage of teitei land with salt water	Poor design of seawall
7	Macuata	Labasa	Siltation	Logging and sugar mill
8	Nadroga/Navosa	Conua	Foreshore erosion	No breakers
9	Namosi	Veivatuloa	Saw dust	Sawmill waste
10	Naitasiri	Naitasiri	Siltation	Excessive land use methods by Chinese farmers
11	Ra	Nakorotubu	Foreshore erosion	Absence of breakers
12	Rewa	Suva	Pollution and over fishing	Ships berthing in Suva harbour and the great many population in Suva
13	Serua	Batiwai	Foreshore erosion	No breakers
14	Tailevu	Verata	Foreshore erosion	Roading

Licensing

9. The ***consent*** to fish within a qoliqoli begins with the Vanua endorsement, Tikina or Yavusa, depending on the ownership status of that particular locality.

10. The ownership right of the marine resources belongs to the state as stipulated under the Fisheries Act.

11. It is today, after 122 years, since the Great Council of Chief's meeting in Nailaga, Ba, in 1881, whereby it was announced that Queen Victoria gave clear instructions ***that all customary ownership of and usage of resources according to native customs and traditions should not be taken away from the native owners***. Simultaneously, the then Governor's instruction to Mr Wilkinson to investigate the qoliqoli ownership and register them like land ownership starting in the Yasawa and Ba area. Unfortunately this was never fully executed nor being completed. Therefore Queen Victoria's wish to respect Fijian culture and customs was not fulfilled.

12. The Fisheries Act was enacted with clear responsibility accept to police our i qoliqoli. Today policing of qoliqoli is always neglected due to the magniude of the exercise. Authorities have always

asked and looked upon the traditional qoliqoli owners to assist with policing as the department is unable to carry out this task on its own.

13. Policing of coastal fisheries is shared between government and Traditional Fishing Rights Owners (TFROs) who lack the facilitates and are handicapped to undertake the tasks. They do not have speed-boats with modern equipments (like communications, flares, cameras), no maps and no legal authority except only a few trained fish wardens.

14. The Fijian Affairs Regulation introduced in 1944 with the Fijian Court system commanded the respect of the indigenous communities. Activities like fish poisoning with "duva", aimless burning, stray animals eating immature root crops etc were prohibited. FA regulations strengthened traditional linkages between respective Vanuas and maintenance of traditional obligations.

15. Recognising Customary ownership prior to the issuance of commercial fishing license is acknowledging the traditional chiefly status of the area. This is also considered the weak link in community management of qoliqoli areas where poor coordination and lack of consultation between the Turaga ni Yavusa and Vanua elders to discuss fishing applications before consent and conditions is given.

16. However good leadership was evident in Verata when the Turaga na Ratu mai Verata banned commercial fishing from the Verata qoliqoli. Today after years of declaring "tabu zones", as conservation areas to restock their depleting marine resources and with periodic monitoring, only one licence with specific conditions and monetary benefits to the village is entertained. So this spells out that traditional leadership and tenure systems could contribute effectively to managing our qoliqoli resources sustainably. The same also applies with projects in Ba, Kadavu, Nadroga/Navosa, Lomaiviti and Cakaudrove to name a few.

Bose Vanua

17. The Bose Vanua is the traditional forum to be consulted and to discuss issues pertaining to the allocation and use of natural and cultural resources. Unfortunately there is no recognition given to this important forum by legislated institutions even though the Vanua regard qoliqoli and sasalu with special significance of heritage values.

18. Special training for Turaga ni Yavusa to appreciate their chiefly status and the need to consult with Vanua elders prior to endorsing fishing application should be undertaken immediately and consultations are now in process. Marine conservation projects in Fiji are undergoing empowerment exercises to help the Vanua and the community to manage their qoliqoli.

Tikina Council

19. The Bose ni Tikina, tikina council, is the forum, presided by the local chief and attended by village elders and association representatives, should be informed of all development proposals in a Tikina. It could develop policies and introduce management guidelines. Sadly, only a few Tikina are utilising this opportunity.

20. The Bose Vakoro, village council, a regulated institution is to hear all village developments proposals and updates, including fishing interests and marine conservation issues.

21. Setting up of Village and Tikina council offices at the village and community level would improve advisory services and information sharing between the community and GO/NGOs to guide developments.

22. The Vanua systems and the Fijian administrative machinery, under the Fijian Affairs Act, is well understood and respected by the traditional resource owners. Given appropriate support it would be the ideal framework to facilitate and monitor resource based developments and research activities.

23. A benefit of the customary system is that it is changeable to include latest technologies, if it is to improve outputs.

24. Traditional resource mapping using local knowledge and interpretations would help win respect of the people as sites are related to a particular Mataqali through history.

25. Village resource gathering area – ***qoliqoli and qele ni teitei*** are owned and managed communally. Rehabilitation of the resource gathering area to support food security is an excellent tool to fight poverty and family hardship.

26. Seasonal calendar is a very important tool to be documented and reintroduced to the community to guide and relate people to their resources and activities that correspond with a particular timeframe and other set of activities.

27. Capacity building for TFROs to understand the composition and status of their i qoliqoli would help them understand and respect their resources and eventually engage in management activities that would sustain their relationship and reliance.

28. Some marine related legislations that is currently creating confusion in one qoliqoli area needs a mention. A recent case was raised in Suva whereby 4 different legislations cover one particular qoliqoli area;

    a. Fisheries department - live coral
    b. Lands department - dead coral
    c. Forestry department - mangrove
    d. Ports authority - shipping

    All the four legislation would not stop the illegal fishing activities and waste problems faced by the local community. Likewise it does not introduce policing activities.

29. Conclusion, considering all the above, therefore:-

    a. Problems encountered today in managing our i qoliqoli could be linked to originate by not complying to the wishes and Her Majesty's instruction to the then Governor of Fiji.

    b. The Ministry of Fijian Affairs (via FAB) would be the most effective organization to facilitate community based developments, it has offices in the 14 provinces of Fiji.

    c. Community based initiatives, and NBSAP, should be encouraged with FMMA network lessons gained are to be shared.

    d. Customary tenure has a place within our indigenous society. The system could work effectively here in Fiji as has been proved in Verata, Tailevu and few other places where chiefly system is respected. However it needs technical support and continuous guidance from academic institutions so that sustainability is achieved through introduction of modern techniques.

    e. The policing of the i qoliqoli should be considered a priority and village fish warden be trained and equipped. Stock taking of qoliqoli and baseline inventor would provide basic management requirements to guide decisions.

    f. Appropriate legislations be introduced to cover traditional knowledge and IPR issues.

    g. Turaga ni Yavusa workshop on licensing protocols and procedures should be planned now in collaboration with other stakeholders.

    h. Traditional resource mapping of all the i qoliqoli in Fiji be done now.

To establish the office of Roko Tui Yaubula at the national level and Tui Rara ni Yaubula at the local/tikina level.

ANNEX 20

TONGA's APPROACH to COASTAL FISHERIES MANAGEMENT
by Tevita F Latu and Marc A Wilson

1.0 Background

The Kingdom of Tonga has 170 islands in total with a total land area of c.699km^2. The three main islands are Tongatapu, Ha'apai and Vava'u groups. Thirty six islands are permanently inhabited. Tonga's land and sea compromises 395,000 km^2 and the yet-to-be declared Exclusive Economic Zone which will extend this to c.700,000 km2 (Petelo and Kailola,1995).

Fish (includes invertebrates) has been the major source of protein for Tongans throughout history. The gradual urbanization of its people from the small islands into the major centres and the development of the cash economy has increased the pressure on these coastal resources.

Fishing and activities related to fishing underpin Tonga's rural economy. The exchange or gifting of fish plays a significant role in Tongan culture. The World Bank (1996) estimated the value of subsistence fishing in Tonga at around T$2.5 million this was equivalent to a per-household income of T$221 for rural Tongan families [4].

Traditionally, the people of Tonga have always had the freedom to harvest fisheries resources in the sea without any restrictions. This arrangement has meant that our coastal resources have become a victim to the open access tragedy ie the so called "tragedy of the commons". In the past there was no need to conserve these resources as the population was low and the fishing technology rudimentary. Significantly improved fishing technology and the commercialization of fishing,, the development of an industrial fishing sector and a growing population has now placed Tonga's fisheries resources under threat of overfishing. This has prompted Tonga to start a programme to manage and conserve those resources under immediate threat.

11. The Status of Inshore Fisheries:

The commercial importance to communities of the inshore fisheries resources are from finfish, rock lobster, mullet, giant clams, aquarium fish and corals, octopus, seaweed and edible shells. The harvesting of aquarium fish and corals as well as other invertebrates forms an important commodity of the fisheries export revenue for Tonga and provides opportunities for the participation of remote island communities in this export sector. Women have always been involved in the gleaning of the intertidal zones which consists of shellfish, seaweed, octopus, sea cucumber, sea urchins as well as fish of the reef flats. In Tonga women are acknowledged as the "expert exploiters of the coastal resources". Other resources are harvested by subsistence and artisanal fishers. Inshore resources adjacent to communities have been identified as being locally overfished.

Mullet is Tonga's most preferred fish but in recent years its numbers have dwindled to a stage where they are now infrequently seen at the market. Urbanisation and the resultant runoff of urban waste, along with dynamite fishing have been blamed for the decline in mullet stocks. During the early 90s beche-der-mer were an important commercial species but poor utilization through the harvest of all sizes resulted in rapid depletion of the resource and a ban (which is still in place) on the harvesting of all species of sea cucumber (beche-der-mer) was introduced in 1995. The lobster stocks have also been under intense fishing pressure in recent years and minimum size limits and a prohibition on the taking of berried females has been instituted.

The commercial export of clam along with domestic consumption led to the depletion of Tonga's clam resources. In 1993 cabinet banned the commercial export of giant clams (vasuva) and also commenced a restocking programme using seed produced at the Ministry's Aquaculture Centre.

[4] Based on unpublished data from the 1996 census. Rural households are defined as total households minus household in 5 villages with populations in excess of 3000.

1.**2 Threads to the marine environment :**

In recent years intensive agriculture has developed in Tonga for the cultivation of export crops such as squash pumpkin and this has resulted in the extensive use of pesticides, herbicides, fertilizers and other chemicals which seep into the soils. During the rainy season the resultant runoff of theses chemicals may cause eutrofication in the lagoons and other coastal areas. It is well known from other parts of the world that such chemical run-off has a number of impacts on the marine environment. Adverse impacts reduce the productivity of the inshore fisheries and thus reduce the availability of resources for use by man

The mining of sand for the use in traditional covering of graves and for construction works has increased erosion and contributed to increased turbidity of lagoons and inshore areas. Refuse dumps situated close to the coast also result in the seepage of a host of noxious chemicals into the adjoining coastal waters.

Despite the existence legislation banning the use of destructive fishing practices and the provision for the imposition of significant penalties for such offences some fishers still use practices such as dynamite fishing, reef smashing and poisoning. Traditional poisoning is still widely used in the outer islands of the Tonga group. These wasteful methods have unsustainable long-term effects on the marine ecosystem and biodiversity. The Ministry continues to apprehend and prosecute such offenders but the need for cash increase the preparedness of some fishers to use these techniques.

1.3 Co-management of the Coastal Fisheries :

Many problems facing the management of the coastal fisheries have been due to the weakness of management authority to realize the importance of community involvement. The previous techno centric top-down management approach has failed simply because it was based on a centralized approach. Little account was taken of the fishers needs, concerns or involvement in the management process. Although Fisheries regulations have been put in place to protect fish species the level of compliance with these is poor. This is due to a lack of awareness by many Tongans of the regulations, their purpose and of the inability of the Ministry to enforce them.

The recognition that communities need to be involved in the management of the inshore areas has resulted in the Government of Tonga introducing new fisheries legislation that provides for greater involvement by stakeholders. In particular the new act addresses the open access issue by making provision for the declaration of any area of the fisheries waters and corresponding subjacent area to be a ***Special Management Area*** for purposes of:-

- Coastal Community management,
- application of certain conservation and management measures,
- subsistence fishing operations or other specified purpose.

In consultation with the Management Advisory Committee and the Coastal Community responsible for a Special Management Area the Ministry may make regulations in respect of that Special Management Area, relating to or for the implementation of a fishery plan for the conservation, management, sustainable utilization and development of fisheries resources in such Special Management Area.

What does this mean?

1. Regulations may be made after consultation with the FMAC and the Coastal Community responsible for the SMA.
2. Authorities for a SMA cannot be issued without prior consultation with the relevant Coastal Community.
3. Ongoing consultation processes need to be established.

These provisions of the Fisheries Management Act 2002 provide substantial legislative support for co-management. However, the implementation of such arrangements will be challenging for the Ministry and the communities involved. A new Community Development section has been established within the Ministry which will be responsible for the implementation of Tonga's co-management approach. Capacity is being developed through the assistance of the AusAID funded Tonga Fisheries Project. It is anticipated that the field implementation of Tonga's co-management programme will commence in 2004.

(Petelo and Kailola,1995

World Bank (1996). Pacific Island Economies: Building a Resilient Economic Base for the Twenty-First Century. Washington D.C. April 1996.

ANNEX 21

Creating legal space for community based fisheries management and customary maritime tenure in the Pacific: issues, trends, threats and opportunities

by

Blaise Kuemlangan

The fertile literature on community-based natural resource management (CBNRM) in general and in the fisheries sector in particular, show that the implementation of such approach to management will have a broad range of implications including policy, technical, institutional and legal implications. However, much discussion on utilising the community based management approach in natural resource management to date has centred on its conceptual, economic and technical/management aspects. It is also important that the formal legal environment within which community-based management mechanism functions, be examined to determine whether it supports or will need necessary enhancement to support the implementation of CBNRM. It may even be necessary that such an examination takes place before or when CBNRM is being considered for utilization or trial. The question as to whether community based fisheries management (CBFM) is legally sustainable must be asked of the whole legal framework of the state – from fundamental laws such as the constitution, to subsidiary legislation. Amendments to existing legislation or new legislation may be necessary to implement CBFM. There is no blueprint as to how a CBFM should be set up in a legal framework, what number of rights with respect to management of the fish resources should be accorded or what should be the level of participation by the local community (e.g. whether it be at the level of consultation during the management process or through formal representation in consultative, advisory or decision-making institutions within the fisheries management framework, or whether it should be a devolution of management authority or of implementation powers, or both). It is important however to ensure that constitutionality of all these aspects of fisheries management be ascertained. It is also important to ensure that enabling legislation for CBFM consider the following issues: security, exclusivity, permanence of rights vested, flexibility of its provisions so as to allow the states to exercise choice that reflects its unique needs, conditions and aspirations for CBFM and to ensure that CBFM harmonizes with the overall fisheries management legal framework. Attaining the right balance in the CBFM legal framework however is difficult and depends largely on local circumstances.

Creating legal space for community based fisheries management and customary maritime tenure in the Pacific: issues, trends, threats and opportunities

by
Blaise Kuemlangan

Introduction

The last decade observed increased interest in different approaches to fisheries management including the use of the different types of limited access regimes for governing utilisation of fish resources. Among the limited access regimes looked at is the property or rights based regimes (FAO 2002). One of these property rights regime, referred to as the collective property regime, involves the communal management of the resource whereby a community collectively enjoys the rights to withdrawal and access. The community as one unit has an exclusive property right that can be extensive. The creation of rights and its assignment to the community is considered an economic interest which in turn stimulates an interest in sustaining and protecting these rights with the view to achieve, *inter alia*, sustainable resource use.[5]

Another recognisable trend is the focus on increased stakeholder participation and devolution of fisheries management functions (FAO 2002), in recognition of, among others, the fact that top-down management with authority heavily concentrated in central government agencies is often ineffective. Such a management approach involves the exercise of fisheries management functions through a central authority which initiates fisheries plans and policies, controls, monitors and undertakes surveillance of fishing and related activities, and enforces fisheries regulations. This approach to management is effective only if the central authority has the full and required capacity to fulfil its mandate. It gives little deference to stakeholders' concerns which creates miscomprehension between the regulator and the regulated and often frustrates effective management. Thus the current broad consensus that top-down fisheries management should yield to wider participation by stakeholders through implementation of community-based fisheries management. In the latter approach to management, stakeholders are involved directly or indirectly in policy formulation and decision-making processes or some aspects of the functions of the central authority. This facilitates consultation with stakeholders or for stakeholders to have representation in the decision making process. It promotes transparency and accountability on the part of the management authority on the one hand and invites a responsive stakeholder contribution in the implementation of management programmes, greater respect for and compliance with directives of the relevant government authority on the other.

There are also socio-political dimensions to the pursuit of CBFM, including increased realization of the need to foster sustainable development of the small scale fishery which is vital to the national economy, the livelihood of the poor or provides inexpensive food for the local populace. The maintenance of viable, decentralised settlement patterns to prevent large-scale migration of fishermen to urban settlements is also becoming important to States. To this could be added the growing socio-political pressure for decentralization of governance (Kurien 1999).

There has been much discussion of community or village based management of fisheries in the Pacific Island Countries (PICs)[6] for comparatively the same amount of time as there has been discussion on CBFM world-wide. Of particular significance in the Pacific context is the documented existence of customary maritime tenure or traditional management of the resources of in the marine areas in most if not all Pacific Island countries (PICs). Indeed, the existing body of literature trumpet the potential role of customary maritime tenure or traditional norms of fisheries management in Pacific Island Countries or generally recommend that such practices form the basis of management approaches in the Pacific particularly in coastal fisheries. Yet other reports herald the success of use of customary maritime tenure in a number of these countries. CMT or

[5] The first section of this study, from the introduction to the discussion of the legal aspects of CBFM, is an adaptation of the paper entitled, "*An overview of legal issues and broad legislative considerations for community based fisheries management*" by Kuemlangan and Teigene (2003) for the Second Large River Symposium (LARS2). It is reproduced here in its adapted form with the kind permission of the Scientific and Editorial Committee of LARS2 and the co-author of that paper, Mr. Henning Teigene.

[6] PICs here refers to the members of the Forum Fisheries Agency viz Australia, Cook Islands, Federated States of Micronesia, Fiji, Marshall Islands, Kiribati , Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu. However, the focus of the discussion in this paper is on the developing PICs.

traditional management practices as found in the Pacific Island Countries would be relevant and should play a pivotal role in fisheries management approaches as it displays the characteristics that justify community based management approaches highlighted above. The CMT not only inherently involves or displays collective property regime features but also emanates broad participation in decision making and management. The push for use of CMTs in contemporary fisheries management in the Pacific is persistent and would be consistent in the context of the global trends to CBFM highlighted above.

This is a brief study which primarily looks at the legal aspects of CBFM and role of law (legislation) in enhancing CBFM and CMT.

The study is presented in two parts. The first part discusses the broader subject of CBFM and the significance of considering associated legal aspects. It presents findings based on the review of documented cases of CBFM globally and elaborates on the argument that it is important to ensure that CBFM is legally grounded or will otherwise need legislative support in implementation. The substantive section of the first part of the study provides an overview of broad legal issues relating to CBFM which is preceded by a summary description of what CBFM is and the exposition of the current lack of consideration for legal issues relating to CBFM. The final section of the first part of the paper provides some basic considerations for legislating on CBFM and draws general conclusions.

The second part of the paper strives to provide answers to the questions - what has been the progress in pursuing CMT-based community fisheries management as a component of contemporary fisheries management in the Pacific? Should legislation facilitate desired progress?

Whether or not customary maritime tenure should be legislated has been debated with some arguing against it while many others arguing for it albeit with some qualification as to the exact manner in which customary maritime tenure ought to legislated so as not rigidify custom. Recently, in the context of Vanuatu, the need to further examine whether it is desirable to formally incorporate customary maritime tenure in legislation was inquired again. (Govan 2002). The discussion in the second part of the paper reports on the result of a desk study of current literature on CMT in the Pacific supplemented by site visits and interviews (often at country and central fisheries management authority level), with a view to answer the questions put. The countries covered in this study were chosen based on the (adequate) amount of literature available, the ability to undertake visits in a short period available to the author for the study, subject to the convenience of accessibility by air travel and other considerations. The discussion and findings of the second part of the paper are therefore a result of what can be gleaned from the process under the circumstances and should be considered as providing an overview only of the prevailing situation concerning the utilisation of CMT in the Pacific. Obviously, a central theme on the discussion in the latter part is to address how use of CMT can be enhanced with particular emphasis on one of the considerations put – that of the role of law or fisheries management legal framework in enhancing use of CMT.

The significance of considering legal aspects of CBFM

The implementation of community-based natural resource management (CBNRM) in general and in fisheries will have a broad range of implications including policy, technical, institutional and legal implications. Much of the debate on utilising CBNRM has focussed on its conceptual, economic, technical and management aspects. The legal environment within which community-based management functions also needs examination to determine whether it supports or will need necessary enhancement to support the implementation of CBNRM.[7] It is advisable that such an examination takes place before or when CBNRM is being considered for utilization or trial (Lindsay 2001)(Kuemlangan and Teigene 2003).

The need to examine legal issues connected to CBFM is important for the following reasons:

1. it is documented that effective implementation of CBFM systems depend on supporting legislative framework. (Berkes 1994, Ruddle 1994);

[7] See The World Bank. 1999. Report from the International CBNRM Workshop, Washington D.C., 10-14 May 1998. URL: http://www.worldbank.org/wbi/conatrem/ which discusses considerations for establishing community based natural resource management (CBNRM). It underscores the legalising of institutions a basic requirement for establishing CBNRM.

2. there is evidence that CBFM systems have had a measure of success in jurisdictions like Philippines and Japan where there exists a favourable legal environment (Alcala and Vande Vusse 1994, Ruddle 1994). In respect of traditional community-based marine resource management systems, the functional systems recorded are those that exist in jurisdictions that accord them legal recognition and are protected by government (Karlsen 2001, Pomeroy et al 2001, Ruddle 1998).
3. it can pre-empt and avoid legal challenges which could have adverse consequences.[8]

Broad legal issues

The nature of the rights accorded to the local community. Property, property rights and usufruct.

The discussion on CBNRM often focuses on the rights of local communities at different levels such as the right to the resources, rights to manage the resources or the exclusive right to exploit the natural resources. What is essentially referred to is fundamental economic rights including property, property rights and usufruct. The legal view of property can be summarised as follows. Property is not a thing, but a right established by socially constructed conventions. Property is a bundle of rights or interest in an asset which may be apportioned between different holders. Rights can be established and supported within a given community and are only declared as such when tested in courts. Rights can be established, qualified and extinguished by statute (Leria and Van Houtte 2000).

Quite clearly a community based management regime can be classified as a common (collective) property right regime. The community is in possession of a sufficient number of rights or powers over the thing or resource they manage. However, each community based management (CBM) regime will be unique both in terms of legal underpinnings and with regards to the institutional and management arrangements that support it. How it will be defined in the context of property regimes will depend on its characteristics and how many or few of the sticks in the bundle of rights that are held by the community. Views can vary here, and while some will claim that a common property regime exits, others will maintain that at the end of the day the state only accords the community usufruct rights, not property rights.

A common theoretical foundation and understanding of the concepts when approaching this issue may be useful but is difficult in practical terms because the appreciation of these concepts largely depends on the legal systems in which they exist. Against this scenario, it is obvious that any discussion that tries, at the outset, to define whether a CBM regime should or should not be regarded as a property rights regime would be folly. Suffice it to say that a conscious consideration of what it is that one wishes to create and facilitate in advance is better than no consideration *ab ititio*. This should be done in collaboration with the local communities, allowing the local community-based institutions to define, preside over and redefine the rules of resource use. Equally important is to recognise the place of the state legal framework and note that the establishment or perpetuation of a CBM regime may require enhancing or establishing a legal framework to support it. In this context, the legal framework is viewed not only as facilitator for CBNRM, but also an inhibition which should be removed.

The fundamental legal basis for CBFM

The question as to whether CBFM is legally sustainable must first be asked of the fundamental laws of a state. This is particularly important for those states that are established by constitution or whose legal systems recognize the constitution as the supreme law. If the fundamental law, (the constitution, organic law or presidential or royal decrees), stipulates that certain prerequisites of CBFM are not possible, then CBFM in its fullest sense cannot be established legally. As touched upon above, there is no blueprint as to how a CBFM should be set up in a legal framework, what number of rights with respect to management of the fish resources should be accorded, what should be the level of participation by the local community and whether it be at the level of consultation during the management process or through formal representation in

[8] For example, in Iceland the ITQ based fisheries management system introduced by the 1984 Fisheries Act was found to be unconstitutional. This may be an extreme example and one which relates more to the issue of individual transferable quotas. However, it has a valuable lesson for policy and decision makers that innovative approaches to management including rights based management be reviewed from all perspectives and that they are found to be legally functional in the national context before they are comprehensively applied.

consultative, advisory or decision-making institutions within the fisheries management framework, or whether it should be a devolution of management authority or of implementation powers, or both. It is important however to ensure that constitutionality of all these aspects of fisheries management should be ascertained. In particular decentralization or delegation of resource management functions and appropriation of property or user rights could raise legal problems which are discussed as specific legal issues hereunder.

If it is the resolve of the government as reflected in national policies and directives to establish CBFM, then effort should be redirected at amending the fundamental laws of the land to enable this.

The fundamental legal basis and decentralization

Decentralization does not necessarily mean people participation in governance of the full range of their own affairs and much less in the management of resources. Some may say that decentralization is really the effective establishment of central government at the local level. However, there are instances that decentralization may instil a culture of stakeholder participation in management of resources. In the latter context and as it relates to CBFM, the comprehension of the notion and ensuring its effective operation may come easier to communities where decentralization is a national policy supported by law. In this respect, decentralization or the delegation of mandate for the management of fisheries resources is essential for CBFM. Such mandates would come with formation of local governments and may vest in those governments the power to make subsidiary laws, and to administer and enforce laws. This feature is evidenced in the institutional framework of governance as reflected in fundamental laws such as the constitution, or if the constitution is silent on this issue, it may be an inherent culture in the system of governance.

The 1987 Constitution of the Philippines is an excellent example of a fundamental law which leaves no room for doubt by clearly providing that CBFM shall be established through decentralization. Article X provides that there shall be a tier of local governments who shall be granted under a code for the local governments, powers, responsibilities and resources and all other matters relating to the organization and operation of local government units. In addition, it is an inherent policy that the State shall encourage non-governmental, community-based, or sector organizations that promote the welfare of the nation (Article II, Section 23). Further, Section 7 of the same Article states that the "Local Governments shall be entitled to an equitable share in the proceeds of the utilization and development of the national wealth within their respective areas, in the manner provided by law, including sharing the same with the inhabitants by way of direct benefits.

When considering the possibilities for decentralization of fisheries management functions, subsidiary legislation that implement fundamental laws and enable decentralization must also be considered. Jurisdictions with a decentralized system of governance would most probably have in place a web of subsidiary legislation which confer resource management or enforcement powers to local government administration, local communities or other stakeholders. These legislation may pertain to the establishment of local governments and their functions and administration (government and administrative laws), the management of other natural resources or the environment. Consideration of this web of legislation is necessary to clarify, sort out and resolve possible competing or overlapping authorities. The same holds true if the fundamental laws (e.g. the constitution) or framework laws (e.g. the main fisheries law) are revised with a view to introducing CBFM. Subsidiary legislation pursuant to these laws needs to be revisited to ensure compliance with the amended framework laws, and with other legislation as appropriate. While this is a tedious task, it is of crucial importance that the management powers and responsibilities of the community managers are clear and undisputed.[9]

The fundamental legal basis and allocation of ownership or other substantial rights

Like decentralization, the issue of the allocation of property and use rights should be asked also of fundamental laws as well as specific laws relating to natural resource development. This issue is often to be

[9] For example, for the management of fisheries in the Lake Kariba, FAO assisted Zambia in a revision of its fisheries legislation to implement a community based management approach. This included the development of new fisheries legislation underpinning the creation of local and regional councils and committees having both management and enforcement functions and powers (Kuemlangan 1997).

found in national constitutions, either addressed directly or indirectly if such appropriation is contrary to other constitutional principles or rights.

Where a Constitution neither states explicitly the validity of allocating property or use rights nor prohibits such allocation, it can be safely deduced that property and use rights may be allocated under subsidiary legislation for as long as these legislation are gauged in terms that are not inconsistent with the Constitution.

The Icelandic example on the other hand shows us that it could be problematic to allocate property rights or other use rights because of constitutional constraints. The Supreme Court held in 1998 that in its current form then, the ITQ system breached constitutional rules on equal rights and rights to work on the one hand, and the constitutional rule against discrimination on the other. A legislative amendment to render them transferable satisfied the Court in 2000 that their transferability did not effect any discrimination.

There are examples of successful CBFM where local ownership (or other substantial property rights) over fish resources is recognized by law. This is the case in Samoa where local council by-laws entrench traditional management and conservation practises (Taua 1999).

The establishment of CBFM in the context of the creation of property rights systems, with all their implications of the inclusion of some and exclusion of others, to a greater or lesser degree of permanence, conflicts directly with the hallowed right of the public to take fish from public waters[10]. For this reason, the introduction of property rights in fishing has encountered considerable difficulty, and sometimes, downright opposition. Even though a serious barrier, this need not be the end of initiatives towards CBFM. Where the constitution or other fundamental law stands in the way of the allocation of such rights the political resolve to amend these laws must be mustered in order to implement CBFM. Otherwise such practices will continue to suffer from the effects of a weak legal basis.

The need for national legislation: some principal considerations

In addition to the need for having enabling legislation that is consistent with fundamental laws and which elaborate basic constitutional principles relating to CBFM, there is also the basic need for security and enforceability of a right. Legal insecurity and uncertainty is likely to originate from legal regimes which do not allow for local people to establish enforceable legal rights to the resources on which they depend, or to play a meaningful role in the planning and managing of such resources.

Legislation provide mechanisms for site-specific delegation to local people of some measures of management responsibility over state land and fisheries resources, either on and indefinite basis or for a definite period. A balance is normally sought through this mechanism for ensuring that the state level concerns for efficiency in fisheries management and the local-level concerns for self-governance, self-regulation and active participation are realised while defining the extent of their mandates.

Local institutions cannot define the rules by which they interact with an outsider. CBFM must naturally exist inside its larger legal environment and linked with sovereign authority, which is the state, and thus need a legal status that outsiders can recognize and interact with. They need legal protection from trespass and the criminal behaviour of outsiders. They need state law to give legal recognition to community based rules and to tell outsiders that they have to abide by those rules. This is elaborated hereunder in the discussion on security as a principal legislative issue.

Community rules can not define the limits of state power. Thus it is crucial that national legislation address to what extent the state will respect local autonomy and where and under what conditions it will retain the power to intervene. From a property rights regime perspective, this touches upon the fundamental question of who owns the natural resources.[11] Most fishing nations that implement a rights based fisheries regime have

[10] This has been expressed differently in various jurisdictions — in Iceland, for example, it was couched in terms of violating the constitutional principles of economic freedom and equality before the law.

[11] Iceland, which has one of the worlds most advanced ITQ systems, has chosen to include as Article 1 of their 1990 Act Relating to the Management of Fisheries the following text: “Marine resources that are found in Icelandic waters and are utilized are the common property of the Icelandic nation. (…) The issuing of

retained the power to allocate, and withdraw rights and change the regulations governing their administration. If the rules governing a rights based regime are explicit in the form of legislation, it is less problematic in administering them and deflecting legal challenges.

State law has also an important role to play in providing protection for individuals against the abuse of local power.

Importantly, state law is needed to provide basic guidelines for protection of important wider social interests, such as environmental protection. Where wide rights have been allocated to the local community, this question surfaces strongly. Where the local community is given ownership (and other property rights) of natural resources, where do the state stand with respect to protection of wider interests? On the one hand the answer is simple, as the government always retains a regulatory function by which it can act to protect legitimate interest of outsiders, including future generations. On the other hand there is a problem of defining those interests. A wide definition and continued intervention by the state on this ground would clearly diminish the local authority.

Security

When considering a legal framework for CBNRM, security of the rights allocated to the community are fundamental. Security can be described as the ability of the community to withstand challenges of others to the right. In particular when these rights take the form of property or use rights this aspects gain in importance. Such rights can be challenged by other individuals, by displacement or court verdict. It may be challenged by the state, which can withdraw or terminate the right in accordance with law. Security requires, among other things, that there be clarity as to what the rights are, that the rights cannot be taken away or changed unilaterally and unfairly, and that rights are enforceable against the state (including local government institutions). An aspect of security is certainty both about the boundaries of the resources to which the rights apply and about who is entitled to claim membership in the group. Another important aspect which has been touched upon but not stated outright is the need for the law to recognise the holder of the rights.

Exclusivity

This is the ability to hold and manage the right without outside interference. The right must be exclusive. This requires accessible, affordable and fair avenues for seeking protection of the rights, of solving disputes and for appealing decisions of government officials. The ability to enforce the right is an important aspect of exclusivity. Other fishers may interfere with a local community's ability to harvest the fish in the manner they want. More significantly, the state by regulations, license conditions, gear, area and time restrictions etc. usually interferes to a considerable extent. The lines of authority need to be drawn clearly in order to provide for the exclusive exercise of the rights and powers allocated a local community.

Permanence

This is the time span of the rights allocated a local community. In particular when the local community takes on wide management responsibilities and rights the security of permanence and duration is crucial. The duration of rights should be either in perpetuity or for a period that is clearly spelled out and is long enough for the benefits of participation to be fully realized.

Flexibility

Flexibility is the community based managers need for flexibility or legal space to exercise choice that reflects their unique needs, conditions and aspirations.

a) Legal regimes should allow flexibility in deciding what the objectives of management should be and the rules that will be used to achieve those objectives.
b) Flexibility is required in regard to how state law handles the recognition of local groups

---

fishing permits, in accordance to this legislation, does not constitute any claim to ownership or irrevocable claims by individual parties over fishing rights."

c) Flexibility is needed on the definition of management groups and areas of jurisdiction

Ultimately, flexibility requires that the legislative framework that supports CBFM must have the ability to allow reflection of change in policy, and is preferably a framework law which allows detailed mechanisms to be set out in regulations or ease of amendment

Integrating CBFM into the broader fisheries management legal framework

CBFM will obviously have to exist within the wider legal and fisheries management framework given that the CBFM mechanism is usually introduced to achieve fisheries management goals. This must be properly reflected in legislation and in the policy making process by securing a role for the community managers in the overall picture of state fisheries management. To address this concern a number of matters may be considered for inclusion in legislation, or where they already exist, appropriate linkages will need to be made: (i) the policy-making framework and process must consider the place of the community managers in relation to overarching policy makers. Where the process of making and notifying a management plan is spelt out in legislation, securing the community managers a place in the planning process is paramount. Management planning should not be limited, but should enable any appropriate management unit divisions (Stewart 2002), (ii) the decision rules required for determining total fishing effort, e.g. total national quotas, need to address the role of the community managers in taking such decisions. In the same context, the relationship between the overall fishing effort and fishing effort within the community management area should be tackled; (iii) the delegation of responsibility, including regulatory powers to community managers and the structure of the management authority, (iv) enforcement powers of the community managers and its place in overall fisheries surveillance and enforcement, (v) the exercise of judicial powers of community managers, should be explicitly stated. It is also paramount to ensure that CBFM legal framework is compatible with the relevant international legal framework.

Conclusion

The fundamental question that needs to be asked and one which, unfortunately, has been raised rarely is: Is CBNRM legally sustainable? (Lindsay 1998). A related question would be: Do the circumstances require that a legal framework be established to support CBFM?

Community-based management or other forms of rights based management of natural resources as well as other approaches to management attempt to address problems in fisheries management. It has been put that institutional and legal issues are the cause of most fisheries management problems (Garcia and Grainger 1997). This should be caution enough to suggest that the legal aspects of fisheries management approaches be thoroughly trashed out. This requires, among others, scientists and lawyers to collaborate by providing their input and expertise not only when problems arise, but in anticipation of problems. In practice, this means that a multidisciplinary approach should be adopted for fishery resource management from initial investigation through assessment and evaluation to policy formulation and implementation leading to operational involvement until termination of the project.

Ultimately, it would have to be asked what the necessary elements for an appropriate legal framework that supports the effective implementation of CRBM would be. In addition, any law that is established for utilization of rights based fisheries must be practical and flexible in effect to respond to the needs for effective implementation of such management approach. In the final analysis and as Lindsay (1998) aptly puts it, it is a question of balance in establishing the legal framework for community based management. Attaining that required balance however is not easy and depends largely on local circumstances.

References

Alkala A.C. and Vande Vusse F.J.1994, In R. S. Pomeroy. (Ed.). Proceedings of the Workshop on Community Management and Common Property of Coastal Fisheries and Upland Resources in Asia and the Pacific: Concepts, Methods and Experiences. Manila: ICLARM, 12-19.

Berkes, F. 1994. 'Property rights and coastal fisheries'. In R. S. Pomeroy. (Ed.). Proceedings of the Workshop on Community Management and Common Property of Coastal Fisheries and Upland Resources in Asia and the Pacific: Concepts, Methods and Experiences. Manila: ICLARM, 51-62.

FAO 2002, Law and sustainable development since Rio – Legal issues and trends in agriculture and natural resources management, FAO Legislative Study 73, Rome

Garcia S and Grainger R. 1997, Fisheries management and sustainability: A new perspective of an old problem? *In* Developing and sustaining world fisheries resources. The state of science and management. 2nd World Fisheries Congress. Hancock, D.A., D.C. Smith, A. Grant and J.P Beumer (Eds): 631-654

Govan, H. 2003, Notes on village-based marine resource management in Efate, Vanuatu (unpublished draft report).

Karlsen G R 2001, Can formalisation help? The introduction of fisheries co-management in the inshore fisheries of Dingle, Co. Kerry, Ireland *In* Marine Policy 25 (2001) 83-89.

Kuemlangan B. Zambia Draft Fisheries Legislaiton – Prelimenary Report, August 1997, done under FAO Technical Cooperation Programme Project TCP/ZAM/6613. (Unpublished).

Kuemlangan B and Teigene H. 2003. An overview of legal issues and broad legislative considerations for community based fisheries management, (unpublished paper submitted and presented at the Second Large River Symposium (LARS2), 11-14 February 2003, Phnom Penh, Cambodia)

Kurien J. 1999, Community Property Rights: Re-establishing them or a secure future for small-scale fisheries. In FAO Fisheries Technical Paper 404/1 - Use of Property Rights in Fisheries Management

Leria C. and Van Houtte A. 2000, Rights-based fisheries: A legal overview, p 263-300 in Current fisheries issues and the Food and Agriculture Organization of the Unites Nations, a publication in association with the Center for Oceans Law and Policy, University of Virginia School of Law.

Lindsay J. 1998, Designing Legal Space: Law as an enabling tool in community-based management, International Workshop on Community-Based Natural Resource Management, Washington D.C., May 10-14, 1998.

Pomeroy R S, Katon B M and Harkes I 2001 Conditions affecting the success of fisheries co-,management: lessons from Asia *In* Marine Policy 25 (2001) 197-208.

Ruddle K. 1994, Changing the focus of coastal fisheries management, In R. S. Pomeroy. (Ed.). Proceedings of the Workshop on Community Management and Common Property of Coastal Fisheries and Upland Resources in Asia and the Pacific: Concepts, Methods and Experiences. Manila: ICLARM, 63-86.

Ruddle K. 1998, The context of policy design for existing community-based fisheries management systems in the Pacific Islands, p. 105 – 126 *In* Ocean & Coastal Management Special Issues 40 Numbers 2-3 1998, A modern role for traditional coastal marine resources management systems in the Pacific Islands.

Stewart C. 2002, Legislating for property rights in fisheries. To be published as a FAO Legislative Study.

Taua A. 1999, Community-based Fisheries management in Samoa, FishRights99 Conference, Fremantle, Australia, 1999

Welcomme R. L. 2001, Inland Fisheries – Ecology and Management, FAO, London 2001.

The World Bank 1999, Report from the International CBNRM Workshop, Washington D.C., 10-14 May 1998. URL: http://www.worldbank.org/wbi/conatrem/

ANNEX 22

The ProcFish and DemEcoFish Research Project – Objectives of the Socio- Economic Component

Mecki Kronen
Community Fisheries Scientist, Reef Fisheries Observatory, SPC, Noumea, New Caledonia

Based on the framework laid down by Pierre Labrosse's presentation, this paper aims at providing insight into the socio-economic component of ProcFish - and to a certain extent DemEcoFish- only. Case studies are selected to illuminate some of the focus areas of analysing the user side of marine resource status and that have been raised as important to community management within the last two days of presentation.

In a nutshell, the socio-economic component aims at finding indicators (or proxies) to rapidly, and easily assess fishing pressure. Fishing pressure is used as a proxy of status of marine resource.

Secondly, it also aims at developing an appropriate methodology, including:
- approach
- data collection
- data analysis, and
- dissemination of results.

In the following, four case studies will be presented to highlight some of these areas, namely:

1. *The methodological approach – a comparison between questionnaire and a participatory tool based surveys*
2. *Data collection, which target groups – what outcomes?*
3. *Fishing for fortunes? An economic-socio-anthropologic example*

4. *Fishing pressure - an assessment*

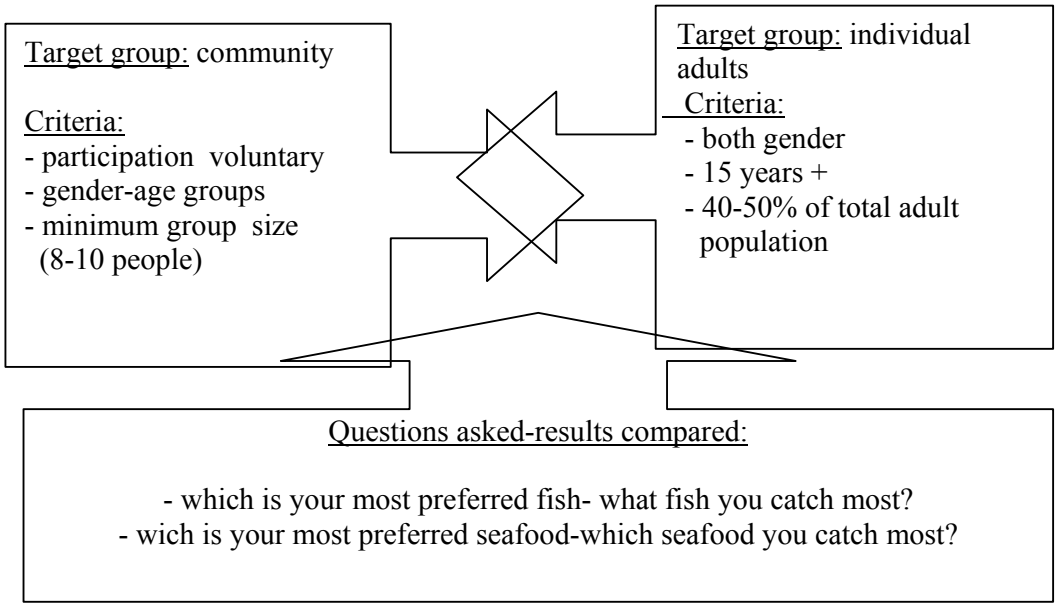
Case Study 1: The methodological approach – a comparison between questionnaire and a participatory tool based surveys

One of the objectives was to find the best survey method to render quantitative (and qualitative) data for comparative regional assessment of the fishery status, given

a) a snapshot approach, i.e. no repetitions, and
b) time and human resource limitations.

From a set of possible approaches and methods, participatory tools and methods, choosing ranking and scoring, were compared with closed and fully structured questionnaire surveys.

Participatory scoring & ranking Closed fully structured questionnaires

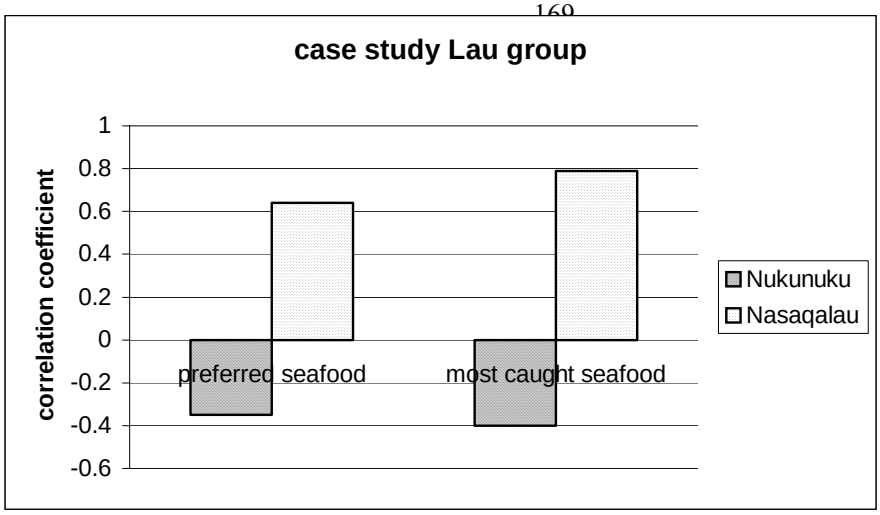


Results of both surveys were compared using Spearman's rank coefficient (Kendall's concordance). Overall, concordance (agreement) of results is low. This is mainly due to the fact that species are only ranked highest in one of both surveys, and rank very low in the other.

However, there are also two patterns emerging, one each for the dataset of Fiji and Tonga. In Fiji, correlation is low as far as results referring to "preferences" are concerned, but fairly high if referring to species "caught". This pattern suggests that while preferences are subject to personal perceptions and hence may vary depending on the situation, catches are a matter of fact and thus not arguable.

In the case of Tonga, high correlations emerge with questions referring to invertebrates, but the opposite is true for finfish inquiries.

Comparison also inidiacted the risk of manipulation associated with scoring and ranking. In the case of two neighbouring villages in the Lau group, Fiji, correlation of datasets referring to invertebrates is significantly low in the case of Nukunuku, and significantly high in the case of Nasaqalau. The resaon being that > 80% of Nukunuku'a population belongs to the 7 Days Adeventist Church that imposes seafood taboos. Under group pressure, people did not commit to prefer or catch seafood, but did so when individually questionned. Nasaqalau's people are not exposed to religious seafood taboos.



Based on these results it was concluded that participatory scoring and ranking methods are unlikely to produce always reliable data. As compared, closed and structured questionnaires are more likely to deliver reliable data as they are much less manipulative, need no training of the target group, allow the selection of participants and to determine sample size even if a "quick & dirty" approach is taken.

Case Study II: Data collection- which target groups – what outcomes?

Each community population was stratified according to functions relevant to its fishery activity rather than focusing on gender or age-related groups. Accordingly, the following groups were targeted:

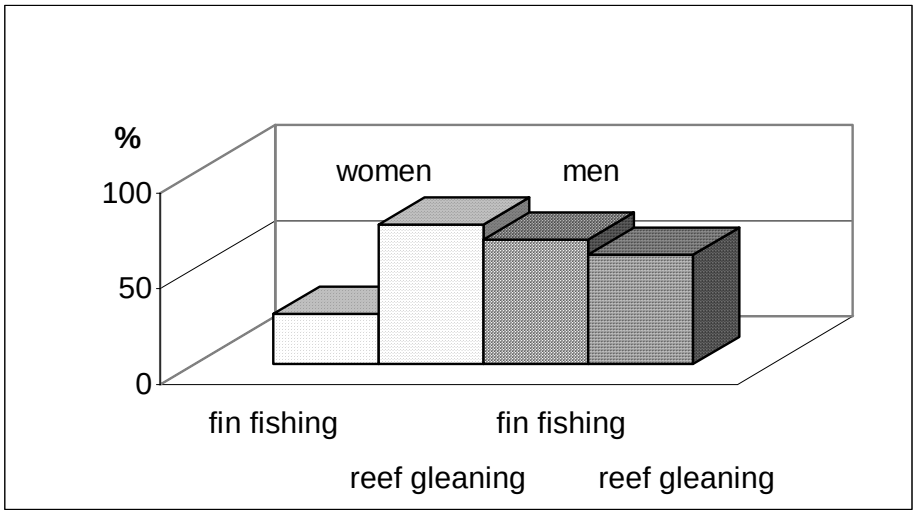
- household (census, demography, basic socio-economic parameters)
- individual adults, ie. All people ≥ 15 years of age (individual consumption and fishing activities)
- "serious" fishers (all that were nominated by the community)
- boat owners (all)
- marketing agents, middleman, shop owners who merchandise fish caught by any of the community members
- school children, ie. eldest primary school students (overview of childrens' participation in fishing)
- key informants (any person in or associated with the village who could provide information relevant to understand fishing activities in the community concerned).

However, data collected can be analysed according to particular gender or age group related questions. Here, an example is given to illuminate women's role in Tonga's and Fiji's fisheries which is believed to be of assistance to community management planning and implementation.

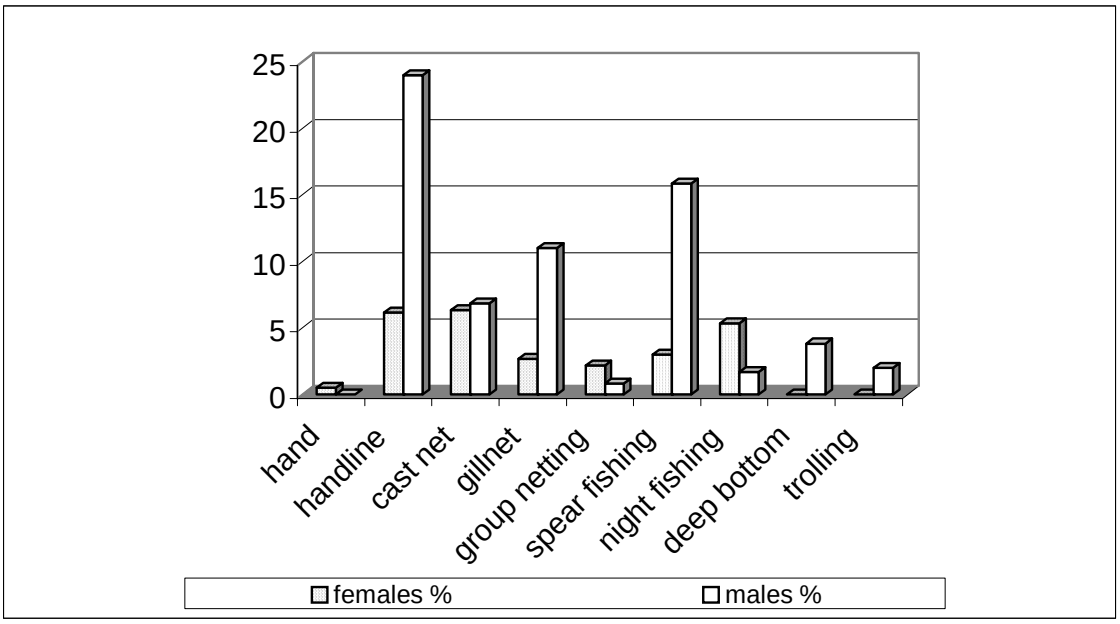
Results are demonstrated in the following figures, and showing in summary, that:

- 25% of Tongan women surveyed finfish against all traditional believes, and Tongan men are also substantially involved in reef gleaning activities;
- women prefer castnetting, groupnetting, fishing at night and with hands only, handline and to a lesser extent spearfishing. Men's domain is that of trolling and deep bottom fishing.

Percentage of Tongan women and men performing finfishing or reef gleaning

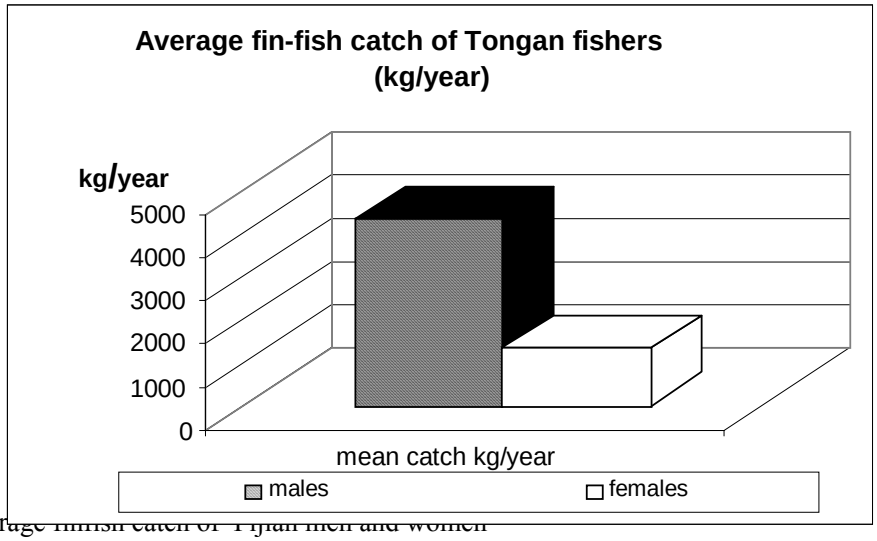


Fishing techniques used in percentage of Tongan women and men asked

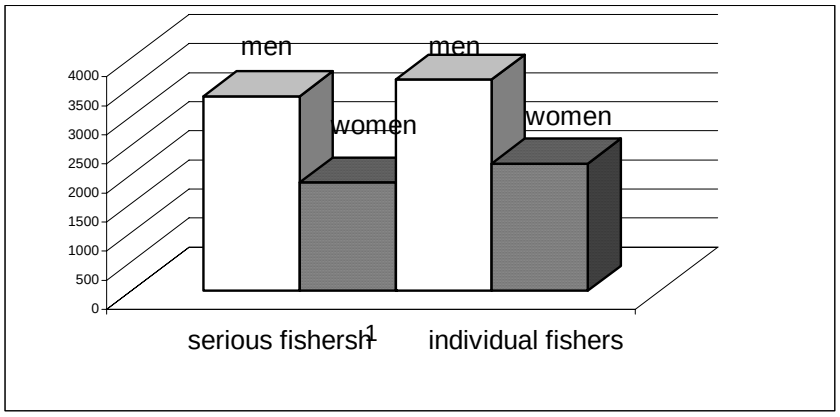


The survey further showed that Tongan women's contribution to the household's supply with fish and other marine resources is as reliable as that of men. The major differences between men's and women's fishing activities are:

- Major changes between women and men fishers are not the frequency of fin fishing trips but the average duration of each trip (men = 6.1 hrs/women = 3 hrs)
- Also women perform fin-fishing mostly during day-time while about 50% of men do so during night or night/day-time
- Collection or reef gleaning activities are slightly more frequently performed by women then men
- But about 80% of all fishers (women & men) reef glean at day only
- Women fisher reach about 30% of the average catch of men fisher, which is mainly explained by 3 factors:
- women do not fish at night
- women do not use more efficient techniques such as gillnets
- women do not use motorised boats and thus have not much choice of better fishing grounds



Average finfish catch of Fijian men and women



Once women have reached social status that is supportive to their fin-fishing activities as shown in the case of Fiji, average catches reach 57-60% of that of men fishers. Also, the percentage of serious fishers as compared to average fishers amongst Fijian women was found comparable to that of men.

However, some major differences continue to remain:

- women fish mainly for auto-consumption, and the additional cash revenue while men are more commercially oriented;
- women cannot be full-time fishers only because they still remain responsible for household and family chores;

- women's catches are under-represented because catches from joint fishing trips of couples are mainly accounted for under the man's achievements.

In conclusion, these selected issues highlight that:

- Women's role in subsistence and small-scale artisanal fishing is underestimated;
- Traditional gender roles do change due to social or marketing factors,
- Changes are necessary elements to be taking into consideration for policy formulation, strategic planning and managament.

Case Study III: Fishing for fortunes – a socio-economic-anthropological example

Profits resulting from a variety of subsistence and small-scale artisanal fishing systems in Tonga are compared to alternative income sources using net present value calculations. Net present value (NPV) is an economic tool that allows to compare today's value of different systems by taking into account all costs, all benefits and an interest rate over a certain time period.

Fishing systems compared include simple and low input systems based on walking and single or dual fishing methods, to canoe users and single or multi-geared fishers using motorised boats with or without paying for transport, and owners of motorised boats that are/or not being paid for transport services rendered. Compariuson also includes access to local rural and urban market at Nuku'alofa. In addition, profits made by marketing agents and shop owners were also compared.

Risk-free salary based (TOP 6/hour) income and profits made from traditional intercropping with processed kava as main cash product were selected as alternative income sources.

NPV results show that generally:
- most fishing systems are economically not viable, or at least not competitive to any of the alternative income sources selected;
- to be competitive to salary based income, fishing systems must be highly productive and include payment for transport services, or use of motorised transport at no cost;
- there are only 2 fishing systems that are superior to agricultural production: highly productive fishing systems that include considerable revenues for boat transport services rendered, and those fishers that have in addition access to high market prices at Nuku'alofa.
- In general, agents dealing with fish merchandise at low risk and low production cost are competitive to salary based and agricultural income.

It can therefore be concluded that in order to achieve an economic attractive and competitive fishery, the following parameters have to be met:

A weekly catch of over 80-100 kg
\+ CPUE ≥5.8 kg/hour
\+ lowest possible operational cost
\+ market price ≥ 5 TOP/kg

A fish merchand in Tonga is successful if having:

A minimum turnover of 150 kg/week
\+ lowest possible operational cost (in addition to normal shop operations)
\+ a profit margin of 0.50 TOP/kg.

So, the question must be posed: why do Tongan fishers continue to fish? The answer(s) lay not in western economic rationale but in a combination of:

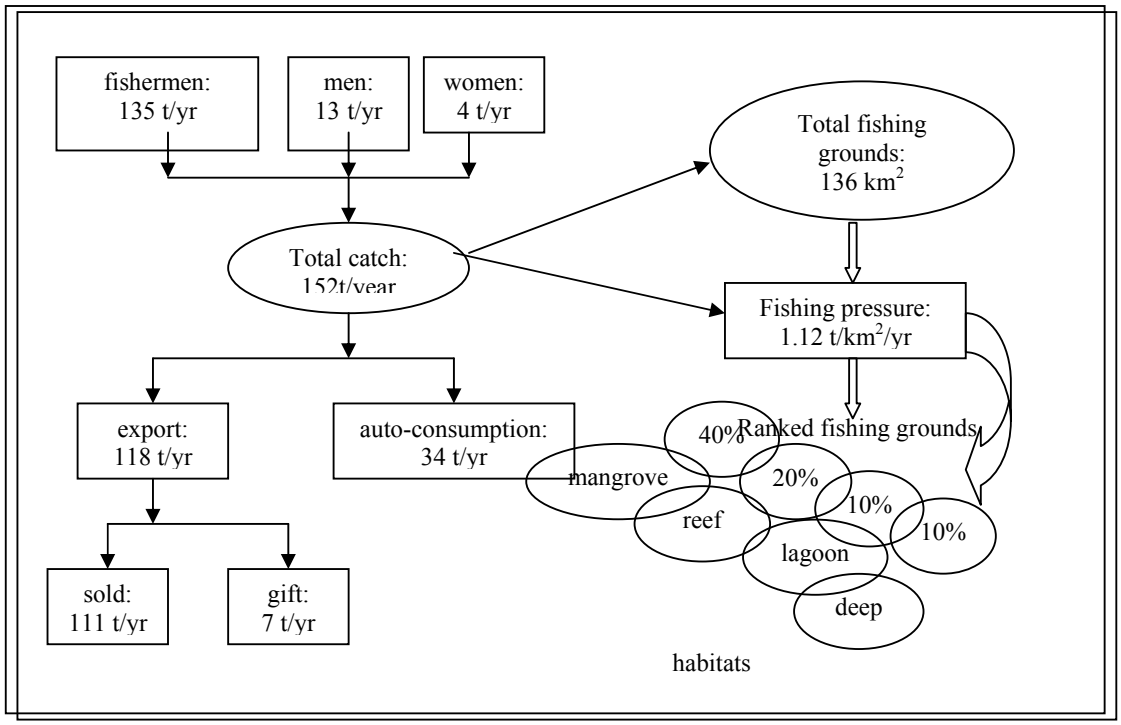
- cash is not associated with profit but with the need to satisfy siubsistence, social obligations and occasional wants;
- traditional rules are barriers to profit maximisation and innovation as any such activity is socially classified as "greedy" ("fetokoni'aki", "manumanu"), and acquisition of goods above subsistence are subject to redistribution;
- price of reef and lagoon fish does not reflect production cost but a combination of import prices and socially acceptable rates.

Accordingly Tongan fisher fish for food, social support, subsistence requirements and traditional values.

Case Study IV: Fishing pressure a case study from Lofanga, Ha'apai Group, Tonga

Socio-economic survey yielded quantitative data of total catch that could be associated with producer groups, export and auto-consumption, and fishing grounds. This approach is considered appropriate to assess fishing pressure on fishing grounds induced used by the community surveyed.

The balancing of catch, its use and fishing pressure is demonstrated in the following graph.



In conclusion, socio-economic research can provide for community management:

1. The necessary basis to make decisions;
2. Identification of focus areas;
3. Identification of target groups;
4. Clarifications of "general believes" and "common statements"
5. Economic value of the resource and its use
6. Database for future monitoring and evaluation.

ANNEX 23

SPC's Fisheries Development Section: some thoughts on our role—past, present, and future—in coastal fisheries management in the region

EVOLUTION OF FISHERIES DEVELOPMENT

The various names that have been given to the Fisheries Development Section at SPC during the last thirty years mirror the evolution of fisheries development in the Pacific. In the early seventies the section was called the **Outer Reef Artisanal Fisheries Project** and most development centred on small-scale artisanal fishing projects conducted by masterfishermen from canoes and small skiffs (trolling and handline fishing). Reef species were soon being exploited to their limits and a need was seen to move fisheries offshore onto the reef slopes and into pelagic waters to divert fishing pressure away from lagoon and reef species.

As a result, the section got re-named the **Deep Sea Fisheries Development Project** in 1978 and development emphasis in terms of requests and projects shifted to deep-sea fishing for snappers (deep-bottom snapper fishing with reels or with bottom longlines) and to small-scale tuna fishing around FADs (vertical longline, palu ahi, drop stone, and ika-shibi fishing). The section remained the DSFDP until 1993.

During this fifteen year period there was another integrated project that reflected another offshore move. Deep-water snappers were soon being exploited to their limits as well, and a need was seen to divert pressure away from this fishery by promoting small- and medium-scale tuna longline fishing (fishing for tunas in pelagic waters using hydraulic monofilament longline gear). The first SPC medium-scale longline fishing project came under the heading of the **Offshore Fisheries Development Project**.

From 1993 to 2000 the section was called the **Capture Section**. Most of the work programme during this time was centred on FAD riggings and deployments, FAD fishing techniques, and commercial medium-scale tuna longline fishing to the limits of the region's EEZs, Reef and lagoon fishing and deep-water snapper fishing were not forgotten, but there were few requests or development projects relating to these fisheries in the 1990s.

In 2000 the section was re-named the **Fisheries Development Section** and the Masterfishermen were re-named Fisheries Development Officers. The role of the section has expanded to include not only fisheries development but also safety at sea, choosing suitable fishing vessels, advice on processing and marketing, and providing informational materials on environmental issues related to fisheries development. The emphasis, however, has remained with commercial medium-scale tuna longline fishing, and to a lesser extent, FADs and FAD fishing.

WHERE DO WE GO FROM HERE?

With few exceptions, there are no more fisheries to exploit. There are no Patagonian toothfish in SPC's jurisdiction, Pacific Islands lobsters (except in Hawaii) won't go into traps, and whaling is likely to remain a banned activity. Some exceptions come to mind, however: the broadbill swordfish fishery in New Caledonia undoubtedly will go into full bloom when an air link is established between New Caledonia and the US market, there is potential for developing baitfishing in the region including fishing for pelagic squid, and there is potential for the development of recreational and sportfishing in many Pacific Island countries.

In the meantime, most other fisheries in the region are in a state of contraction. Many reef and lagoon areas are being classed as Marine Protected Areas (MPAs) where commercial fishing is not allowed, deep-bottom snapper fishing experienced a boom-bust development in many countries in the region and is very slow to recover, and longline fishing for tuna is also going through the same boom-bust cycle in many countries, although for different reasons.

There are exceptions to this, however. For example, the longline fishery in the Cook Islands, after a couple of false starts, is finally taking off. It is in the boom phase right now. In other countries, however, the trend is

the opposite. Samoa, Fiji, and New Caledonia are all experiencing contractions in the fishery and in the markets.

Solander Fisheries Fiji, for example, recently indicated that the tuna longline fishery in Fiji was only marginally economic due to the following reasons:

- Increasing operating costs, in particular increasing airfreight costs,
- Less airfreight capacity,
- Lower prices especially for chilled yellowfin on the US market,
- Illegal fishing in the Fiji EEZ (unlicensed vessels),
- Lack of facilities for the number of longline vessels now operating,
- Current low catch rates for albacore and variable catch rates for yellowfin,
- The need to fish further offshore, outside the EEZ, and in the Vanuatu EEZ to maintain economic catch rates. This has resulted in longer trips and increased steaming distance to the fishing grounds, and
- A high level of gear interaction in the main fishing areas. There have been mainlines cut, floats cut off, etc.

Some thoughts on FADs and FAD programmes

One thing that stands out in this brief overview is that nobody has ever suggested developing a fishery to take the pressure off of FADs and FAD fishing (anchored FADs, not the drifting FADs used in the purse-seine fishery). The region's FAD programmes have experienced a waxing and waning popularity, but this has not been attributable to fish stock declines or over-fishing or catch rate fluctuations. Largely the problems have been associated with costs and longevity, both of the FADs themselves and of the people and programmes. FAD fishing is probably the only fishery that has not experienced a boom-bust cycle. In spite of this, most countries in the region do not have a well-developed sustainable FAD program.

Bob Gillett (Gillett-Preston Associates) recently wrote the following regarding the region's FAD programmes (from Gillett, R. 2002. *Domestic Tuna Industry Development in the Pacific Islands: the Current Situation and Considerations for Future Development Assistance*. FFA. Cited with permission):

"Over the last three decades a very large number of initiatives have been undertaken by Pacific Island countries to develop small-scale tuna fisheries. These have included deploying fish aggregating devices (FADs), governments constructing appropriate small tuna fishing vessels, providing subsidies and grants for vessel and gear, providing hire vessels for offshore fishing, encouraging production of tuna jerky and salted tuna, experimenting with novel tuna products, installing freezers on outer islands for holding tuna, collecting tuna caught by outer islands fishers, establishing schemes for purchasing tuna from artisanal fishers at subsidized prices, longlining from small-boats, promoting ika-shibi fishing, copying Maldivian tuna fishing, promoting small-scale pole/line fishing with live bait, sponsoring overseas study tours, upgrading fishers to medium-scale longlining, and many other schemes. It should also be pointed out that the government fishery agencies of the region are planning to implement additional types of small-scale tuna fishery development projects.

In reviewing the history of development of small-scale tuna fisheries, one of the few initiatives that has been successful and continues to contribute to the success of small-scale fisheries is the FAD. Despite decades of small-scale tuna development efforts throughout the Pacific Islands, FADs remain one of the few innovations that allow small-scale fishers to economically take advantage of the region's large tuna resources. Other attempts may have had sporadic success or special applicability in one country, but overall, nothing comes close to producing on-going benefits to small-scale tuna fishers as the FAD.

Noting the relative success of the FAD, it is ironic that very few countries in the region have an effective on-going FAD programme. By this, it is meant a FAD programme that is financed by national sources (rather than dependent volatile donor funding) and in which, as one individual stated, 'a lost FAD gets replaced in 5 days, not 5 months or 5 years'.*"*

A fish aggregating device (FAD) is a deep-water mooring and buoy system, anchored off the coast in a known area that attracts tuna and associated species. FADs might be more appropriately called "*Fisher*

Aggregating Devices" since the main ways in which they are used in the Pacific Islands are as a resource management tool to attract small-scale fishermen away from overstressed reef fisheries or MPAs towards more environmentally resilient offshore fisheries, and to reduce fuel usage—and increase safety—by reducing searching time for productive offshore fishing areas.

The main problems with FADs have been their variable lifespan due to premature loss, and the high initial capital cost of each unit (up to US$5,000 per FAD). Pacific Island fisheries departments recognize the value of FADs as economically positive tools for managing fishing effort and have obtained project funding for limited programmes of FAD deployment over the past 10–15 years. However, the use of FADs in the Pacific Islands has never quite become sustainable. In most cases fisheries departments are required to justify the costs of FADs, yet the main economic benefits are indirect or unquantified, resulting from reduced pressure on reef fisheries and from lower costs to artisanal fishers. In some cases, sportfishing clubs and local tuna exporters have been persuaded to assist with the costs of FAD deployments—but most potential donors are worried about the unreliability of past FAD designs—several schemes have fallen through after premature FAD loss.

It should be noted that FAD fishing encourages the use of surface trolling and mid-water tuna fishing techniques, and provides an economically viable alternative to horizontal longlining—a technique which is raising bycatch concerns in other parts of the world. There is usually no bycatch problem associated with FAD fishing. FAD fishing is also more viable with smaller boats than horizontal longlining, and is thus much more accessible to small-scale and village fishermen with limited access to capital. FADs also provide more reliable catches for sportfishing boats and improve the prospects for developing locally owned sportfishing enterprizes.

The FAD as a management and conservation tool

Although the other fisheries programmes within the Fisheries Development Section should not be forgotten—medium-scale commercial tuna longline fishing is still considered one of the best options for Pacific Island participation in harvesting the vast tuna resource—it is time to look at FAD programmes again, not only as basic fisheries development tools, but as fisheries management tools as well. In fact, the Fisheries Development Section has recently implemented just such a programme under the auspice of the New Zealand Pacific Initiative for the Environment (PIE) Fund.

The Fisheries Development Section remains convinced that sound FAD programmes can offer realistic and positive fisheries management and conservation options for small-scale Pacific Island fisheries. To that end the Fisheries Development Section is currently implementing a multi-year project to systematically experiment with different FAD designs to improve longevity, and to collect rigorous information to help justify future investment by Pacific Island governments and the private sector. The project is titled *Research into more cost effective mooring systems for fish aggregating devices (FADs) in the Pacific region as a means to limit fishing pressure on the inshore marine resources*. The real scope of the project goes well beyond what is indicated by the project title, however. The project, which is being implemented in Niue and the Cook Islands, began in 2001 and will carry on for three years. Besides research on more cost effective FADs, the project aims to use FADs as management and conservation tools.

Although a great deal of money has been invested in Pacific Island FAD programmes in the past, FADs are generally too expensive for fisheries departments to experiment with, using different designs and materials, and no FAD placements have been monitored rigorously enough to enable much to be learned from mistakes in the region as a whole. This project will rectify that situation. If results prove as positive as expected, they will be followed up and extended to other small island countries through the Fisheries Development Section in the form of advisory and technical assistance. The information will also be available to local communities, the private sector, and national fisheries departments to justify and sustain investment in future FAD programmes.

Besides FAD designs, FAD rigging, and FAD mooring, the project includes three annual household surveys that involve the collection and analysis of data related to local communities to try to quantify and document any changes or influences that result from the deployment of FADs in different locations, especially where

MPAs are declared. In addition, a FAD fishing logbook has been developed that is being used to collect data on FAD fishing catch and effort over the span of the project.

The project, in short, is aiming to improve living marine resource management capacity by refining and justifying the economic sustainability of a specific, positive, tool for manipulating artisanal fishing effort in environmentally friendly directions—the FAD. While the experiments, and most of the initial benefit, are taking place in Niue and the Cook Islands, the eventual benefits will be methodological and widely applicable not only amongst island fishing communities elsewhere in the Pacific, but in other regions as well.

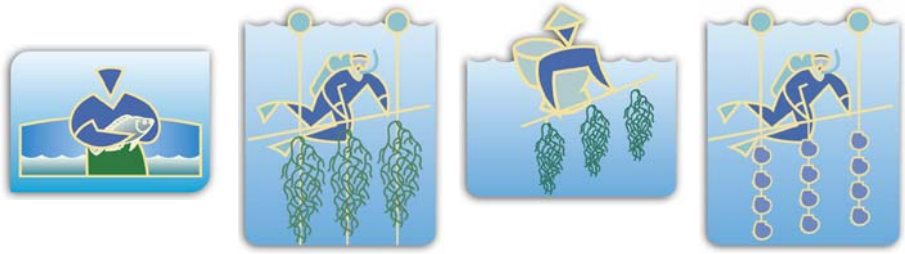
To date, a total of eight FADs have been deployed in Niue and seven in the Cook Islands. Community surveys have been carried out in both locations and the fisheries departments in Niue and the Cook Islands are continually collecting FAD fishing log data from FAD fishermen. The project began in 2001 when Fisheries Development Officer, William Sokimi, conducted FAD site surveys, and continued on into 2002 with Fisheries Development Advisor, Lindsay Chapman, conducting the house-to-house community surveys and Fisheries Development Officer, Steve Beverly, supervising the rigging and deployment of the first fifteen FADs. Lindsay Chapman is the overall project coordinator, Ian Bertram is the Cook Islands project coordinator, and Brendon Pasisi is the Niue project coordinator.

This report was written by the Fisheries Development Section of SPC for the WPRFMC Coastal Fisheries Management Meeting, Nadi, Fiji. 17 March to 22 March 2003.

Aquaculture

Our goal

"A regional support framework for economically, socially and environmentally sustainable aquaculture planning, research and development by Pacific Island governments and private



Ben Ponia
Aquaculture Adviser

Presentation Outline

Brief Overview for the Pacific Region

- Economic
- Social
- Environment

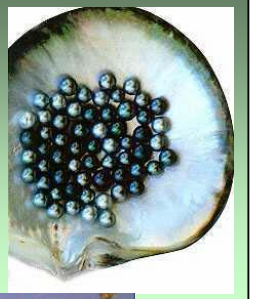
SPC's Aquaculture Work Program

- SPC Role
- Technical Assistance
- SPC Aquaculture Action Plan
- Commodity focus

Economic Value

- **US$130-180 mill per annum**
- **90% from pearls (French Polynesia, Cook Islands) and marine prawns (New Caledonia)**

Black



Prawn

Social and Rural development

- **Seaweed as a substitute for copra (Kiribati, Fiji)**
- **Subsistence fish farmers (Papua New Guinea)**

Seaweed

Fish Farming

Environment

- Giant clam in community MPA (Samoa)
- Restocking over-fished resources (New Caledonia)

Giant

Sea

SPC Aquaculture Work Program

SPC's Primary Role: A Regional Focal Point

- Networking across the region
  - Aquaculture Web Portal www.spc.int/aquaculture
- Identify regional priorities

Main Forms of Technical Assistance

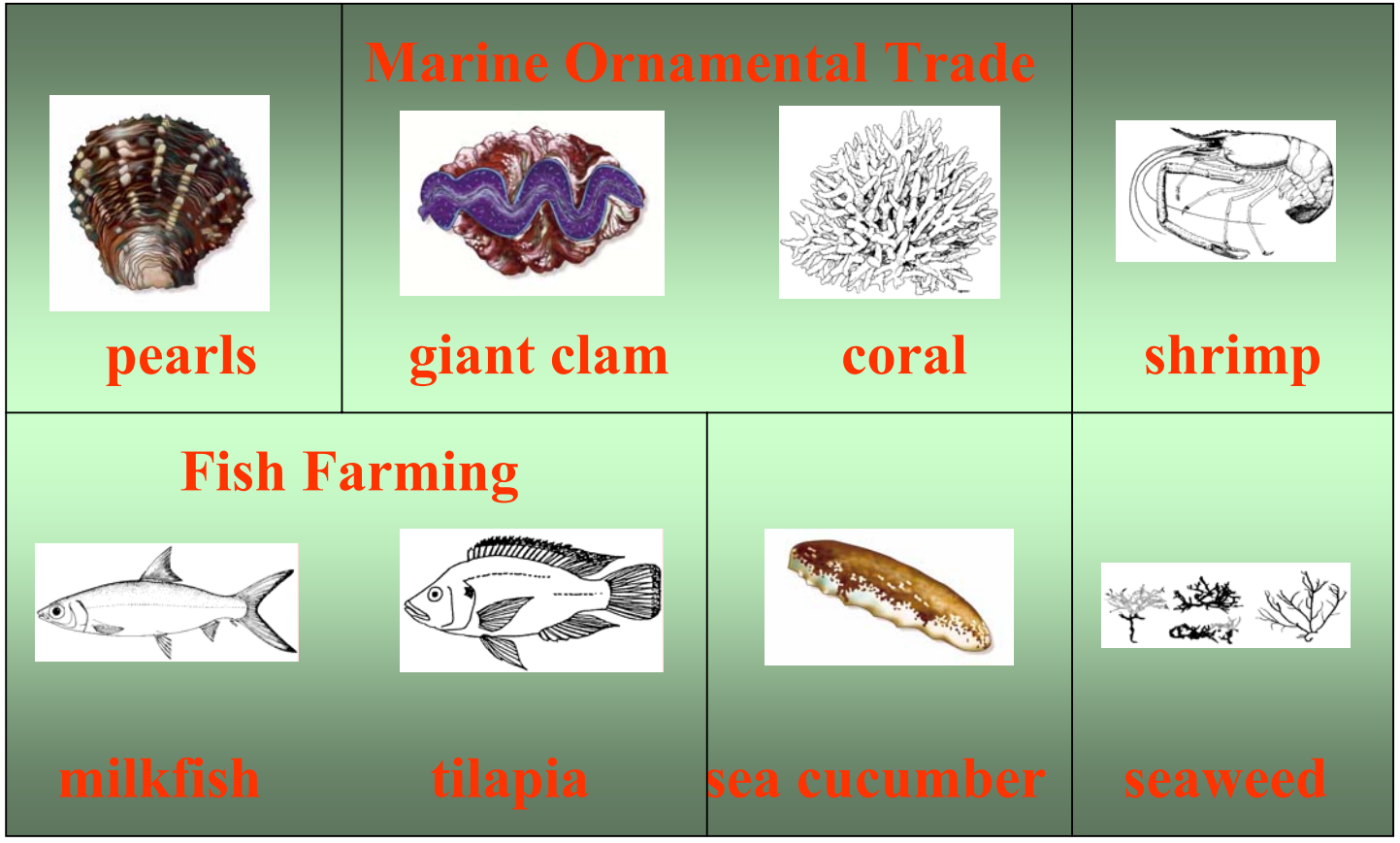
- Training and professional development
- Information
- Short-consultancies
- Small grants
- Extension

SPC Aquaculture Work Program

SPC Aquaculture Action Plan

- **Derived from 1st SPC Aquaculture Meeting, Suva 2003**
- **Identifies regional priorities and a course of action**

SPC Aquaculture Work Program



ANNEX 25

Masanami Izumi
Fishery Officer
FAO Sub-Regional Office for the Pacific Islands
Apia, Samoa

FOOD AND AGRICULTURE ORGANIZATION (FAO) OF THE UNITED NATIONS SUB-REGIONAL OFFICE FOR THE PACIFIC ISLANDS (SAPA)

FISHERIES PROGRAMME

The FAO Office in Apia was upgraded to a sub-regional office in 1996, and has since expanded its activities in the area of natural resource management in the Pacific. The establishment of FAO/SAPA is a reflection of FAO's desire to decentralize and to bring its operations closer to its member countries of the Pacific.

1. **FAO/SAPA staff:**
   SAPA consists of 22 staff; including 6 Technical Officers (fisheries, integrated resource management, farming systems development & marketing, plant protection, forestry resource management, and food & nutrition), Policy Officer, Assistant Sub-Regional Representative (formerly called National Professional Officer) and Programme Assistant under overall managerial and administrative leadership of the Sub-Regional Representative.

2. **Member Countries in the Region:**
   FAO member countries are 12 in the region (Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga and Vanuatu).

   Kiribati, Marshall Islands, Niue and Palau joined in November 1999, and Nauru in November 2001. The Federated States of Micronesia and Tuvalu lodged their membership application in January 2002 and November 2002 respectively.

3. **Programme:**
   FAO provides technical assistance to Small Island Developing States (SIDS) in the Pacific. The overall objectives of the technical assistance programme are to enable the Pacific Island countries (PICs) to adopt and implement policies and measures to ensure that;

   - the capacity of fisheries administrations in the PICs is strengthened,
   - fisheries resources are conserved, managed, developed and utilized in a rational manner,
   - national food security is enhanced, and
   - the utilization of fisheries resources continue to contribute to national economic and social development on a sustainable basis.

   The programme will be used as a vehicle to assist the PICs under the implementation of the Code of Conduct for Responsible Fisheries which comprehensively covers the conservation, management and development of all fisheries, laying out principles and standards for estabishing responsible fisheries sectors.

4. **Code of Conduct for Responsible Fisheries and IPOAs:**
   To strengthen sustainable management of fisheries resources in the region, an early implementation of the Code of Conduct for Responsible Fisheries is highly desirable throughout cooperation of regional organizations. FAO is fully committed to assisting the PICs in the efficient inplementation of the Code of Conduct. Within the framework of the Code of Conduct, four International Plans of Action (IPOAs) have been adopted at FAO's Committee on Fisheries.

   - IPOA for Reducing Incidental Catch of Seabirds in Long-line Fisheries
   - IPOA for the Conservation and Management of Sharks
   - IPOA for the Management of Fishing Capacity
   - IPOA to Prevent, Deter and Eliminate Illegal, Unregulated and Unreported (IUU) Fishing

5. **Meeting/Workshop Schedule 2003:**

17-21 March:	Regional Policy Meeting of Coastal Fisheries Management (SPC), Nadi, Fiji
31 March - 1 April:	5th Meeting of FAO South West Pacific Ministers of Agriculture, Suva, Fiji
22 April - 9 May:	Sub-Regional Seafood Inspection Course (TCP/RAS/2802), Suva, Fiji

--- June:	Right-based Fisheries Management Workshop (FFA), Rarotonga, Cook Islands
20-24 October:	Pacific Regional Workshop on the Implementation of the Code of Conduct for Responsible Fisheries, Nadi, Fiji
1-4 December:	Deep Sea Conference 2003, Queenstown, NZ
---	Artisanal Bottom Fisheries Management Workshop, Queenstown, NZ

6. Technical Assistance:

Technical assistance to the members is provided through FAO's Technical Cooperation Programme (TCP), Special Programme for Food Security (SPFS), TeleFood Special Fund (TSF), Partnership Programme, Small-scale Facility for FAORs, Regular Programme etc. Past and current projects are listed below.

TCPs:

Fiji - (1996) Strengthening management capability in the Fisheries Division (Phase II) (US$50,000)
- (2001-2002) Enhancement of customary marine fishery tenure ($60,000)

Marshall - (2002) Seaweed cultivation ($156,000)

PNG - (1996-1997) Strengthening national capacity for fisheries conservation and management ($94,000)
- (1997) Sustainable development of national fisheries and support of food security ($283,000)

Solomon - (1995-1996) Strengthening national fisheries capacity ($81,000)

Tonga - (1997-1998) Fisheries sector study ($248,000)
- (1999-2001) Assistance in fisheries legislation ($135,000)
- (2002) Development of seaweed (*Cladosiphon* sp.) farming ($143,000)

Vanuatu - (1996-1997) Strengthening of national fishery policy ($145,000)

Region - (1997) Assistance to South Pacific to meet new fish regulations ($165,000)
- (2001) Uruguay Round Agreement on agriculture: present and future implications for agriculture and fisheries in the region
- (2002-2003) National HACCP-based fish inspection systems in the South Pacific ($323,000)
- (2003) Regional Programme for Food Security

TSFs:

Cook - (1999) Fish Aggregate Device assistance ($1,666)

Niue - (2001) Icing of Fish Products ($9,750)
- (2002) Re-establishment of Hakupu Marine Conservation Area ($6,965)

Samoa - (1998) Lagoon giant clam nursery development in Fusi Safata Village on Upolu Island ($9,105)
- (1998) Lagoon giant clam nursery development in Satoalepai Village on Savaii Island ($5,925)

Solomon - (1998) Kia Village Fishing Project, Santa Isabel ($5,300)

Tonga - (1998) Improved drying of fish facility ($7,500)

Others:

Fiji - (1999) Collection of aquaculture and fisheries technical information material ($440)

Kiribati - (2002) Feasibility study on the development of shrimp (*Liptopenaeus stylirostris*) farming
- (2002) Study on ecological and socio-economic factors in seaweed farming ($2,000)

Marshall - (2001) Study on formulation of national fisheries management plan for sharks and seabirds

Palau - (2001) Feasibility study on milkfish farming

PNG - (1996-1998) Special Programme on food production in support of Food Security in PNG (including inland aquaculture development) ($744,730)
- (2002) Study on formulation of national fisheries management plan for sharks

Tonga - (1998) Second In-Country HACCP Training Workshop in Va'vau
- (2000) Assistance in producing an educational video tape on natuiral resources management and conservation ($1,000)
- (2002) Study on tuna and bottom fishey license management

Vanuatu - (1999) Seaweed site survey

Region - (1994-1999) South Pacific Aquaculture Development Project (Phase II) ($4,170,000)
- (1998) Regional workshop on economic strengthening of fisheries industries in Small Island Developing States in the South Pacific in Apia, 14-18 September 1998
- (1999, 2000, 2001, 2002) Round table meeting on implications of WTO agreements for the Pacific region
- (2001) Sub-Regional Workshop on Uruguay Round and Multi-lateral Trade Negotiations
- (2001) Project formulation study on fisheries legislation in Micronesia
- (2001) Project formulation study on seaweed farming in the region
- (2001-2006) Support for Improvement of Statistics on Coastal and Subsistence Fisheries and Aquaculture ($250,000)
- (2001-2002) Aquaculture Country Profiles for the Pacfiic Island countries
- (2001-2002) Updating Fishery Country Profiles and Atlas for 14 Pacific Island countries
- (2002) Regional study on Pacific fisheries
- (2003) Regional study on safety-at-sea

(as of March 2003)

ANNEX 26

Investigating the Effects of Import and Export of Reef Fish on Pacific Island Economies and Resources

WESTERN PACIFIC REGIONAL FISHERY MANAGEMENT COUNCIL

Walter Ikehara[12]

Background

The Western Pacific Regional Fishery Management Council is one of eight regional fishery councils established by the Magnuson Fishery Conservation and Management Act of 1976. It is the policy making organization for fisheries in the exclusive economic zone (EEZ) around the Territory of American Samoa, Territory of Guam, State of Hawaii, the Commonwealth of the Northern Mariana Islands and the US Pacific island possessions, an area of approximately 1.5 million sq miles. The Council is tasked with maintaining opportunities for domestic fishing while preventing adverse impacts to stocks, habitat, protected species and ecosystem resources within the EEZ.

The US Pacific Islands are spread throughout Micronesia and Polynesia, and are comprised of various governmental jurisdictions. Each area possesses unique coral reef ecosystem resources, and unique histories of coral reef resource utilization.

Coral Reef Ecosystem FMP

Within the past 10 years, coral reefs have come to forefront of United States (US) marine resource management issues. Beginning with the establishment of the US Coral Reef Task Force in 1998, US federal, state, territorial and commonwealth resource management agencies have undertaken a coordinated effort to conserve coral reefs by minimizing adverse human impacts to coral reef ecosystem resources and habitats.

Among the issues of most concern to US resource management agencies are: overfishing, pollution, recreational overuse, coral bleaching and disease and lack of public awareness. As fishery managers, we are concerned with maintaining resource sustainability through prevention of overfishing and destruction of habitat. While fishing for coral reef ecosystem resources in federal waters (generally 3-200 miles) is minimal to date, much coral reef harvesting still occurs in state and territorial waters, and the Council has developed a Coral Reef Ecosystem Fishery Management Plan (FMP) that establishes a series of management measures to ensure coral reef fisheries remain sustainable in the EEZ.

The FMP is the nation's first ecosystem-based plan for fisheries and includes specific objectives to promote sustainable fisheries while providing for substantial protection of coral reef ecosystem resources and habitats throughout the Council's jurisdiction. Developed over the last six years by fishermen, scientists, resource managers and conservationists, the FMP:
(1) Prohibits the use of destructive and non-selective fishing gears;
(2) establishes a network of no-take Marine Protected Areas throughout the region, and
(3) establishes permit and reporting requirements when fishing for coral reef ecosystem resources.

More information on the Council and the Coral Reef Ecosystem FMP can be obtained at:
http://www.wpcouncil.org.

Importance of Coral Reef Resources

It is well recognized that nearly every Pacific Island community shares an intimate relationship with the ocean, and have depended upon coral reef fishery resources as a source of food, medicine, and a cultural

[12] Program Manager, Commercial Fisheries and Resource Enhancement,Division of Aquatic Resources, Department of Land and Natural Resources, State of Hawaii, Honolulu, Hawaii, USA.
http://www.hawaii.gov/dlnr/dar/

resource for thousands of years. Today, coral reef resources continue to be a major component of Pacific Island cultures, economies and lifestyles.

Even in Hawaii, a greatly urbanized society, coral reefs still play an important role in our economies and lifestyles. Coral reefs provide thousands of jobs in the ocean recreation and tourism industry. But more importantly, many people in Hawaii participate in some kind of fishing on coral reefs to provide supplemental food for families and for recreation.

This dependence on coral reefs stems from largely from the influence of Hawaiian and Polynesian cultures, but more recently, it may also be attributed to the immigration of various Pacific and Asian cultures which now make Hawaii their home. There are a number of fishing sectors actively participating in coastal fisheries in the US Pacific Islands including commercial, recreational, subsistence, and charter boat fishers.

Commercial fishery information have been collected in Hawaii and other US Pacific Islands for a long time, however, we still don't have a good estimate of coral reef fishery harvests because recreational and subsistence information is generally lacking, especially in Hawaii. From what we have heard at this meeting, we are not alone.

However, commercial fisheries data can provide some insight to the commercial value of coral reef fishery resources harvested in the US Pacific Islands. The total ex-vessel value for US Pacific Islands coral reef fishery resources in recent years has been estimated to be about $15.6 million. $14 million of this is derived from food fisheries (mostly bottomfish and lobsters), $1 million from ornamentals and $600,000 from sport fisheries.

Much of the fish caught locally in Hawaii is exported to Japan and the US mainland. But, we also import a significant volume of fish into Hawaii to meet the local market demand for fresh food fish and our immigrant communities favor food fishes from their home countries.

We also import and export a tremendous amount of ornamental reef fish for the aquarium fish trade. The US is the largest consumer of the international trade of ornamental reef fish and accounts for about 85%-90% of the trade market. In Hawaii, we have a large percentage of species found only in Hawaii making them a valuable item for international ornamental fish collectors.

The Potential Impact of Import and Export Markets

The increase of coral reef fishery resources being imported and exported throughout the Pacific Region, begs a better understanding the patterns of this activity. More importantly, we need to understand the effects that the import and export of reef fish have on local communities. As noted in Mechi Kronen's presentation, over 70% of coral reef resources are being harvested for sale and export from some communities.

Many Pacific countries are finding large international markets for coral reef resources and exploit these resources as a means of to build economic growth. These countries provide the resources which supply the live reef food fish trade in China and the aquarium trade in the US. The high value import markets offer the economic incentive that could drive Pacific Island communities to harvest reef resources in an unsustainable manner. There may be undesired consequences for island communities if coral reef harvest for export sale causes overfishing or destruction of habitat. The resources that could be harvested are not restricted to fin fish. For example, many tons of "live rock," coral rock on which a wide variety of marine life are attached, and living coral were taken from Hawaii reefs and exported for use in building living reef tanks popular in the aquarium trade, until Hawaii banned their harvest, sale and export. Such take could have serious impacts on coral reef habitats.

Since the US is one of the largest importers of reef fish, especially in the ornamental reef fish trade, the Council's Scientific and Statistical Committee (SSC) expressed concern about the sustainability of reef fish resources and the impacts of the import/export trade to Pacific Island reef resources and communities. In the February 2003 Council meeting in Saipan, the Council endorsed the recommendation of the SSC to surface this concern at the SPC Coastal Fisheries Management Meeting here in Nadi, Fiji.

The main points of concern are:

- By depleting fishery resources for short-term economic gains, food security and the well-being of the community could be compromised in the long term.

- Continual exploitation without some controls may result in large scale degradation of reef resources and habitat, especially in areas where destructive fishing techniques are still used.

- For those countries that import fish to meet local demand, the imports themselves could mask the depletion of local resources to the consumer and the public by substituting for locally caught fish. The public could get the mistaken perception that resources are abundant because the fish are still readily available in the market, while local resources are actually being depleted.

The complex nature of the potential problem underlines the importance of collecting adequate social and economic information in addition to the usual biological and fisheries data, and reinforces the need for comprehensive management plans. Increased awareness of the potential problem could help to avoid the likelihood of its occurrence.

We thank you for allowing us to discuss our views on this issue and hope that they prove useful in your deliberations.

ANNEX 27

MARINE AQUARIUM COUNCIL

Opportunities for Sustainability in the Marine Aquarium Industry

- Collecting and exporting marine aquarium organisms in developing countries creates jobs and income in rural low-income coastal areas that have limited resources and economic options, e.g. an estimated 7,000 collectors in the Philippines.
- Among coral-reef products that can be harvested with sustainable methods, aquarium animals bring the highest profit.
- Local collectors and their communities often become active reef stewards, guarding these valuable resources against destructive uses and creating de facto conservation areas.
- Impartial studies conclude, "in comparison to other extractive and destructive impacts on coral reefs, … the effects of collecting live coral for the aquarium trade are very small" and that the global coral trade has "little long term impact. "

Problems with the Marine Aquarium Industry

- Some operators in the industry use destructive practices and/or poor husbandry/handling practices, resulting in unnecessary reef degradation and mortality of captured organisms.
- Reliable information on the collection and trade of marine ornamentals is lacking.
- Reliable data on harvested stocks and reef habitat is lacking.
- Governments have limited resources for effective management of coral reefs and enforcement of laws against destructive fishing practices.

Marine Aquarium Trade Certification–A "Win-Win" Solution

- The demand from informed consumers for quality products and practices creates an incentive for industry to adopt and adhere to standards.
- Certification and labeling are the most useful means to ensure that the market requires quality products and sustainable practices, especially for industries and markets that are diverse and international.
- The most valid and credible certification is developed though a process that is independent, international and involves all key stakeholders.
- "Third-party" certification should include international standards, accreditation of those who certify compliance, labeling of the outputs and increased awareness, demand and confidence among the industry and consumers.
- Certification will create credible, international, multi-stakeholder standards of practice where none exist.
- Certification will require proof of compliance with domestic laws, e.g., no destructive fishing practices, and with international laws, e.g., CITES permit conditions.
- Certification will lead to sustainable industry financing for conservation by requiring, among other things:
    - Monitoring of reefs and stocks for compliance with sustainability standards.
    - Industry documentation of compliance with standards and submission of data to an international trade information system.
    - Management plans and conservation areas for harvested reefs.

ANNEX 28

The role of the WorldFish Center in the Pacific

Warwick Nash
WorldFish Center – Pacific Office, Nouméa, New Caledonia

Although there are a lot of things that I could tell you about the WorldFish Center, I will restrict my talk to aspects that are of relevance to the topic under discussion – coastal fisheries management.

Topics to be covered:
- What sort of organisation is WorldFish and what does it do ?
- What role can WorldFish play in assisting PICTs ?
- Aspects of WorldFish research related to fisheries management

A description of the WorldFish Center, its structure and goals

Known originally as the *International Center for Living Aquatic Resources Management*, the name was shortened to its acronym, *ICLARM*, then a couple of years ago extended to *ICLARM – The World Fish Center*. Finally, a few months ago the appellation became *the WorldFish Center*.

WorldFish mission

- To reduce poverty and provide food security in developing countries
- To help rural communities develop and manage their fishery resources

WorldFish identity

The WorldFish Center is an international non-profit research organisation that focuses on development in lesser developed countries.

Who funds WorldFish ?

WorldFish is not a donor organisation. It receives much of its funding from the United Nations Development Program (UNDP), the United Nations Environment Program (UNEP) and the World Bank. It also receives funds from more than 70 other donors, mostly for specific projects.

How does WorldFish aid countries?

Briefly, WorldFish assists countries identify suitable projects, assists in the preparation of funding applications, and conducts / supports research to develop food and income opportunities in lesser-developed countries.

The Nouméa office is within the Coastal and Marine Resources Research Project (CMRRP) program, which is one of five programs within the WorldFish Center.

CMRRP Projects

Projects carried out (past and present) within the CMRRP include the following:
- Village farming and restocking of giant clams
- Development of village farms for blacklip pearl oysters
- Development of new artisanal fisheries based on the capture and culture of postlarval coral reef fish
- Effects of alternative logging operations on inshore marine ecosystems in the tropical western Pacific
- Development of methods for mass-rearing of sea cucumbers to restore/enhance wild stocks
- Optimal-release strategies for restocking of sandfish (*Holothuria scabra*)
- Testing the use of MPAs to manage fisheries for tropical coral reef invertebrates (Arnavon Islands)
- The role of MPAs in fisheries management and biodiversity conservation in coral reef ecosystems.

Future projects and initiatives

Coastal Challenge Program

Theme 1: Reversing degradation of coastal resources due to land-based activities
Theme 2: Enhancing livelihood opportunities for coastal communities
- multi-agency (CGIAR, partners)
- very large: 10 years, tens of millions of dollars

Pacific aquaculture initiative - in prep., to ACIAR, research for aquaculture development
Three core components:
Sea cucumbers (various)
Larval fish capture / culture
Various microprojects

Fishery management issues to be addressed through projects

With reference to stock restoration projects :

1. Use of aquaculture as a means of rebuilding stocks is seen as a panacea - even as a substitute for good fishery management.

When discussing the prospects of trochus aquaculture in some countries, it has been suggested to me that, if wild populations are being replenished with hatchery-reared juveniles, size limits could be done away with. This isn't true. Which leads to the related point:

2. Restoration of depleted stocks with hatchery-reared juveniles is no substitute for good fishery management. Stock restoration doesn't make sense unless accompanied by sustainable fishing practices.

There is a lot of interest in culturing sea cucumber species to restore overfished stocks, but few countries have fishery management controls to limit sea cucumber catches to sustainable levels. Which countries are preparing management plans and controls for sea cucumber fisheries? Which countries plan to do this? Without a sound management framework in place, the sea cucumber culture and release research that we are doing in New Caledonia has little chance of long-term success – releases of hatchery-reared juvenile sea cucumbers into the sea will simply be propping up unsustainable fishing practices. Another point:

3. Not all species are good candidates for stock restoration by release of hatchery-reared juveniles into the sea.

The usefulness of releasing hatchery-reared juveniles to restore depleted stocks depends on several factors related to recruitment rates and ease of capture. So in the proposed ACIAR-funded study we won't be just doing more aquaculture research to figure out how to grow and restore yet another sea cucumber species. We will be taking a step back, and will develop the criteria for determining whether a species is suitable for stock restoration by this method.

In conclusion, I'd like to reiterate the point that the aquaculture research that WorldFish is doing cannot be effective unless sustainable fishing practices are in place. We therefore strongly support countries' efforts to do the planning and community consultation necessary for this to happen.

Thank you

ANNEX 29

Integrated Coastal Watershed Management, Sustainable Coastal Fisheries and The International Waters Programme

INTRODUCTION

International waters is one of four focal areas of the Global Environment Facility (GEF). The GEF was created in 1994 to provide financing for programmes and projects to achieve global environment benefits in four focal areas:

- biodiversity;
- climate change;
- international waters; and
- and ozone layer depletion.

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 (IWP 2002c).

The Strategic Action Programme for the International Waters of the Pacific Small Island Developing States – or the 'IWP' – is a seven year Programmes that commenced in 2000. The Programme involves 14 participating Pacific Island Countries:

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

The IWP has two main components: an oceanic component and a coastal component. The *oceanic* component of the IWP focuses on the management and conservation of tuna stocks in the western central Pacific. The *coastal* component of the IWP focuses on integrated coastal watershed management. It involves the implementation of 14 'pilot projects' that address sustainable resource management and conservation issues in the coastal zone (2002c).

The coastal component and integrated coastal and watershed management

The coastal component of the IWP is aimed at integrated coastal watershed management. It is intended to support community-level actions to address priority environmental concerns relating to:

- marine and freshwater quality;
- habitat modification and degradation; and
- unsustainable use of living marine resources.

To address these concerns the IWP will support the establishment of 'pilot' projects, one in each of the 14 participating countries. Each pilot project is intended to address the root causes of degradation affecting one or more of the following four focal areas:

- marine protected areas (4 projects);
- coastal fisheries (3 projects);
- freshwater resources (4 projects); and
- waste (3 projects).

This means that as many as seven community level pilot projects could be supported under the IWP looking specifically at coastal fisheries issues.

<u>What is a 'community based' pilot project?</u>

For the purpose of the IWP, the term 'community' is used in a limited sense to refer to a group of people residing in a sub-village, a village or several villages in an urban or rural setting that use resources in a common area (see IWP 2002b). Specifically, the project development unit (PCU) which oversees the day-to-day coordination of work in the Programme considers that a community could constitute 50-700 households with the potential ability to control processes affecting a resource.

In IWP community based project is essentially a grass roots arrangement in which the community works to address its own problems, while being supported by expertise and resources provided by the IWP. The community is expected to identify the cause of their problems, identify and select potential responses, plan, design, implement and monitor those responses. As well as providing expertise and resources to do this, the IWP would provide support for the community project via a national steering committee, a project manager

or 'national coordinator', a Project Coordination Unit at SPREP and various other stakeholders and/or experts (see *Administration Arrangements for the IWP* below).

What is a pilot project?

A pilot project in the IWP is intended to be a small-scale project that tests new (community level) approaches to environmental management. In this way, it is intended to generate lessons for best practice and appropriate methodologies for sustainable resource management and conservation. Under the IWP, the pilot project is intended to encourage active participation of all stakeholders in all stages of project and promote community solutions to problems.

The IWP intends that each country to establish one pilot project under the IWP. Each project would naturally address one of four focal areas covered in the Programme – waste, freshwater, fisheries and/or MPAs. Each pilot project would normally be restricted to one or more villages in one location or site. Some countries are interested in incorporating more than one site in their pilot project. Naturally this would have budgetary, logistical and administrative implications that would need to be considered. A pilot project may be a new project or work in partnership with an existing project.

The idea that a pilot project will generate lessons for future application is important. This is because the GEF and UNDP view the IWP as a whole as a 'Strategic Action Programme' or SAP. The SAP is considered to be an initial step that generates lessons learned in improving resource management. The IWP is therefore viewed by the GEF and UNDP as a set of activities that would eventually lead to the development of Medium-Sized (up to USD1 million) or Full Projects (in excess of USD1 million) in the future that may apply for funding.

As a result, the later stages of the IWP are likely to devote considerable effort to analyzing the results of the Programme to assist countries with the formulation of follow-up activities supported through the GEF and alternative sources of financing assistance.

Underlying principles of the IWP

The Project Document that describes the original design of the IWP (UNDP 1999) notes the importance of three key factors that are needed to ensure the success of community based environmental management projects:

- community participation;
- communication; and
- economic issues.

These factors reflect the importance of human behaviour in environmental management. For example, economics provides a framework for assessing human behaviour. Community participation is critical to the success of projects aiming to change that. Communication enables the transfer of messages to the community and of lessons inside and outside of it.

The PCU seeks to maximise the chances that these factors will be incorporated into the planning, design and implementation of community based environmental pilot projects. Therefore, together with a Project Managers, Programme Assistant and Project Accountant, the PCU contains a specifically recruited:

- community assessment and participation specialist (an anthropologist);
- a communications specialist; and
- a natural resource economist.

These individuals have developed strategies to explain how community participation, communication and economic issues will be incorporated into community base pilot projects in practice. (See IWP 2002f, 2002e and 2002d respectively.)

In addition to the incorporation of participation, communication and economic principles, the IWP seeks to develop partnerships with other agencies and programmes in the region that can provide support and expertise to its work. For instance, in different countries, IWP has already linked with the work on national biodiversity strategic action plans as well as some NGOs (such as FSP and the University of the South Pacific (USP)).

Administration arrangements for the IWP

The IWP is funded by the GEF, implemented by the United Nations Development Programme (UNDP) and executed by the South Pacific Regional Environment Programme (SPREP). The day-to-day coordination of work for the IWP, across the 14 participating countries, is conducted by a Project Coordination Unit (PCU) which is housed at SPREP.

A Programme Technical Advisory Group (PTAG) has been established to provide advice to the PCU on technical issues associated with the implementation of the IWP.

Management of in-county activities for the IWP are managed by 'national coordinators', project managers who are specifically recruited by national governments to oversee the day-to-day work of the IWP. National coordinators are assisted by national steering committees who work closely with the national coordinator to ensure that a wide range of stakeholder interests are met.

Reporting requirements

Operating under the GEF, UNDP and SPREP, the reporting requirements for IWP pilot projects are substantial since projects must satisfy the reporting needs of all three agencies, as well as the reporting needs of in-country agencies affected by the IWP.

To meet UNDP needs, quarterly narrative and financial reports are required from each country participating in the coastal component. The quarterly reports are fielded to the PCU which, together with its own quarterly and narrative reports, aggregates and transfers the information to the UNDP. Quarterly reports on the progress of the IWP are distributed to a wide variety of stakeholders. They are freely available from the PCU.

In addition to quarterly reporting requirements, the 14 participating governments aim to meet annually with the SPREP Secretariat, UNDP and the PCU in a Tripartite Review of financial and administrative issues associated with the implementation of the IWP. Additionally, updates of the IWP are provided to the annual SPREP meeting, and at regular briefing sessions ('internal coordination meetings') within SPREP. This year, a mid term evaluation of the progress of the IWP will also be conducted since the Programme is now half way through its seven year life cycle.

Implementing the IWP in-country

Arrangements for implementing the IWP in participating countries are outlined in *IWP Guidelines* (IWP 2003). This document outlines a broad approach for countries to follow. However, the communities, problems and resources in each country vary. Therefore, it is understood that, so long as countries meet the obligations and intent of the IWP in the original project document (UNDP 1999), this approach may need to be tailored for countries to meet their own circumstances.

The initial steps outlined in the IWP guidelines are broadly as follows:

- national governments recruit a national coordinator to oversee day-to-day management of the pilot project and administrative arrangements in each participating country;
- the national coordinator establishes a national steering committee (of equivalent) to oversee implementation of the IWP. This either be a specially created committee in which case the national coordinator conducts a provisional stakeholder analysis of agencies and individuals affected or affecting the IWP locally. He/she uses this stakeholder analysis to determine who participates in the committee. Alternatively, the national coordinator uses an already existing committee. Membership of the NTF is expected to evolve over time to reflect the needs of pilot projects over time. In the initial stages of the Programme, membership of NTFs is expected to reflect general national priorities in the early phases of the IWP. Later, membership of NTFs is expected to change to reflect specific project activities;
- the national coordinator arranges for a review the priority environmental concerns to be conducted. This review will assist in identifying options for the IWP pilot project to address;
- the steering committee selects one or more focal areas which the IWP pilot project can target;
- the national coordinator invites Expressions of Interest from communities (possibly with government/non-government agencies) to host the pilot project; and
- the steering committee (or nominated representatives) select a host community.

Capacity building and the IWP

The success of the IWP work hinges on the capacity of the people involved. While the project document that specified the content of the IWP did not explicitly consider the development of people in the Programme, the PCU does. Currently, capacity building in the IWP focuses on the development of national coordinators as project managers and the development of local people as facilitators.

National coordinators involved in the IWP bring a wide range of experience and knowledge to the Programme. Not all national coordinators are alike. At the same time, the demands of the Programme are wide ranging. Therefore, the extent to which national coordinators are equipped to deal with different aspects of the Programme (say, media and economic issues) varies. A number of activities are being developed in the PCU to support national coordinators in their work:

- the development of capacity development plans for staff. Working with the staff development officer, Frank Wickham at SPREP, the PCU last year developed a questionnaire to determine the comfort levels of national coordinators in different roles. The responses of this questionnaire have been used to develop draft capacity development plans for each key in-country officer. Strategies to support staff development are focused mainly on *in situ* training such as the use of mentors and training CDs but also provide for

the use of formal training where considered critical. The use of these capacity management plans is still in the formative stages;

- the development of a short course in the economics to support community based management projects. Experience in the Pacific reveals that there is not always a sufficient understanding of the role that economic issues play in the behavior of resource users and the quality of the environment. Together with the USP, ANU and the United Nations Division of Ocean Affairs and Law of the Sea (UNDOALOS), the PCU is currently developing a short course for project managers including national coordinators from the IWP. The overall goals of the course are to provide managers of community based projects with:
  - a sound understanding of the key economic concepts and principles relevant in the planning, design, implementation and monitoring of development and conservation projects; and
  - guidance on how to apply economic concepts, tools and approaches at all stages of the project cycle addressing community needs and aspirations.

  It is currently envisaged that the course will be incorporated into the USP's regular curriculum as an accredited unit of a graduate diploma in the Marine Studies Programme (MSP). As a result, the course should provide a permanent opportunity for Pacific islanders to develop economic management skills. The first delivery of this course should occur around late September/early October 2003 at the MSP, USP in Fiji. Details of the proposed course are available from the PCU and MSP (2002a and 2002b).

As a community-based Programme, the involvement of local people in the IWP is fundamental. Communities are expected to be involved in each step of the IWP, from identification of problems through to monitoring and evaluation of the projects. One of the key activities for the community will be the generation of information on the nature and cause of the problem targeted under the IWP. To support the generation of this information, the IWP will be seeking to train locals in information collection and assessment in each country. The IWP currently plans to start a series of train-the-trainer sessions in which local individuals will be taught how to train community members in information generation. Training is expected to include participatory information generation methods such as participatory problem analysis, brainstorming and seasonal calendars.

It is hoped that the capacity building efforts of the IWP will not only assist the IWP to meet some of its needs, but will also provide some important skills development in-country for the future.

Fisheries and the IWP

To provide background information on coastal fisheries issues for the Pacific, the IWP commissioned two consultancies in 2002 to provide a snap shot of issues that may be important for pilot projects. The two consultancies provide a synopsis of information relating to:

- sustainable coastal fisheries in the Pacific (Dalzell and Schug 2002); and
- marine protected areas (Huber and McGregor 2002).

Electronic copies of these reports are available from the IWP web site and hard copy versions are available from the PCU.

To date, three countries have selected sustainable coastal fisheries and/or marine protected areas as the focus of their IWP pilot project:

- Federated States of Micronesia;
- Niue;
- Solomon Islands.

Details on the community involvement in the development of the projects for Niue and the Solomon Islands are available from this meeting.

Currently, only the Federated States of Micronesia has identified preferred sites for the implementation of a pilot project. These are in Yap State. At present, activities in Yap centre on planning to refine, extend and plan for the winning Expression of Interest for the pilot project. This stage is critical for all pilot projects to be conducted in the IWP. Although an Expression of Interest is the *basis* for a pilot project, it is intended that the host community would be fully involved in developing that proposal in greater detail before implementing it. In particular, it is intended that all communities hosting a project will be involved in activities to return to the problem at hand and describe the symptoms of the fisheries problem (baseline information generation and analysis) as well as to analyse the cause and solutions to the problem.

Future steps in detail

Therefore, having selected a host community and site, countries will be following a broad IWP strategy to development and implement their pilot projects. The key steps are likely to include:

- a review the membership of the NTF;

- establishing teams to support the development of the project (Project Development Team, Local Project Committee, Technical Advisory Committee as needed);
- engaging the community (this will include conducting a detailed stakeholder analysis);
- collecting information on the community to provide a context to the problem;
- working with the community to analyse root cause of problem – *participatory problem analysis* is expected to be a key activity in this step;
- working with the community to generate baseline information which can provide confirmation and detail on the root cause of the problem;
- providing feedback information within the community to promote further discussion and consideration of problems;
- working with the community to identify potential solutions – this is likely to include further participatory activities such as the development of solution trees;
- assessing solutions (cultural and economic feasibility) – this is likely to include assessments of the financial feasibility of activities (such as for any proposed commercial ventures) and, economic feasibility (incentives generated for behaviour change as well as some form of cost benefit analysis of solutions);
- providing feedback information within the community to promote further discussion and select a solution;
- conducting detailed planning with community representatives;
- implementing the solution; and
- working with the community to develop monitoring and evaluation plans (see IWP 2003a).

It can be seen that the development of pilot projects under the IWP is likely to be a highly involved process if all of these steps are to be conducted. For this reason, the time frame for the IWP is important. The original time frame for the IWP was five years but has since been extended to seven (see IWP 2002a) to allow full consultation with fisheries communities to occur. This should enable increased chances for community ownership and involvement in the pilot project.

REFERENCES

Dalzell, P. and Schug, D. 2002, A Synopsis of Information Relating to Sustainable Coastal Fisheries, in technical report series Wright, A. and Stacey, N. (Eds.), 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 4. IWP Technical Report 2002/04, International Waters Programme, South Pacific Regional Environment Programme, Apia, Samoa, 6 volumes.

Huber, M. and K. McGregor, 2002, A Synopsis of Information Relating to Marine Protected Areas, in technical report series Wright, A. and Stacey, N. (Eds.), 2002, 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 1. IWP Technical Report 2002/01, International Waters Programme, South Pacific Regional Environment Programme, Apia, Samoa, 6 volumes.

IWP 2002a, Justification for a Programme Extension, Project Coordination Unit for the Strategic Action Plan for the International Waters of the Pacific Small Islands Developing States, SPREP, December, Samoa.

—— 2002b, National Coordinators Meeting: Report of the First National Coordinators Meeting, 29 April – 3 May 2002, Apia, Samoa, SPREP, Samoa.

—— 2002c, The Strategic Action Programme for the International Waters of the Pacific Small Island Developing States: Frequently Asked Questions, SPREP, Samoa.

—— 2002d, Economics Strategy, Strategic Action Programme for the International Waters of the Pacific Small Island Developing States, March, draft, Samoa.

—— 2002e, IWP Communications Strategy, Strategic Action Programme for the International Waters of the Pacific Small Island Developing States, March, draft, Samoa.

—— 2002f, Social Analysis – Assessment and Community Participation Strategy, Strategic Action Programme for the International Waters of the Pacific Small Island Developing States, November, draft, Samoa.

—— 2003, Guidelines for the Initial Phases of the International Waters Programme: In-Country Arrangements, Selection of Pilot Projects and Strategic Planning and Design, Version 1.05, Project

Coordination Unit for the Strategic Action Plan for the International Waters of the Pacific Small Islands Developing States, SPREP, March, Samoa, *draft*.

Marine Studies Programme, University of the South Pacific 2002a, TRAIN-SEA-COAST Course Development Mission Report: 18-22 November, SPREP/ANU.

Marine Studies Programme, University of the South Pacific 2002b, TRAIN-SEA-COAST Course Development Mission Report: 10-14 February 2003, SPREP/ANU.

SPREP 2002, What's SPREP?, http://www.SPREP.org.was, last revised September 25, 2002, accessed 4 March 2003.

UNDP 2002, South Pacific Biodiversity Conservation Programme (SPBCP) Terminal Evaluation Mission: Final Report, Samoa.

ANNEX 30

Community Managed Marine Protected Areas in the Pacific Islands: Summary of Case Studies

Kenneth T MacKay, Field Program Coordinator, Canada-South Pacific Ocean Development Program, Forum Secretariat, Suva, Fiji (kennethm@forumsec.org.fj)

Examples from four small island countries in the South Pacific Cook Islands, Fiji, Samoa and Vanuatu (summarized in Tables 1 and 2) indicate that community managed marine reserves are being implemented and maintained by local communities and are expanding. These community managed areas are one of the few tools for management of coral reef resources. The combination of strong customary marine tenure, involvement of local leaders, local knowledge and local governance systems has contributed to the success. Scientific and community monitoring does need to be strengthened in order to better measure success.

There has been a range of approaches to implementing the projects varying from the Cook Islands where the process was lead by the Koutu Nui, the Council of Chiefs with little formal involvement of government, while in Fiji a community facilitated by an NGO have been the lead agencies, and in both Samoa and Vanuatu the fisheries departments have initiated the project. In Samoa there was a large foreign assisted project with specially trained and dedicated staff supported by outside experts. In Vanuatu, in contrast there was a very modest effort and funding using existing Department of Fisheries resources.

In all cases there has been a strong role of Village leaders and the community. In Fiji and Samoa there has been additional measures to ensure co-management so that the national authorities can assist communities in managing the resources in the face of illegal fishing from those outside the village.

A close examination of the assessment indicates in all case there has been some weakness in the assessment particularly in development of community involvement in assessment and in biological assessments. However, the community-managed reserves have in all cases been perceived to have been successful and are expanding.

In all cases local communities have implemented their own fish reserves, decided on the location, established their own rules and management approaches. In all cases the process takes time.

The lessons learned from these four case studies may be useful for other projects and are given below.

Customary Marine Tenure

All areas informally recognize CMT thus making it easier to implement closed or reserve areas. Two countries Fiji and Vanuatu give legal recognition to CMT. While there is no legal standing in the Cook Islands there is still a strong traditional belief in the system. In Samoa, while the CMT system is reported to be weakening it did not appear to be a problem in introduction of the closed areas and the other management systems. There were indications from all countries that conflict between or within villages over marine tenure boundaries could lead to failure. Marine tenure disputes were identified in both Samoa and Vanuatu as reasons for villages ceasing to implement marine management measures. In Cook Islands, areas where conflict was recognized were not chosen for Ra'ui sites. In Fiji the resolution of conflict and agreement on boundaries was essential before the MPA could be established. Considerable outside facilitation was necessary and mechanism to hear grievances were important.

Traditional Leaders and involvement of communities

In Fiji and Cook Islands the traditional leaders were the driving force behind the reserves with an NGO (WWF) assisting and facilitating and government fisheries staff backstopping. In Samoa, traditional leaders were essential in accepting the process, approving and endorsing the plans and in applying sanctions. Although the process was initiated by the Fisheries Division with outside donor funding, the staff had been specially trained in facilitation to assisted communities to develop their own plans. In Vanuatu the Fisheries Division initiated the process with a few villages but these communities, usually with leadership from the traditional leaders, continued the marine management themselves, adopting new measures and the process spread to a large number of new villages.

No take MPA's

In Cook Islands, Samoa and Vanuatu the reserves are not classic no-take MPAs but allow some flexibility to match the socio-cultural concerns. They may open for short times or allow harvesting during certain seasons or for certain species. In Fiji the community has accepted a small no-take permanent closed area and a larger management area. The systems have and are evolving, in the case of the Cook Islands they are moving from a short-term community food bank to longer term closed areas including permanent closures on biologically important areas.

Compliance and Co-management

Compliance is much higher than is normal for government imposed Marine Protected Areas. In most case the communities are able to enforce compliance on community members by using traditional sanctions but there is a need for outside legitimisation (i.e. co-management) in some countries in order to enforce compliance on outsiders. Co-management is encouraged by integrating traditional practices with formal legal systems. In Samoa existing village by-laws can be recognized by the fisheries act and allow fisheries officers and police to enforce the rules, In Fiji a simple legal instrument was developed. In Rarotonga, the Cook Islands, the respect for the traditional system and traditional leaders appears to enforce compliance even on non-community members. However, the Fisheries Act is currently being revised and will incorporate a section that will allow acceptance of village or Island management plans that could incorporate Ra'ui or other traditional management. In Vanuatu education of villagers on national fisheries regulations is leading to village enforced compliance of national laws.

Size of protected areas

The individual reserves are small but in the case of Cook Islands, Samoa and Vanuatu the network of village reserves adds up to a significant area. In Fiji it is anticipated the area will increase as adjacent areas implement their own reserves. In all cases the reserves are perceived to be increasing the biomass of harvestable fish and invertebrates and biodiversity. There is increased interest from other communities and areas are expanding. Of considerable interest in Vanuatu is the observation that cooperation among villages to manage shared or contiguous areas yields better results than individual management.

Biological and Community Monitoring

In most cases formally biological baseline surveys were lacking or not complete. Community monitoring has been attempted in Samoa and Fiji but is as yet not fully implemented. All cases have plans to improve the biological and community monitoring. Information from communities on their perceptions of the changes was available from all cases but only in Samoa was there a rigorous approach to collecting the data. There is, however, a need for a more rigorous and routine approach to monitoring across all projects.

Education

Education was an important component of all projects focusing on schoolchildren, and media awareness. In Vanuatu education of villages on fisheries regulations was very important. While in the Cook Islands, the education concentrated on increasing respect for conservation, the Chiefs and the Ra'ui system.

Charismatic Species

Only Vanuatu focussed on single species, initially on trochus and subsequently with the involvement of the NGO, Won Smolbag, on turtles. This appears to be a major factor in the incredible spontaneous expansion of marine management measures in Vanuatu villages. This is a lesson that should be examined by other projects.

In all projects the concept of a closed protected area appears to have been well accepted and in Samoa, many more villages chose this approach than expected.

Sustainability

Sustainability has been identified as an issue in Fiji and Samoa. In Fiji, the project funding was ad hoc and thus the NGO was often reactive. Also because of the location of the MPA there is considerable cost in surveillance and policing so that some revenue generating activity will need to be identified to ensure the long-term sustainability. In Samoa, there needs to be a long-term institutional commitment to sustain the project until long-term community benefits are obtained. In the Cooks the strengthening of respect for the Chiefs and the low level of financial inputs required appear to reinforce sustainability. While in Vanuatu the rewards from trochus management appear to have reinforced the community commitment and strengthened the long-term commitment to conservation.

Table 5: Comparison of important features of community management of marine reserves in four Pacific Island Countries

Country/ Island	Customary Marine Tenure		Process of implementing community managed marine projects					Enforcement	
	Tradition	Legal	Lead Agency	Role Government	Role NGO	Role Local leaders	Role Community	Govern-ment	Chiefs & Community
Cook Is/ Rarotonga	Accepted	Not legally recognized	Koutu Nui Council of Chiefs	Ministry of Marine Resources Assisted in marking and signing areas Carried out biological assessment	WWF Supportive in education & media campaign	Lead group in initiation, implementation, enforcement & evolution	Actively participated but followed guidance of chiefs		Chiefs have main Role with community support
Fiji/ Ono	Accepted	State owns the sea but landowners have use rights. Traditional areas are codified Governmen t plans to turn ownership over to	Waisomo village with facilitation of the NGO WWF	Fisheries Department trained village fisheries wardens Developing mechanisms to recognize/ legalize community management	WWF Co-lead backstopping village with training, community workshops and social & biological assessments, & media campaign (technical input from University & others).	Key to success, initiated project, obtained support of outside groups, negotiated within village and with nearby villages	Active participation and assisted in negotiations with other villages	Developing legal mechanism s to allow national enforcemen t to target illegal fishers from outside community	Initially negotiating agreement from nearby villages. Village Fisheries wardens now assisting

Country/ Island	Customary Marine Tenure		Process of implementing community managed marine projects					Enforcement	
	Tradition	Legal	Lead Agency	Role Government	Role NGO	Role Local leaders	Role Community	Govern-ment	Chiefs & Community
		landowners							
Samoa	Accepted but weakening	Not legally recognized	Samoan Fisheries Division	Lead Agency Initiated project followed up and carried out social & biological assessment	No formal NGO involvement Subsequent district level MPA project has NGO involvement	Initial acceptance essential, assisted in developing & approving village by-laws & enforcement	Active participation in all phases of project	Legalization of village by-laws to allow national enforcement no need yet for national intervention	Community sanctions effective. Inter-village conflict has been settled by traditional mechanisms
Vanuatu	Strong Acceptance	Recognized in the constitution	Vanuatu Department of Fisheries	Lead agency in initiation via modest Trochus extension & conservation education effort Follow up primarily from	Won Smolbag's (WSB) turtle conservation play catalytic in promoting conservation and follow up in training	Essential to development & enforcement of Trochus closures and acceptance of turtle monitors	Actively supported and initiated new conservation measures	Education of villages on national conservation regulations	Community sanctions effective and additional resource management measures adopted

Country/ Island	Customary Marine Tenure		Process of implementing community managed marine projects					Enforcement	
	Tradition	Legal	Lead Agency	Role Government	Role NGO	Role Local leaders	Role Community	Govern-ment	Chiefs & Community
				villages with reinforcement from Dept Fisheries and subsequent assistance from the NGO (WSB) on turtles.					

Table 6: Comparison of assessment of community management of marine reserves in four Pacific Island Countries

Country/ Island	Assessment Who		Assessment results				Unique features	Limitations
	Social	Biological	Compliance	Social	Biological	Expansion		
Cook Is/ Rarotonga	No formal assessment	Ministry Natural Resources biodiversity survey before and after for fishes and invertebrates	Very high	Increased knowledge and respect for Ra'ui	Biodiversity of invertebrates and fishes increased	Increased areas of Ra'ui in Rarotonga. Management plans for other Islands incorporate Ra'ui	Conservation accomplished by respect rather than legalization. Detailed survey of biodiversity before and during. Traditional system is evolving to accomplish long-term conservation	Cannot address other marine pollution problems and fish poisoning. Not useful in areas where traditional authority weak

Country/ Island	Assessment Who		Assessment results				Unique features	Limitations
	Social	**Biological**	**Compliance**	**Social**	**Biological**	**Expansion**		
Fiji/ Ono	WWF	WWF, University & outside experts after initiation Training initiated for community monitoring	High among local villages probably some incursion by other fishermen in first 2 years	Community perception that fish have increased	Data not sufficient to indicate if increased fish in MPA. Recent surveys and training of community monitors should address questions in the future	Considerable interest from neighboring communities on adjacent Island and elsewhere in Fiji. Other NGOs now working with different communities	Considerable effort at negotiating boundaries of village fishing zones	High negotiation costs to determine boundaries with other villages Protected area not easily policed by village Ad hoc funding

Country/ Island	Assessment Who		Assessment results				Unique features	Limitations
	Social	**Biological**	**Compliance**	**Social**	**Biological**	**Expansion**		
Samoa	Fisheries Division using elaborate survey tools	Fisheries Division in conjunction with community	High but sometimes pressure from village to relax conservation	Very positive perception of the role of fish reserves in increasing biodiversity and catches.	Community biological assessment not sufficient Village survey suggest increased catches in villages with management plans	Expansion to larger scale (district) conservation efforts. Is serving as a model for community management project in American Samoa & elsewhere.	High level of government involvement using specially trained staff Legal system that allows village by-laws to be enforced by national authority	Inter-village conflict prevent development of fisheries management plans

Country/ Island	Assessment Who		Assessment results				Unique features	Limitations
	Social	Biological	Compliance	Social	Biological	Expansion		
Vanuatu	Johannes 1998, Johannes & Hickey 2001	Fisheries Department surveyed trochus resources	High approval of marine management measures	Positive economic benefits derived from management measures for trochus lead to adoption of other management measures.	Trochus harvest increased under delayed harvest	Large expansion in numbers of villages and increased #s of conservation measures being adopted	Focus on single (charismatic) species e.g trochus & turtles High level of spontaneous adoption and considerable evolution of systems Where reefs are shared by different owners/villages cooperative management among all owners worked better than separate management	Marine tenure disputes mitigate against success

ANNEX 31

Support for Fisheries Management Projects

What donor agencies are looking for

To be in a good position to access aid funding for various projects, it is necessary to understand the policy environment under which aid agencies and their counterpart organisations in developing countries operate. You need to know where they are "coming from".

DONOR DEVELOPMENT PHILOSOPHIES

Most donor's overall development philosophies are similar. They are formulated to a large extent by the aggregation of their policies on, or approaches to, the multitude of issues which impact on development theory and practice. It is interesting that most donors have strikingly similar policies on these issues.

These policies are informed by a wide range of factors:

Research

All donors' policies are to some degree informed by the research that is done by the major players in the world of development assistance - for example the World Bank and the United Nations Development Program. To a lesser extent they will also be informed by research that they may commission through Universities and other institutions involved in the study of development.

Global Issues

Their policies will also reflect global concerns and the results of major events like the Earth Summit in Rio De Janeiro in the early 1990s and the UN Decade on Women in the late 1980s.

Politics

Then there is the political environment to consider. The policies of the governments are continually changing – especially so when as governments themselves change. In Australia the government and the opposition usually take a bipartisan approach to development philosophy and on policy.

However, even with the bipartisan approach there are still differences. For example the current government has a strong focus on poverty alleviation and on governance, whereas the previous government had a focus on sustainability and the environment. These differences bring about a change in focus for AusAID and its development partners. To the extent that it might appear that all AusAID is currently interested in is poverty alleviation and institutional strengthening. While this is the current focus, AusAID is still interested in sustainability, the environment together with all the other issues discussed in this paper.

Development needs and focus will also change for the developing countries. While the Government of Samoa currently has a strong focus on public sector reform, other Governments may have priorities in infrastructure development and others yet again can have any number of development priorities. These priorities will dictate which policy issues will be of major importance to our partners. It will help if you know what your government's current development priorities are so you can slant (put more emphasis on that particular aspect) your submission accordingly.

Development policies and priorities seem to be sometimes confusing and in a constant state of change. To the extent that it sometimes appears that the donors are following the latest "fad" to come from the World Bank (and others) and are constantly changing their development philosophies. This is not the case, it may be that there is more emphasis placed on a particular policy at any given time, but the overall philosophy doesn't really change all that much. The philosophy continually evolves with the new and latest policies adding to the total picture of what development assistance is all about.

It is important for someone who is seeking funds for a development project to understand, not only the overall development philosophy of the donors, but also their policies on the issues affecting development theory and practice. It will also help if the reasons behind those policies are also understood. If you can do this, you will be able to satisfy the donors' needs and requirements and, if you address these requirements fully in your submission, you will have a greater chance of securing the funding you need.

As most aid funds are channelled through the development or planning agencies, it is also important to realise that individuals within these agencies or departments may also have specific biases. These individuals are really the gate keepers to development funding. If you know what their biases or preferences are, you can address them in your submission, again improving your chances of success by getting through that first gate.

DEVELOPMENT ISSUES

I have listed a selection of key aspects or issues affecting development. I have also tried to explain very briefly why the policies on these issues are important from both the donor and recipient's perspectives. You will need to understand all these issues and address them when putting forward a proposal for aid funding.

The other technical papers presented here this week will give you concrete examples of the benefits which can result from coastal fishery management projects. You can use these examples and the results of the Samoa experience to explain and justify your request for funding for similar projects involving community fisheries

Economic Return

The estimated economic rate of return (EERR) is still a major factor in any development agency's consideration of an aid project. It is equally valid for both donor and recipient agencies. Basically it enables the return on project funds to be estimated and considered to see if the projects are going to represent value for money. The EERR also enables decision makers to compare the economic returns of competing projects and to assess overall priorities competing for scarce resources.

While it is far too early at the submission stage or prefeasibility stage to assess an economic rate of return for a project yet to be designed, it is possible to list (in a qualitative sense) the likely economic benefits of an activity. For example in a community fishery project a wide variety of benefits are likely:

- increased local catches (in Samoa the community fishery was worth significantly more in economic terms than the commercial fishery which was the country's second biggest export activity);
- the benefits to the local community of increased consumption of local fresh produce (eg better health - fresh fish instead of tinned fish or meat),
- import substitution (eg fresh for tinned fish or meat);
- the ability of local fishers to participate in the local cash economy through the sale of surplus fish)

Environmental Impact

All donors are committed to development which is socially, economically and environmentally sustainable. Environment policy has been a major plank in donors aid policy since the Rio Earth Summit.

In Samoa the reef ecosystems were being threatened by unsustainable fishing practices and a lack of understanding by fishers of the long term damage they were doing to the reef and their livelihoods by the use of such practices. The project in Samoa significantly increased fish stocks while at the same time it protected the ecosystems and the biodiversity of species in the lagoons and on the reef. The completed project continues to conserve fish species and stock for future generations.

See gender below. It is also important to get women involved in projects where there is some emphasis on environmental management. This is because women have been shown to take a longer term – an intergenerational in fact – perspective. This makes their inputs into these projects vital to the success of the project.

Gender (and Community involvement)

Each of the agencies has a Gender policy. Most – including AusAID's - have evolved from earlier Women in Development Policies. These "WID" policies can be directly attributed to the United Nations Decade for Women. As our understanding of issues based on gender increased, we have come to realise that it is not just women who may be discriminated against. The Samoa project identified a significant number of men in the community who were without a voice in local decision making. As they were key stakeholders and the main fishers, the success of the project would depend on their full participation. Mechanisms therefore had to be provided to enable them to have inputs into the design and implementation of the project.

Women need to be involved and consulted not only because of their role in influencing family members' attitudes and behavior, but also because of they are more likely to take a longer term view which is important from a sustainability and environment perspective.

If the gender analysis shows that women are key stakeholders, it will be important to ensure that systems are in place to cater for them – eg to ensure that there are sufficient female extension officers to serve the needs of these women.

Gender analysis is therefore important, not only from a equity perspective but also from sustainability, project design and project implementation perspectives.

Full gender analysis will ensure that **all** the stakeholders are involved in the design and implementation of projects. The chances of project success are improved immeasurably by this involvement

Governance

Following a lengthy study by the World Bank in the mid 90's, Good Governance is now recognised virtually as a prerequisite and a precondition to development. While the Samoan Project had a small component of management improvement and institutional strengthening, its main contribution to good governance can be seen in its use of local institutions (village councils, women's committees and the setting up of a mechanism to give untitled men a voice in the management of the local community fishery). The project has in fact significantly strengthened civil society at the local level. (I won't discuss the formation of the Commercial Fishery Management Advisory Committee which was equally important in establishing sound management of the commercial fishery and in strengthening civil society in Samoa.

Poverty Alleviation

AusAID (as with most donors) has a strong focus on poverty alleviation. Sometimes it is really difficult to show just how a project (especially one on governance and public sector reform for example) relates directly to poverty alleviation. However with a community fishery project – this should not be difficult at all. You can point out that the people who benefit directly from such a project will be people living in rural areas (another plus), that they are restricted from participating in the cash economy, that their livelihood is at risk because of diminishing resource in the coastal fishery. See above under economic return on how a fishery management project can benefit villagers living in rural coastal areas.

Recipient contribution

Your chances of success will be improved if you can demonstrate (even at this early stage) just how the recipient government and the local community or target group will contribute to the project.

Donors look to these contributions as indicators of commitment, likely ownership and sustainability. Commitment and ownership are preconditions for sustainability and success of development projects. They have come from both the recipient government and the local community.

Examples of contribution for the government could be:

- structural change to provide on-going assistance to the communities developing management plans – an increase in the extension services provided by the fisheries department,
- increased importance given to the extension services in terms of status and budgets
- provision of office space and utilities for the project advisers

Examples of contributions by the community could be:

- provision of boats/canoes for the use of extension staff and advisers
- provision of human resources to provide policing of fish reserves, monitoring catches and undertaking or assisting with fish population surveys etc
- provision of venues for management committee meetings etc

CONCLUSION

Gaining funding for development proposals depends on a lot more than paying lip service to the donor's requirements. It is not just about ticking boxes. By making sure that you understand and satisfy all the policy criteria of the donors, you will not only increase your chances of securing the funding, but you will also ensure that you have the basis for the best possible project with the best chance of success.

ANNEX 32

The use of problem/solution trees in solving fisheries management problems.

Michael King, Fisheries Consultant

A problem/solution tree is a technique or tool used to involve people, usually a group, in defining and solving problems. Use of the tool involves defining the key problem, listing its negative effects, determining its causes, and proposing solutions. Problem solution trees have been used in community-based fisheries management (to involve community groups) and are used in commerce to address business problems (to involve experts in finding solutions to a particular problem). In this meeting the technique will be used to apply the collective experience of some of the most senior fisheries people in the Pacific to particular fisheries management problems. If we cannot solve fisheries problems at such a meeting, in the presence of 100s of years of collective experience, then our coastal fisheries are indeed in trouble.

In the case of large groups the results of group deliberations are best recorded on a large white board visible to all. In smaller groups, which will be the case in this meeting, records of discussions can be made on the blank forms available (see below). As many particular problems have been proposed, we will divide into groups. Each group is asked to choose a recorder (to fill in the form shown below) and present the results to the meeting.

Coastal Fisheries Management meeting. Summary of problem/solution discussions by groups

Names of participants in discussion group				
Countries of participants *(circle facilitator/presenter)*				
EFFECTS list the effects of the problem				
PROBLEM addressed enter a single distinct problem here				
CAUSES of the problem discuss and enter the causes of the problem (one per box)				
SOLUTION to the problem enter a solution for EACH of the above causes				
	list the sequential steps that must be carried out to address each of the above solutions			
ACTIONS required 1st phase what must be done first etc				
Actions required 2nd phase				
Actions required 3rd phase				
Actions required 4th phase				

Referring to the example based on “ciguatera fish poisoning” as an example (see form below), the steps involved are as follows .

a) In most cases several problems can be resolved into a single key problem. The recorder should write the key problem on the white-board a little way down from the top (as in the example).

b) The effects of this key problem on the fishery and the community are now listed. The recorder writes down these effects on the form in the row above the key problem.

c) The group is then asked to think about the causes of the key problem and these are written by the recorder on the row below the key problem.

d) The group is then encouraged to discuss and propose possible solutions. The proposed solutions are written by the recorder on the next row of the form.

e) Finally the group is asked to decide on practical remedial actions to put the solutions into effect. Most actions will have to be taken in a series of sequential steps – these should be recorded in the appropriate boxes as phase 1, phase 2 etc. Note that, in practice, each country wishing to address the problem would need to draft out a detailed work programme with aims and outputs based on these actions.

Use one sheet for each individual problem. In order to cover all the problems proposed, each group will have to address several problems and bring the results back to the meeting.

Coastal Fisheries Management meeting. Summary of problem/solution discussions by groups

Names of participants in discussion group				
Countries of participants (circle facilitator/presenter)				
EFFECTS list the effects of the probem	*effects on public health*	*less fish are available*	*fishers have problems in marketing catch*	
PROBLEM addressed enter a single distinct problem here	*Ciguatera fish poisoning*			
CAUSES of the problem discuss and enter the causes of the problem (one per box)	*destruction of corals by subsistence fishers*	*destruction of corals by tourists & snorkellers*	*sewage and storm-water entering coastal waters*	
SOLUTION to the problem enter a solution for EACH of the above causes	*reduce coral destruction by subsistence fishers*	*reduce coral destruction by tourists & snorkellers*	*reduce contamination by waste-water & sewage*	
	list the sequential steps that must be carried out to address each of the above solutions			
ACTIONS required 1st phase what must be done first etc	*discussions with fishing associations and community groups*	*discussions with tourist association hotels & dive shops*	*discussions with relevant government agencies*	
Actions required 2nd phase	*agreements to reduce coral damage during gleaning, shore fishing etc*	*agreements with associations, hotels and dive shops*	*lobby for upgrading of sewage systems and stormwater drains*	
Actions required 3rd phase	*radio talks and press releases aimed at general community*	*preparation of press releases and leaflets for tourists*	*regulations on regular emptying of septic tanks*	
Actions required 4th phase		*arrange for distribution of leaflets at hotels and airports*	*press releases on need to reduce nutrients entering coastal waters*	

What we need from this meeting are clear guidelines on actions that must be taken to solve our fisheries problems. It is not enough to say, for example, that we can solve a particular problem with a fishery by having a management plan. We need to get down to specifics. We need to spell out exactly what actions we need to take to address the problem.

A word of warning in this regard. We need to be sure that the problems we are addressing are the ones that are most important in their effects on fisheries, fishers, fishing communities and the marine environment in your particular countries. We can only do this if we are in regular contact with fishers and

people in the community and aware of their problems. Most of you will believe this to be the case, but it is not always so. Many field workers for example study resource species but neglect to interact with the people fishing them. It must be remembered that most fisheries problems are related to people not fish.

One final request. SPC needs to know what assistance is likely to be required by each country in order to take the actions proposed. Ueta Faasili has prepared a form for each country representative to fill in. This will assist SPC, and perhaps other supporting agencies, to plan a work programme to assist you with your endeavours.

ANNEX 33

The challenges in the management of the Live Reef Food Fish Trade in the Pacific

Being M. Yeeting
Reef Fisheries Observatory
Secretariat of the Pacific Community, Noumea

Background

The coastal zone of the Pacific Island Countries (PICs) encompasses thousands of square kilometres; most of them covered with coral reefs. The coral reef ecosystems of the pacific region are some of the richest in the world. They are considered as biological resources of global importance because they lie at the centre of global marine biodiversity, and most are presently in good condition. They are also crucially important to the economies and local livelihoods of the PICs as sources of food and as the basis for small- and large-scale fisheries, as well as ecotourism. Preservation of these rich coral reef ecosystems is therefore one of the key ingredients for food security, sustainable development, and poverty reduction. For the PIC population, coral reef resources are the major source of protein, especially for the poorer, isolated communities on outer islands. Moreover, in these relatively resource-poor countries, ecotourism, anchored on the distinctiveness and beauty of the region's coral reefs, is one of the few sectors that hold promise for growth and employment generation. Any reduction in biodiversity will therefore also cause a subsequent reduction in potential opportunities for sustainable use of the resources, e.g., catch of aquarium fish larvae, medicinal research, marine aquaculture, and the LRFT.

Although many of these reefs are still relatively undisturbed, the coral reef ecosystems of the Pacific are under threat due to coral mining and destructive fishing methods associated with the LRFT for both aquarium fish markets and food fish markets. Severe overharvesting and the use of destructive fishing methods, primarily the use of cyanide to stun and capture target species, have been ubiquitous features of the LRFT in Southeast Asia for the past several decades. This practice and other destructive fishing methods, such as the use of dynamite and fishing in spawning aggregation sites have caused adverse effects on coral reef ecosystems as well as reef fish stocks. As stocks of desired species have become depleted in Southeast Asia, live fish operators are rapidly moving into the island nations of the western Pacific, bringing the same destructive methods with them. Unlike reef threats like coral mining, pollution, and sedimentation, LRFT operators typically target the most remote, pristine, isolated reefs for fish collection. These are often outside of the protected area systems.

As a low-volume, high-value fishery in which local fishers are often involved and can make a good income, the LRFT can be managed to provide sustainable use of coral reef ecosystems. But for this to happen, the PICs must establish sound policies and management plans for coral reef conservation and sustainable fisheries, and have the institutional and technical capacities to carry them out. These are currently beyond the capacity of these countries to do on their own.

At the second Pacific Community Fisheries Management Workshop (Noumea, New Caledonia, October 1998), the SPC member countries endorsed the Live Reef Fish Pacific Regional Strategy (jointly prepared by SPC, IMA, TNC, and WRI) as a new initiative with high priority, and urged SPC to secure partners and seek the resources necessary to implement the strategy. Furthermore, in the First SPC Heads of Fisheries Meeting (Noumea, New Caledonia, August 1999), the SPC member countries highlighted the need to build effective local capacity to manage the expanding LRFT, and to strengthen the information base for management. Therefore, the meeting directed SPC to continue seeking the means for implementing the Regional Live Reef Fishery Strategy.

Between 1998 to 2000, SPC has been able to borrow capacity from another donor-funded reef fisheries management project to address some of the needs for assistance requested from its member countries but this has subsequently ceased. A joint project proposal from SPC and its collaborative partners (TNC, IMA and WRI) was submitted to ADB in 1999 as a Regional Economic Technical Assistance (RETA) grant asking for US$1.2 million over three years. This was to provide the capacity required by SPC to assist its member countries on LRFFT related issues and problems and to fund necessary field activities to achieve this. Out from this project proposal an amount of US$215,000 was granted for a 13 months period. This was well short of the amount requested and in addition, the funding only provides for field activities without any capacity strengthening support for SPC, which was one of the primary needs and objectives of the proposal.

TNC seeing this important need by SPC and which was essential for the Pacific LRFT Regional Strategy to be implemented effectively decided to provide some interim funding to support this capacity. This provided the capacity for SPC to recruit a LRFT Specialist to co-ordinate all LRFT work in the region and to manage and implement the Pacific LRFT Regional Strategy, which incorporates the ADB RETA. The TNC funding however runs out in June 2001and the ADB RETA funds could only support some of the work required over a limited number of SPC member countries. It was therefore necessary for SPC to seek out funding support in order to strengthen its capacity.

In addition given the constant demand for wild caught live reef fish on the Asian markets, it is likely that the LRFFT would continue to expand rapidly into the Pacific even to new areas where LRFFT operations may have seemed impossible. In order for SPC to contain and address this rapidly growing nature of the LRFFT in the Pacific. It would need to further strengthen its capacity and improve its response mechanism to its member countries' request for technical assistance in dealing with LRFFT issues. This rapid response mechanism would only be realised with the availability of funding support for SPC to develop this capacity and to build and strengthen the existing collaborative approach that has been established with TNC, IMA and WRI. This collaborative approach does not only strive to provide the basic information required for managing the LRFFT but also aims at building local capacities within Pacific countries to ultimately be able to address their own LRFFT problems and manage the Industry in a sustainable manner.

A project proposal submitted to MacArthur Foundation was accepted and funds were obtained to provide the needed support to maintain SPC's technical assistance to its member countries starting from the end of 2002 until the end of 2004

Activities

SPC has identified and focussed on 7 main areas of needs of its member countries. These 7 areas are relatively common for PICs. The findings and outcomes obtained are very important in providing a realistic strong basis for the sustainable management of their LRFFT operations in respective countries. The activities in each of these areas are described below.

Live reef fish trade awareness

Three different levels of awareness are recognised. There is awareness at the community level that could possibly include local fishermen. There is awareness at the operator's level, and finally at the government level which would include, fisheries officers, planners and politicians. Obviously the development of materials for the different target groups would differ as well as the approach required. Activities would include the production and dissemination of educational materials for local communities, working with and training of suitable local counterparts on effective LRF awareness methods and campaigns for local communities.

Assessment of resources

Some knowledge of the LRF resources in terms of what is there and how much, is essential in order to make decisions on how much to harvest and manage appropriately for each country situation. Preliminary assessments should include:

- assessment of total and exploitable fish stocks;
- analysis of the main structures of these populations;
- the reef's health status;
- evaluate ciguatera fish poisoning levels in LRF fishing areas.

The acquisition of such information needs some technical knowledge. It would involve defining a sampling strategy to obtain a reliable picture of the resource and using an adequately tested sampling method to provide high-quality information that can be repeated in both space and time for long-term monitoring. This is one activity where local capacity building in terms of technical know-how should be emphasised. However for the more immediate need assistance in conducting in-country assessments would be required. This would also provide local officers to get hands-on field training on the assessment methods. These can be achieved by organising training workshop on assessment methods and/or probably more cost effectively, to provide opportunities for short- term capacity building attachments for Pacific Island fisheries officers to join the project core team in their field assessment work to be done.

Development of LRF policy and regulations

Because the LRF Trade is new in the Pacific, most pacific countries lack a policy and regulations to keep the LRF operations under control. These are important to ensure that the government and local communities knows how to deal with foreign LRF investors or buyers, that the resources are utilised in a sustainable way and that the resource owners get the true benefits from their resource. This will involve working closely with the relevant government departments and to assist in co-ordinating their efforts. Bringing in policymakers, fisheries managers, industry representatives and resource owners together to discuss issues is an effective way of getting dialogue and understandings between the different players. In-country small consultative workshops and country visits to formulate realistic LRF policies and regulations.

Development of LRF management plans.

Workable LRF Management Plans have to be developed for all the SPC member countries involved in the LRF trade in order to ensure sustainability of the resources and the trade. Some of these countries have already started developing these management plans but almost all have not started implementing. A Management Plan does not serve any purpose if it does not work therefore there is still a lot of work to do. The consultative workshops mentioned above could be used also to formulate the basic infrastructure of the plan.

Training in sustainable LRF operations.

This would involve working with and training the fishermen on non-destructive fishing methods, good fishing practices, and sustainable resource management and good handling practices, quality control and marketing strategies for the local LRF operators. A few demonstration sites could be selected and developed to test and show the applicability and practicality of recommended practices to obtain sustainable LRFT operations.

Institutional strengthening and capacity building for management of LRFT.

Most governments in the Pacific currently lack the basic infrastructure to support management efforts. This is mostly due to the lack of co-ordination among government departments to utilise the existing government system effectively and also partly due to the lack of technical and managerial skills to deal with the management issues of the LRFT and resources to implement the management plans. The identification of existing problems

and assessment of the need for and the development of a co-ordination body in the country would be required to facilitate the implementation of management plans and regulative measures. The incorporation of user pay options within the management regime would be investigated in order to develop a local self-supporting management system.

Building local capacity within countries would be a very important part of the project. These can be provided through working together with local counterparts in each country as well as in the provision of short-term capacity building attachments between countries or with the collaborating organisations.

LRFT monitoring.

Three different kinds of LRFT monitoring are envisaged. The first is a fisheries- independent one and which will involve trained fisheries officers to do regular underwater visual census of stocks and could be tied in together with Activity 1. The second would be to monitor LRF operations through the collection of data/information from fishermen and operators. The third would be surveillance and monitoring of exports and collection of customs information. In order for the monitoring to be effective at the three different levels it is necessary to involve local fisheries officers. Training of fisheries officers in the three monitoring approaches would therefore be necessary. Considerable in-country follow up and evaluation of these monitoring systems would also be necessary to ensure its appropriateness and effectiveness.

Key Considerations

Industry structure

Foreign investment: As with any enterprise, a producer country wants to ensure that as much as possible of the enterprise's benefits accrues to its citizens. Encouraging investment and participation by local companies and workers in the enterprise is one way to achieve that goal, but the potential for local investment and participation is often constrained by available capital and labour. Consequently, most countries have rules governing foreign investment and participation that seek to balance the "costs" of foreign investment with the benefits of enterprise development. In the case of LRFF fisheries in most countries, the availability of local capital and labour is probably not an important constraint for the enterprise of fishing, but it may be for fish storage and transportation, including exporting.

Joint ventures: Although local investment and participation is one way to ensure that benefits accrue locally, it also entails risk (because the enterprise's total available net benefits might be very small, or even negative). Joint venture arrangements that guarantee certain minimum levels of benefits to local interests while letting the foreign partners bear most of the risk is an alternative approach.

Vertical integration: **There** is strong vertical integration of the industry, particularly between the exporters and importers/wholesalers. It is therefore relatively difficult for local companies to participate as exporters without a strong business link to the large Hong Kong-based companies.

The market

The market drives fisheries: The great esteem paid by consumers to LRFF products and the large size of the market mean enormous demand for LRFF products. That demand has led to, and continues to lead to, the development of LRFF fisheries throughout the Indo-Pacific that as fisheries are intensive and that as businesses are aggressive.

Price volatility: Prices for LRFF vary seasonally, with strong spikes during several holidays. Prices are also quite susceptible to prevailing economic conditions, as is apparent from price drops that have occurred since the economic crisis that swept Asia in 1997.

Ciguatera: The risk of ciguatera poisoning is an important consideration to consumers. There is consequently some preference for smaller fish. In cases where particular source countries or areas are implicated in ciguatera poisoning incidents, the demand for LRFF from those areas may be substantially reduced.

Preferred fish sizes: The market's preferred fish sizes are such that immature fish make up the majority of production for some species, particularly the larger species such as *Epinephelus lanceolatus*, *E. fuscoguttatus*, and *Cheilinus undulatus*.

Holding and transportation

Shipping is costly and risky: Whether shipping by sea or by air, transportation costs constitute a large portion of the total costs of getting LRFF from the reef to the consumer, particularly where there is a risk of substantial mortalities during transit.

Holding time is costly: Shipping by air generally involves making frequent small shipments, while shipping by sea involves making infrequent large shipments. The former has the advantage of proportionally fewer mortalities and lower feed costs while the fish are being held prior to shipment. But whether by-air or by-sea transport is more cost-effective in a given situation also depends on available air routes, available cargo space, air cargo costs, and distance to market. In either case, the less time the fish are held, the lower the losses of fish and the lower the production costs, so catching fish in fast pulses just prior to export can be advantageous.

The Fisheries

Local versus foreign participation: Producer countries often want to encourage participation by local fishers and discourage participation by foreign fishers. This can help serve certain economic and social objectives. It can also be beneficial by providing oversight over the enterprise. Local fishers, for example, are probably less apt to use fishing practices that degrade habitat, such as cyanide fishing. However, in cases where local fishers cannot meet the supply needs of the exporter, those inefficiencies result in fewer net returns and fewer net benefits available locally.

Price information: The market for LRFF products is very dynamic, with strong seasonal factors. Keeping track of market prices, such as Hong Kong wholesale prices, can help local participants in the fishery negotiate advantageous terms with their foreign associates.

Competition and bargaining power: The structure of the LRFF trade is such that there are relatively few players at the export step in the chain of custody. These exporters are generally the ones seeking access to reef resources (either deploying their own fishers, hiring local fishers, or buying fish from local fishers). Because in most cases there are very few of these operators in a given area – often only one in an entire producer country – there is little competition among them. Prices or wages paid to local partners and fishers are consequently not as much as they would be if there were greater competitions. Producer countries can improve their negotiating power with buyers and exporters by encouraging competition. Although the fishery may not be big enough to support more than one exporter, there are ways to provide for competition in gaining access to the fishery (e.g., through bidding).

Destructive fishing methods: Some fishing methods are more destructive to habitat than others. Cyanide poisoning and traps can be highly destructive, while hook-and-line gear is relatively benign.

Unselective fishing methods: Some fishing methods are more selective for target species and sizes than others. Cyanide poisoning is highly selective in terms of what is actually caught, but it causes lots of incidental mortality of fish and other organisms. Traps are not very selective but unwanted fishes can be easily released alive. Hook-and-line gear is selective for carnivores and can be somewhat selective for target species, but some degree of bycatch is inevitable.

Dangerous fishing methods: Fishing methods that require divers to use compressed air, particularly cyanide fishing but also trap fishing, bring the risk of decompression sickness, which can cause permanent disabilities or death.

Culture fisheries

Managing seed fisheries: Culture methods that rely on wild-caught seed put pressure on wild resources just like any other capture fishery, and these fisheries should be managed like any other fishery. For example, management strategies should be cautious and controls should be put in place to prevent overexploitation and habitat degradation.

Competitive advantages in the Pacific Islands: The Pacific Islands have few competitive advantages in terms of mariculture production, so expectations for the development of mariculture for the LRFF market should be modest. The culture of wild-caught seed is likely to be more feasible than full-cycle mariculture.

The resource

Productivity: The species targeted in the LRFF trade offer only relatively small yields. This is both because they tend to have low intrinsic productivity (so only small proportions of the stock can be taken per unit time – about 15 percent per year in many cases) and because they tend to be few in number on the reef. Expectations of the size of an LRFF fishery that would be possible in a given area and the magnitude of the benefits that could be derived from the fishery should be correspondingly modest, especially in cases where the resource is valuable for other uses besides the market for LRFF. Once a trade link is established between a producer country and the international market for live reef food fish, a LRFF fishery has the capacity to make large harvests in a short amount of time, so proactive and conservative management strategies are essential in order to avoid overexploitation.

Life history characteristics: **The** productivity of fishery resources is dependent not just on intrinsic biological characteristics, but also on *how* they are captured – such as the degree of harvest selectivity by fish sex and size. Certain life history characteristics common to many LRFF target species, particularly sex reversal and aggregating behaviour, often exacerbate the degree of harvest selectivity and its adverse effects. These characteristics should therefore be taken into consideration both when assessing the productivity of the resource and formulating management strategies.

Vulnerable species: Certain species, such as *Cheilinus undulatus* and *Epinephelus lanceolatus*, are so unproductive, rare, threatened, and/or valuable outside the LRFF trade that keeping them out of the trade is probably the best policy in virtually all cases, and effective means to protect them from fishing should be put in place. In many cases, such as where there is marine-based tourism, the reef system as a whole is so valuable outside the LRFF trade that a LRFF fishery would not be justified.

Ciguatera: Ciguatera or the lack thereof, is a very important product attribute and the private sector has a strong incentive to improve traceability in the industry so that dangerous fish are not traded and consumed. Still, in order to protect their reputation as sources of high quality fish, producer country governments should consider putting in place controls to ensure that ciguatoxic fish are not exported, such as closures of ciguatera hot spots and export restrictions on species known to commonly be ciguatoxic.

Management Guidelines

Management is:

An ongoing process that must evolve to meet the changing status and needs of a fishery

Good management requires:

A creative and interdisciplinary mix of mgmt measures well supported and understood by all stakeholders (govt, local fishing communities, traders and consumers)

Regular data (resource & fishery) collection and analysis

Review of management plans and procedures

Consideration of other related fisheries (shouldn't / can't manage in isolation)

Adaptive management needed to achieve:

Long-term, sustainable fishery

Minimise environmental impacts

Maximum return to country and citizens for their marine resources.

Management Steps

1. Establish a national LRFFT policy

- Precautionary approach
  - recognise uncertainty; avoid irreversible change;
  - future generations' needs

- Policy options:
  - not to proceed (impacts? conflicts? information? enforcement?)
  - moratorium (information; mgmt plan; enforcement)
  - Proceed with prudence (precautionary approach)

- Questions:
  - cost of mgmt vs. value of fishery - subsidised? can operator pay?
  - who benefits?
  - Alternatives?
  - objectives in establishing the fishery?

2. Assess the resource

- Identify areas where fishing will occur
- Target species:
  - "resource assessments"
  - current exploitation levels -- subsistence & commercial
- Spawning aggregation sites:
  - where? when? condition? usage?
- Ciguatera:
  - does it occur?
  - species? locations? seasonal?

3. Develop a management framework

- National level & Provincial/State level strategies
  - set specific and measurable objectives
- Strategies:
  - resolve resource ownership & user rights issues before licensing
  - begin with limited fishery, e.g. one operator per area
  - trials?
  - limited entry with specific time frame, review & evaluate
  - true co-management
- Prepare & implement mgmt plan with regulations & licensing conditions
- Determine *real costs* of mgmt:
  - effective mgmt may exceed income generated
  - long-term costs of over-exploitation or mismanagement

4. Ensure compliance and enforcement

- Capacity?
- Financial & other resources?
- Legal framework?
- Political will?
- Strategies:
  - use trained observers at all stages
  - require inspection of all shipments and clear from designated ports/airports
  - awareness raising -- understanding
- Run draft mgmt plan & regulations through the "*enforcement reality check*"

5. Monitor the fishery and the resources

- Regularly evaluate the fishery for:
  - compliance
  - benefits
  - prices paid; income received (fishers; companies; country/govt)
- Develop catch, export and resource monitoring programs
- Establish HK import information on shipments (survival; prices?)
- Collect, collate **AND** ***analyse and interpret*** the data *in a timely manner*

6. Review management policies, plans and regulations

- Adaptive management
  - Use results of data analysis & interpretation
- Review mgmt measures, policies & plans:
  - reality check against original objectives
- Regularly evaluate the fishery (resource & operators)
- Don't be afraid to change:
  - LRFFT operators are flexible and adapt to changing circumstances, so managers must be equally adaptive

Some Management Options/Tools

⇒ Enact area and seasonal closures
⇒ Place bans on exports based on species, size, or life stage
⇒ Protect spawning aggregation sites - area & time closures
⇒ Set up a limited entry fishery
⇒ Reserve fishing for local people/companies
⇒ Require fishermen training in acceptable catch and handling methods (best practices)
⇒ Monitor vessels using observers
⇒ Apply appropriate fees to cover management costs