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Prepared by: Laurence Slee
PINZ
Wellington, New Zealand

For Government of Palau
and Asian Development Bank

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Prepared by:

Steve Lindsay, Marine Resources Specialist

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Acronyms

AVA	Australian Volunteer Organisation
AESOP	Australian Executive Service Overseas Program
AusAID	Australian Agency of International Development
BED	Bureau of Economic Development
BMR	Bureau of Marine Resources
BOA	Bureau of Agriculture
CITES	Convention on International Trade in Endangered Species of Wild Fauna & Flora
CCRA	Code of Conduct for Responsible Aquaculture
EIA	Environment Impact Assessment
EIS	Environment Institutional Strengthening
EEZ	Exclusive Economic Zone
EQPB	Environmental Quality Protection Board
FAD	Fish Attracting Device
FAO	United Nations Food and Agriculture Organisation
FFA	Forum Fisheries Agency
FEIM	Facility for Economic and Infrastructure Management
FFA	Forum Fishing Agency
GOP	Government of Palau
ICES	International Commission for Exploitation of the Sea
JICA	Japanese International Cooperation Agency
JOCV	Japanese Overseas Cooperation Volunteers
KFC	Kuniyoshi Fishing Company
MMDC	Micronesia Mariculture Demonstration Centre
MOS	Ministry of State
MOJ	Ministry of Justice
MNRET	Ministry of Natural Resources, Environment and Tourism
NGO	nongovernment organization
NMDP	National Master Development Plan
NASDP	National Aquaculture Strategy and Development Plan
NTFMP	National Tuna Fisheries Management Plan
PACA	Palau Aquaculture Clam Association
PAN	Protected Areas Network
PCC	Palau Community College
PITI	Palau International Traders Incorporated
PMDC	Palau Mariculture Demonstration Centre
PMIC	Palau Marine Industries Corporation
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organisation
SCUBA	Self Contained Underwater Breathing Apparatus
SPC	Secretariat of the Pacific Community
SPREP	South Pacific Regional Environment Program
VMS	Vessel Monitoring System
kg	kilogram

Executive Summary

Report Scope

This report provides an assessment of the policies and strategies of the marine resource sector in Palau, identifying priority issues and key constraints to its sustainable development and suggesting actions for improvement. The assessment entailed the review of government development policies, plans, strategies, numerous consultant reports and extensive informal and formal consultations with stakeholders.

Stakeholders that were consulted included national and state government agencies, nongovernment organizations (NGO) and the private sector (Appendix 1 provides a list of the stakeholders consulted).

The recommendations identified for this sector focus on key development issues and proposed implementable actions that need to be addressed to improve policies that promote the sustainable development of the nation's offshore and inshore fisheries and aquaculture sectors.

This report is divided into two parts:

Action Plans

The first part focuses on the key issues and actions that need to be addressed by the government. The issues and action plans are set out in a summary matrix of action plans detailed below and also covered in more detail in Appendix 2.

Background Assessment

The second part provides a background assessment that presents and discusses key issues that have a direct impact on the long-term economic development of marine resources of the nation. Specific issues that are identified in the action plans are discussed in more detail.

The sector assessments are not designed to provide a comprehensive review of previous development plans, nor to critique all past and current work programs, but to identify priority development issues that need to be addressed in the short- to medium-term. The aquaculture sector report has been set out in some detail to address issues and interest raised during the stakeholder discussions. This sector is still in the early stages of making a sustainable and significant economic contribution to the nation but is considered to have excellent development potential.

Each sector is provided with a number of priority actions to be considered for implementation. These are summarized below.

Summary of Priority Actions

Sector Wide Actions	<ul style="list-style-type: none">• Complete and adopt the Comprehensive Fisheries Policy.• Complete and adopt New Fisheries Legislation.• Strengthen voluntary fisheries legislative compliance.• Increase enforcement and penalties to ensure compliance to fisheries legislation.• Strengthen the Bureau of Marine Resources' (BMR) role as a facilitator agency, increasing extension and training and interagency collaboration and partnership development for all sector programs.• Complete, adopt and implement a national Quarantine Strategy and Development Plan.• Develop and diversify fisheries and aquaculture commodities for domestic and international markets.• Re-establish a semi-autonomous or autonomous offshore fisheries entity to manage the offshore commercial industry.• The BMR to relinquish its offshore fisheries roles to the semi-autonomous or autonomous offshore fisheries entity and focus on inshore fisheries and aquaculture management and development.
Aquaculture Actions	<ul style="list-style-type: none">• Complete, adopt and implement the National Aquaculture Strategy and Development Plan (NASDP).• Develop, adopt and implement a Code of Conduct for Responsible Aquaculture for Palau (CCRA).• Incorporate the NASDP and code of conduct into fisheries legislation.• Facilitate the evaluation of new species through collaborating partnerships based on biology, environment and economic criteria.• Develop species-specific aquaculture management plans• Privatize the giant clam program including the Palau Mariculture Demonstration Centre (PMDC) and further support Palau Aquaculture Clam Association (PACA) and private sector companies in this endeavour.• Further develop the existing giant clam national law to include a ban on the domestic sale of wild clams.
Offshore Fisheries Actions	<ul style="list-style-type: none">• Implement the National Tuna Fisheries Management Plan (NTFMP).• Finalize tax reform and revenue collection policy in relation to fisheries.• Legalize the sale of by-catch to local markets.• Reassess the shark fin legislation and implement the "Shark Management Plan".• Develop and diversify fisheries products for domestic and international markets.• Improve data collection protocols and observer programs.• Establish the protocols for a sustainable sport fishing industry.
Inshore Fisheries Actions	<ul style="list-style-type: none">• Ensure the economic and environmental sustainability of inshore fisheries, with emphasis on sustainable management and monitoring.• Reduce resource conflict between user groups whilst providing for all users.• Increase public awareness and encourage voluntary compliance with regulations.• Continue to develop sustainable resource conservation and management areas and networks.• Continue to develop species-specific management plans including exploitation and conservation.• Enhance economic fisheries activities associated with the tourist sector (e.g. catch and release fishing).• Reassess the potential to reinstate inshore fisheries co-operatives.

I. Part One: Action Plans

- 1) In summary, it is necessary for the BMR to streamline its policies and strategies to reflect work programs that are realistically achievable within the constraints of its staff and budget resources. The BMR needs to focus on the management of resources and act as a facilitator for the development of these resources in cooperation with national and state government agencies, NGOs and private sector. To achieve these goals the BMR is required to be more active in its work, particularly in engaging with all stakeholders, and it should make a greater effort to withdraw from commercial activities and take action to facilitate more private sector involvement in the industry.
- 2) The marine resources of Palau can provide long-term economic development opportunities. However, compliance with national and state regulations is a priority issue that must be addressed to ensure success in terms of both economic and environmental sustainability. This compliance must be attained through voluntary actions and more effective formal enforcement measures.
- 3) In terms of prospects for income opportunities there appear to be good prospects associated with the tourist sector for fishers (e.g. sport fishing, crew on boats) and aquaculture.
- 4) Improved policies, regulations and public understanding of sustainable aquaculture need to be based on three interrelated and critical considerations:
 - the biology of the species;
 - the environmental and social issues; and
 - economic viability.
- 5) The action plans set out below identify key issues that need to be addressed to prioritise the functions and work programs of the BMR. The timely completion of these actions will provide a realistic framework for the future development of this sector. Funds and costing implications require further work to determine the budget and resource requirements. The action plans are not presented in any order of priority.

Action Plan Matrix

Action Strategy	Recommended Action	Funding and Costing Implications	Indicative Timing
<p>1. Improve Policy and Regulation</p>	<p>1. Finalize and implement the Nation's Comprehensive Fisheries Policy.</p> <p>The policy needs to be based on an ecosystem approach incorporating international standards to help ensure all resources are managed on a sustainable economic and environmental basis including:</p> <ul style="list-style-type: none"> • sustainable natural resource development; • a stronger and more useable institutional framework; • consolidation and enhancement of legislation; • improved stakeholder participation and equity sharing; and • suitable regulations to ensure compliance. <p>The BMR needs to further clarify its Roles and Responsibilities based on current and expected budgetary allocations and staffing and incorporate this information into the policy. The BMR needs to be the lead agency that champions the development and completion of this policy. Considerable stakeholder involvement is required and all drafts need to be circulated for comments before adopted.</p>	<p>A consultant needs to be contracted to finalize the policy.</p> <p>Funds and assistance from regional agencies (e.g. SPC, SPREP) and international agencies (e.g. FAO, UNDP, UNESCO) should be investigated.</p>	<p>Yr 1-2</p>
	<p>2. Finalize and implement a Comprehensive Fisheries Legislation.</p> <p>Ensure an updated single piece of fisheries legislation based on sound environmental and sustainable development principles is finalized, adopted and implemented. The legislation should streamline regulations and define the functions of the government for all aspects of the nation's fisheries and marine resources. Current legislation is located in a number of articles and acts within the national legislative system with interpretation complex and difficult.</p> <p>The single piece of legislation needs to be concise but incorporate all regulations associated with the sustainable development and management of the fisheries sector.</p> <p>It needs to cover:</p> <ul style="list-style-type: none"> • inshore and offshore fisheries; • aquaculture; • marine protected areas; • a semi autonomous or autonomous fishery entity to manage the offshore fishery (if this is 	<p>A consultant needs to be contracted to finalize the legislation.</p> <p>Funds and assistance from regional agencies (e.g. SPC, FFA) and international agencies (e.g. FAO) should be investigated.</p>	<p>Yr 1-2</p>

Action Strategy	Recommended Action	Funding and Costing Implications	Indicative Timing
	<p>considered appropriate);</p> <ul style="list-style-type: none"> • inshore fisheries cooperatives; • enforcement of regulations; and • quarantine issues. <p>The new legislation needs to provide the BMR with the power to regulate the development of fisheries and aquaculture in coordination with other government sectors to ensure marine resources are sustainably managed.</p> <p>The legislation should consider including:</p> <ul style="list-style-type: none"> • an amendment to the existing giant clam regulations to extend the ban on the international sale of all wild collected clam species to include domestic sales; • a Quarantine Strategy and Development Plan for all aquatic resources incorporating the aquaculture quarantine recommendations made in the draft NASDP. <p>The BMR needs to be the lead agency that champions the development and completion of this legislation. Considerable stakeholder involvement is required and all drafts need to be circulated for comments before being adopted. Both state and national legislation agencies need to develop the plan in agreement and ensure useful existing regulations are included.</p>		
	<p>3. Complete, Adopt and Implement the NASDP and CCRA .</p> <p>Finalize, adopt and implement the development polices and management issues detailed in the “National Aquaculture Strategy and Development Plan“ (NASDP). The adoption of this plan into legislation is essential to help ensure that the development of Aquaculture in Palau is economically and environmentally sustainable.</p> <p>Further development of the aquaculture industry should be carefully monitored until the document is finished and adopted by regulatory agencies and recommended protocols are implemented. The development of all aquaculture needs to be based on an ecological approach incorporating international best culture and management practices and requires the development of a separate National Code of Conduct for Responsible Aquaculture (CCRA).</p> <p>The NASDP needs to include:</p> <ul style="list-style-type: none"> ▪ aquaculture; ▪ marine protected areas; ▪ sustainable development protocols and regulations; ▪ aquaculture and species assessments protocols; 	<p>International funding assistance has been proposed and is understood to be available.</p> <p>Consultants will be required to assist with the finalization of the plan.</p>	<p>Yr 2-3</p>

Action Strategy	Recommended Action	Funding and Costing Implications	Indicative Timing
	<ul style="list-style-type: none"> ▪ technical manuals and culture practice protocols; ▪ species specific management plans; ▪ environment protocols; ▪ quarantine protocols and management plans; ▪ market opportunities; ▪ CCRA <p>The national Government, through the BMR and the Ministry of Resources and Development (MNRET), needs to finalize and adopt these documents into legislation and implement the recommendations.</p>		
	<p>4. Complete and Implement the Development Policies and Management Issues Detailed in the NTFMP.</p> <p>Finalize and implement the development policies and management issues detailed in the “National Tuna Fisheries Management Plan” (NTFMP). The adoption and implementation of all recommendations identified in this plan into legislation is essential for the sustainable environmental and economic development of the offshore fisheries resources of the nation.</p> <p>The NTFMP specifies the development and management policies for the nation’s offshore tuna fisheries. This includes the collection of fair revenues for the nation and the international standards of resource management that are to be followed.</p> <p>One of the major recommendations of the NTFMP that has not yet been implemented is the removal of the offshore fisheries roles and responsibilities from the BMR to an independent semi-autonomous or autonomous entity. This entity would assume all management responsibilities for the offshore commercial fisheries. Similar entities are managing the offshore fisheries in neighboring nations with success.</p> <p>The entity would need to manage the nation’s requirements for:</p> <ul style="list-style-type: none"> ▪ international treaties and agreements; ▪ fishing licenses; ▪ managing compliancy issues; ▪ collecting and managing revenues; ▪ collecting and managing the fisheries data (in partnership with the BMR and including national and regional observer programs and port sampling). 	<p>The independent entity responsible for offshore fisheries should be self funded by revenue derived from fishing licence fees and taxes generated by this industry.</p> <p>The collection and analysis of fisheries data and its funding should be the responsibility of the independent entity. The role of the BMR should be limited.</p>	Yr 2-3

Action Strategy	Recommended Action	Funding and Costing Implications	Indicative Timing
	<p>The development of this entity would allow the BMR to focus its resources and attention on the management and development of the nation's inshore resources including aquaculture. The management of these resources must be the central goal of the BMR.</p>		
	<p>5. Improve and Enforce Existing Fishing Regulations.</p> <p>Legislation and its implementation need to be improved to effectively address widespread non-compliance. Non-compliance issues need to be urgently and effectively addressed to ensure the credibility of regulations for economical and environmentally sustainable fisheries policies.</p> <p>There is an unwillingness of inshore subsistence, artisanal and commercial fishers and the general community to conform to regulations. There is also an almost complete disregard by the offshore fishing companies to conform to regulations.</p> <p>Non-compliance (e.g. underreporting and illegal fishing) issues have plagued the offshore tuna fisheries since its inception. Similarly, there are continuing small scale non-compliance infringements associated with the inshore fishery. These include fishing in protected areas, harvesting protected species and fishing in closed seasons. Illegal fishing remains a serious threat to the long-term sustainable management of these valuable resources and there is a large loss of government revenue from non-compliance with offshore tax requirements. Non-compliance issues need to be urgently and effectively addressed to ensure the credibility of regulations for economical and environmentally sustainable fisheries policies.</p> <p>Public awareness programs detailing regulations for the inshore fisheries need to be improved to encourage voluntary compliance through community support. However, strengthened enforcement of legislation and penalties for repeat offenders and commercial operations are also required.</p> <p>Voluntary compliance with regulation does not appear to be a viable option for the offshore commercial fishing fleets. Fish license suspension and closures should be used to ensure compliance.</p> <p>The BMR needs to facilitate and take a lead role to educate the fishing community on the nation's regulations and support regulatory agencies to reduce non-compliance issues.</p>	<p>Funds to manage offshore enforcement should be derived from government revenues from fishing licenses and from penalties for non-compliance. These funds should be managed by the proposed offshore autonomous fishing entity.</p> <p>Funds to manage inshore enforcement should be derived from a combination of national and state government funds and marine park entrance fees.</p> <p>The proposed Protected Areas Network (PAN) endowment fund should assist in financing inshore resource management.</p> <p>The development of additional "ranger" programs is recommended, incorporating a large component of public awareness and education, for inshore resources.</p>	<p>Yr 1-5 Continuous</p>
	<p>6. Re-assess the Shark Fisheries Management Plan and Finning Regulation.</p> <p>The government of Palau needs to reassess its current regulation banning the sale of sharks and</p>	<p>The removal of shark finning ban for sharks that are accidentally caught in the</p>	<p>Yr 1</p>

Action Strategy	Recommended Action	Funding and Costing Implications	Indicative Timing
	<p>their products accidentally caught during the normal fishing practices of the offshore fishing fleet. Currently all accidental sharks caught are required to be released dead or alive. This constitutes a waste of resources and is in conflict with the nation's fisheries policy for the sustainable use of marine resources. As long as the industry operates, sharks will be caught accidentally.</p> <p>Furthermore, the banning of shark finning prohibiting the legal revenue from this resource has encouraged fishing operations to land all of their catches at distant ports rather than in Palau. This is in breach of fishing agreements with Palau and leads to considerably lower tax revenues for the nation.</p> <p>Therefore, it is proposed that the government removes the ban on the sale of shark products from sharks that are accidentally caught by the offshore fishing community and allows the industry to utilize these products for commercial purposes. This will also lead to additional tax revenues for Palau.</p> <p>The nation urgently needs to adopt and implement the BMR comprehensive shark management plan that articulates the capture and subsequent sale of shark and its products through a carefully managed and monitored fishery. The current legal shark capture laws for Palauan fishers need to be an integral component of this plan. The proposed semi-autonomous or autonomous offshore fishing entity (if operated) would be the correct agency to manage the plan for the commercial off shore fisheries.</p> <p>The management plan needs to further develop and incorporate penalties and should consider whether the whole animal or parts of the animal need to be brought to port. The capture of pelagic shark species should be permissible, while the capture of reef associated species must not be allowed. The reef associated shark species currently provide an income to the nation through its tourist industry (as well as their ecological functions).</p> <p>All sharks caught must be reported and included in the fishing capture log sheets on each vessel. All laws and regulations associated with this offshore fishery must be strictly enforced.</p>	<p>course of the normal operations of offshore fishers is considered likely to help in generating more tax revenue from the offshore industry.</p>	
	<p>7. Re-assess the Domestic Sale of By-Catch from Commercial Offshore Fishing Industry.</p> <p>It is recommended that the current regulations that prohibit the sale of any fish caught by the commercial offshore long line fleet into the Palauan domestic market be reviewed. Amendments to the foreign fishing company license agreements to allow the controlled and legal sale of by-catch fish into the local market should be considered.</p> <p>Currently it is illegal to sell any product directly into the domestic market. However, it is estimated</p>	<p>Legalizing the sale of by-product catch would create income opportunities for business and raise the tax base.</p>	<p>Yr 1-2</p>

Action Strategy	Recommended Action	Funding and Costing Implications	Indicative Timing
	<p>that around 20-30 percent of the by-catch product is illegally sold into the domestic market which is being driven by high demand (citizen and tourist) for this product.</p> <p>The current provision to ban the domestic sale of fish caught by these companies was designed to provide a level of protection for local Palauan fisherman. This protection measure may have had merit, however the market demand for this product has increased considerably since the agreements were made and currently the local fishers are unable to meet the domestic demand.</p> <p>Legalizing the domestic sale will provide a government tax revenue base (currently no tax is paid because the sales are illegal) and produce legal opportunities for business to purchase the product. This will increase the nation's tax base and provide opportunities to diversify and add value products derived from these resources (e.g. smoked, dried product).</p>		
	<p>8. Improve Economic Return to Palau from the Offshore Fishing Industry.</p> <p>Undertake tax and fishing license reforms to help ensure a reasonable return from offshore fishing resources is realized for Palau. The revenues that Palau receives from the offshore fishing industry are considered to be small. There are proposals to increase taxes and license fees for this sector, that if realized would increase revenues significantly. However, more detailed consideration of the impact of proposed tax reforms is needed.</p> <p>The major taxes that specifically affect the industry include:</p> <ul style="list-style-type: none"> ▪ collecting annual license permit fee; ▪ foreign labour fee; ▪ foreign water vessel tax; ▪ a fuel excise tax; and ▪ fish export tax. <p>Table 1 in offshore (V) section G tax reform of the main report provides a detailed summary of the proposed tax reforms and the recommended changes that directly affect this industry.</p> <p>In summary, the task force recommendations on the foreign water vessel tax and a fuel excise tax are supported as interim measures until more comprehensive reforms can be introduced. In addition, it is suggested that the following changes are made to the proposed fish export tax: USD1.00 per kilogram (kg) for "A grade", USD0.50 per kg for exported tuna loins and USD 0.25 for all other products (including smoked, dried).</p>	<p>More resources are needed to enforce existing tax requirements. Alternatively license fees could replace taxation as they are easier to collect.</p>	<p>Yr 1-5 Continuous</p>

Action Strategy	Recommended Action	Funding and Costing Implications	Indicative Timing
	<p>The recommended increases for the annual license permit fee proposed by the tax force seem to be excessive and well above regional averages. However, the weak enforcement and extensive non-compliance issues that have characterized the offshore fishing industry mean that license fees may be a better means of securing a reasonable return for Palau from this fishery. It is recommended that the nature and size of an appropriate license fee needs further investigation.</p>		
<p>2. Institutional Development</p>	<p>9. Develop and Strengthen Fisheries and Resource Management Capacity.</p> <p>Strengthen the capacity of the BMR to collect, collate and analyze fisheries data to provide scientifically sound information to develop species-specific and ecosystems management plans and protocols for the nation's marine resources and fisheries.</p> <p>Information collected should include the systematic and regular recording of data on fish landings for subsistence, artisanal and commercial operations and include regular resource assessments and monitoring programs for all inshore resources. All species-specific and resource management plans need to be supported by legislation and recommendations implemented and enforced.</p> <p>The BMR should act as a facilitator to assist national and state government agencies, NGOs, community groups and the private sector to advise on the sustainable development and management of inshore resources, specific research programs and aquaculture. In addition, the BMR will need to facilitate and foster further cooperation among government agencies, NGOs and research agencies to define roles and ensure duplication of effort is minimized.</p> <p>The BMR, in cooperation with the recommended offshore fisheries management entity, needs to improve the mandatory collection of offshore fish data and provide this data to the regional agencies for the analysis and management of this fishery. This includes correct completion of fish log books, port sampling and onboard observers programs. The BMR should take an advisory role and assist this entity through mutual assistance programs.</p> <p>The BMR staff will require continued capacity building in all techniques associated with resource management. Past partnerships with regional agencies (e.g. SPC) should be continued to assist in undertaking these tasks. Continued community awareness programs need to be undertaken to increase community understanding and compliance. This could be provided through the BMR extension programs.</p>	<p>Funds to collect data and manage the inshore resources and aquaculture should be derived from a combination of national and state government funds, agency grants, and marine park entrance fees. The proposed PAN endowment fund should assist in financing inshore resource management.</p> <p>Funds to manage the offshore data collection should be derived from revenues from fishing licenses and from penalties for non-compliance. This is proposed to be managed by the autonomous offshore fishery entity.</p> <p>Funding is required to upgrade existing computer hardware and software to enable the data to be assessed.</p> <p>Increased cooperation and coordination between all entities working in this area is</p>	<p>Yr 1-5 Continuous</p>

Action Strategy	Recommended Action	Funding and Costing Implications	Indicative Timing
		essential for the development of this action. Cost sharing and information sharing are high priorities.	
	<p>10. Develop and Improve Fisheries and Aquaculture Extension Services and Information Exchange.</p> <p>Strengthen the capacity of the BMR to improve the delivery and efficiency of sound scientific extension and information exchange programs for aquaculture, fisheries and resource management. The programs should be delivered to national and state government agencies, NGOs, communities and the private sector. The goals of the extension programs are to develop and create through information exchange a well informed industry based on sustainable environmental and economic principles.</p> <p>Through the BMR, the extension and information exchange programs need to be developed and delivered in a coordinated manner and include modules for specific activities (e.g. fisheries management, conservation area management, aquaculture). The extension program needs to develop additional species-specific training programs, especially for the aquaculture sector which should include; information fact sheets, production manuals and the delivery of training courses suitable for Palau. The “aquaculture package” developed by BMR is a good example.</p> <p>The BMR needs to act as the facilitating agency to develop and deliver programs that address industry needs and support the development of farmers/fishers associations (e.g. PACA) and cooperatives. Increased cooperation and coordination between all agencies is required, with clearly defined roles and responsibilities to reduce duplication of effort. These programs should fully integrate educational agencies (PCC), NGOs and community groups in the development and delivery of these programs.</p> <p>The staff from the BMR will require continued capacity building in all techniques associated with extension and information exchange programs and the information to ensure knowledge and skills are transferred and delivered to stakeholders. Previous partnerships with regional agencies (e.g. SPC, FAO) should be continued to assist in undertaking these tasks. Information delivered should be based on regional and international best practices and further linkages with these agencies should be developed to acquire expertise to attain the project goals).</p>	<p>Government funds should be used to develop and manage these programs. Extension services should be a core function of the BMR and funded accordingly.</p> <p>Funding assistance from international donor agencies is needed to support specific projects.</p>	Yr 1-5 Continuous

Action Strategy	Recommended Action	Funding and Costing Implications	Indicative Timing
<p>3. Increase production and sustainable income opportunities</p>	<p>11. Aquaculture Development and Diversification.</p> <p>Further develop and diversify aquaculture production through research and extension to ensure a sustainable industry. All aquaculture projects need to be developed in accordance with the recommendations of the NASDP and be based on three interrelated and important considerations:</p> <ul style="list-style-type: none"> ▪ The biology of the species; ▪ The environmental and social issues; and ▪ Economic viability. <p>The aquaculture industry is still in its infancy and requires continued research, extension and public sector support before it can reach its goals. There have been several successes (e.g. coral cultivation) and several species appear to show promising results (e.g. giant clams, mangrove crabs, milkfish, grouper). The BMR should regulate the development of the industry through the NASDP, provide extension and information services (outlined above) and promote the private sector development of economic and environmentally viable species.</p> <p>The BMR will need to increase community and private sector awareness of the opportunities and constraints of aquaculture and facilitate access to supporting funds through small business development financing options.</p> <p>The BMR needs to facilitate the development of the aquaculture industry in cooperation with the nation's research agencies to provide sound, environmentally safe aquaculture production information. This information then needs to be adopted and developed by the private sector. The BMR needs to remove itself from the implementation stage of commercial aquaculture and focus on the facilitation of research and development activities, including value adding programs for aquacultured commodities.</p> <p>The BMR needs to act as the facilitating agency to develop and deliver programs that address industry needs and support the development of farmers/fishers associations (e.g. PACA) and cooperatives. Increased cooperation and coordination between all agencies is required, with clearly defined roles and responsibilities to reduce duplication of effort. These programs should fully integrate educational agencies (PCC), NGOs and community groups in the development and delivery of these programs.</p> <p>The staff from the BMR will require continued capacity building in all techniques associated with</p>	<p>The extension and research programs of the BMR could be funded by a combination of external grants and internal funding.</p> <p>Increased program coordination and cost sharing between agencies is required to develop the industry.</p> <p>Commercialization of potential species should be left to the private sector.</p>	<p>Yr 1-5 Continuous</p>

Action Strategy	Recommended Action	Funding and Costing Implications	Indicative Timing
	<p>aquaculture (marine, brackish and freshwater). Past partnership with regional agencies (e.g. SPC) and bilateral donors (e.g. AusAID, JICA) and international agencies (e.g. FAO) should be continued to assist in the development and diversification of aquaculture species based on internationally accepted codes of conduct and best practices.</p>		
	<p>12. Privatization of Commercially Viable Aquaculture Commodities.</p> <p>The Palau Mariculture Demonstration Center (PMDC) has successfully cultured all endemic species of giant clams for over twenty years and can produce all species on a semi-commercial production basis. The production of these animals is well documented and international (aquarium, adductor muscle – food and ornamental) and domestic (food and ornamental) markets are well established with all techniques fully transferable. Similarly, PMDC has been involved with a wide range of research programs that have resulted in the successful cultivation of a number of marine, brackish and freshwater species.</p> <p>The production of giant clams at the PMDC needs to be urgently transferred to the commercial private sector. The BMR must reduce its roles and responsibility for this industry and focus on other emerging aquaculture research and extension programs. Nevertheless, PMDC could consider culturing small numbers of giant clams to continue with reseeded programs. To achieve this a two step approach is recommended:</p> <ul style="list-style-type: none"> ▪ Step One - The PMDC should continue to culture clams through the hatchery to provide the juvenile clam to the Palau Aquaculture Calm Association (PACA) which will then need to take over the responsibility to distribute clams to the farmers who will then on-grow them to market size. The PACA needs to represent the clam farmers and market the product through commercial buyers. This should be implemented immediately. The BMR must relinquish its control over the clams once they are provided to the PACA. ▪ Step Two - The hatchery production of giant clams should be taken over by the private sector, so that it is responsible for both production and distribution of clams. The private sector would either lease the PMDC or develop a new facility. This should be undertaken as soon as possible. Currently one company has expressed an interest. However, the exact form of privatization and the role of PACA in this second step are issues that need further investigation if full privatization is to be successful. <p>The BMR will still need to remain involved in the clam program to ensure information exchange on all aspects of giant clam culture technology is effectively transferred to the private sector through extension programs. However, in time this extension role should be undertaken by PACA. Similarly, the BMR should remain the government agency responsible for the issuing of</p>	<p>Current government funding will need to continue until the PACA or the private sector takes over the role of juvenile clam production and sale. Current government grant allocations that provide clams and equipment for free will need to terminate in the short- to medium-term. PACA would need to be self funding, acquiring operational funds from the income generated from clam sales.</p> <p>The BMR should continue to be responsible for providing permits and extension services.</p> <p>The privatization of the clam industry should mean that MNRET resources, currently involved in production and distribution could be reallocated to strengthen other work program areas.</p>	<p>Yr 1</p>

Action Strategy	Recommended Action	Funding and Costing Implications	Indicative Timing
	<p>export permits.</p> <p>Issues associated with perceived conflicts of interest between the PMDC staff and the sale of clams, and the unwillingness of the BMR and government to relinquish their involvement in the production and sale of giant clams must change. The prospects for the commercial success of giant clams appear to be high, and full privatization of the industry should be a priority. Current theft of cultured clams from farms needs to be urgently addressed and stopped.</p>		
	<p>13. Develop and Diversify Inshore Fisheries Economic Development Opportunities.</p> <p>Develop and diversify the BMR's programs for the economic development of subsistence, artisanal and commercial inshore fisheries. The development of a sustainable fisheries industry must be based on environment and economic best practices incorporating specific management and conservation programs.</p> <p>The BMR should further facilitate the development of the industry through partnerships with research agencies, state governments, communities, NGOs and private sector. The provision of small business development advice and access to funds (grants, loans) should be further developed.</p> <p>There is over-fishing of inshore fisheries and there needs to be improved compliance with legislation.</p> <p>All existing fisheries and development opportunities need to be developed through research, extension and training targeting the domestic (local and tourist) and international markets. All fishers need to be active partners in the continued development and compliance of protected areas and management systems.</p> <p>The BMR needs to increase extension services, information exchange and research programs on all aspects of inshore fishing and greatly increase the bureau collection of fisheries data for management purposes and develop species specific management plans (as detailed above in strategy 5).</p> <p>Enforcement needs to be improved through community education and awareness programs to ensure voluntary compliance with regulations. There should be stronger formal enforcement and penalties for repeat offenders and commercial operators.</p> <p>Improved livelihood opportunities for inshore subsistence, artisanal and commercial fishers</p>	<p>Extension, research and information exchange programs delivered by the BMR could be funded by a core bureau funding and supplemented by external grants and marine park entrance fees. The proposed PAN endowment fund has been proposed to assist.</p> <p>Increase program coordination and cost sharing between agencies, state governments, community and the private sector would help provide resources.</p> <p>Enforcement and education programs should be funded by core government funds, revenues from non-compliance penalties and grants.</p>	<p>Yr 1-5 Continuous</p>

Action Strategy	Recommended Action	Funding and Costing Implications	Indicative Timing
	<p>include:</p> <ul style="list-style-type: none"> ▪ Action 14. Improving fish quality through increased product handling and processing resulting in improved economic returns per fish; ▪ Action 15. Promoting inshore fishers to shift fishing pressure from inshore resources to target pelagic offshore fish resources through the use of FADs. Replacing inshore fish demands with offshore species resulting in less fishing pressure on reef fish. ▪ Action 16. Develop sports fishing both inshore (e.g. bone fish) and offshore (e.g. marlin and sailfish) using tag and release. ▪ Action 17. Livelihood change. Stop fishing and gain employment in the tourist sector (boat captains, tour guides) ▪ Action 18. The government should consider the development of fishing cooperatives to assist in the sustainable development of these fisheries. These would need to be self funded from contributions of members. 		

II. Part Two: Background Assessments

A. OVERVIEW

- 6) Marine resources are an extremely important component of the nation's social and economic development. The medium- to long-term development strategies for this sector as detailed in the 1996 National Master Development Plan (NMDP) remain relevant. In summary the specific objectives and strategies include:
 - Sustainable economic development of the industry;
 - Increased participation of nationals in all sectors (offshore, inshore and aquaculture);
 - Providing an enabling environment for sustainable development; and
 - Managing and protecting the resources for all users.
- 7) The marine sector includes commercial, artisanal and subsistence activities which can be broadly divided into two major components; offshore and inshore (includes aquaculture) fisheries. The Bureau of Marine Resources (BMR) has the task of implementing and managing an efficient framework for the long-term economic and environmentally sustainable development of fisheries resources.
- 8) The policies, regulations and development plans associated with this sector over the past decade are in general, well founded and provide a good basis for the sustainable development and management of the nation's marine resources. More recent assessments and evaluations have provided clear and useful development and management strategies and policies that articulate the direction and support required to attain the nation's aspirations for this sector.
- 9) However, the roles and responsibilities of the BMR are ambitious particularly in light of existing budget allocations and staffing levels. These constraints have hindered the development of this sector and are expected to remain problematic. Senior management leadership and professional guidance within the agency are limited and need to be improved. Professional development of staff skills, continued education and leadership skills are needed.
- 10) The BMR needs to reassess and adjust its roles and responsibilities to focus on priority resource management issues to ensure sustainable development. The sustainable management of the nation's marine resources should be the priority role of the BMR. The agency needs to further develop its function as a facilitator, and reduce its involvement in commercial production. This includes the continued efforts to further improve linkages and synergies with other national government agencies, state governments, educational institutions, nongovernment agencies (NGO) and the private sector.
- 11) The further development and streamlining of legal and institutional policies and processes, as highlighted in this report, will also provide a more useable framework that will facilitate support of the nation's public agencies whilst encouraging private sector partnerships (local and foreign) and investment.

III. Marine Resource Institutional and Policy Issues

A. Roles, Responsibilities and Constraints

- 12) The BMR's mission statement is: "to provide support and a favourable environment for the sustainable use of marine resources of Palau by the subsistence, commercial, mariculture and recreational fisheries sectors for the benefit of the people of Palau". The mission is guided by the nation's Marine Protection Act 1994, Executive Order number 116 and 203, the 1996 NMDP,

the Economic Development Plan, Palau National Congress 27 and a number of international agreements and treaties.

- 13) The BMR falls under the direction and management of the Ministry of Resources and Development (MNRET) which directly reports to the Office of the President. The arrangement and position of the BMR within the organisational structure of the executive branch of the Palau Government are suitable. The bureau's work program covers both offshore and inshore resources and is currently divided in four branches namely:
 - (1) Fisheries Development;
 - (2) Fisheries Management;
 - (3) Conservation and Protected Areas; and
 - (4) Aquaculture.
- 14) Each branch is assigned a number of program areas. In general, these program areas and the bureau's functions are realistic for the inshore and mariculture sections and should remain core functions. However, program areas that are associated with the offshore commercial fishery sector need to be urgently reassessed. It is recommended that the BMR gives priority to relinquishing its management role of the commercial offshore fishing industry to an independent entity. This is discussed further below.
- 15) The current budgetary and staffing constraints are expected to remain a hindrance to the successful delivery of BMR projects. These issues are not restricted only to this bureau. Additional budget allocations for staff and logistical requirements would assist in addressing these current short comings however it is unrealistic to expect that the national government will be able to provide significant additional funds. Nor is it reasonable to expect supplementary funds from bilateral or multilateral donors to cover government budget shortfalls for operational functions. These donors however, should be used to provide specific program funds. Efforts should be made to encourage staff to remain associated with the government employment, rather than seeking alternative employment with the NGO communities. Intellectual and staff retention has been a hindrance to the productivity of the BMR in the past.
- 16) Stakeholders expressed concerns about the capabilities of the BMR to effectively delivery its roles and responsibilities on behalf of the nation. There appears to be some justification for these concerns, as senior management leadership and professional guidance within the agency needs to be improved. However, the expectations of stakeholders appear to be unrealistic given existing budget allocations and staffing levels. Nevertheless, there have been numerous issues over the past two decades that have reduced the support and confidence of government and private sector stakeholders in the BMR. In particular it is suggested that the BMR needs to redefine its roles, functions and mode of operation to minimize perceived conflicts of interest and also ensure transparency of its work programs where there are potential conflicts.
- 17) Equally important, the BMR must be more proactive with stakeholders and be seen as a facilitator that:
 - actively engages stakeholders;
 - fosters public private sector partnerships;
 - improves public awareness;
 - provides accessible and useful advice; and
 - actively solicits and addresses stakeholder concerns associated with the management and development of the marine resources.

B. Actions Required

- 18) It is therefore recommended that the BMR should re-evaluate its current roles, responsibilities and programs to streamline current activities and focus on specific areas that are more appropriate for a government or public function. Prioritizing and streamlining the bureau's functions including the withdrawal of BMR's involvement in a number of commercial programs is expected to improve performance by reallocating funds and staff. Relinquishing the BMR responsibility of managing the offshore fisheries to an autonomous or semi-autonomous entity specifically empowered to manage this fishery is recommended as a priority.
- 19) The BMR responsibility to manage and develop Seabed and Mineral Resources under the fisheries development branch clearly falls outside the goals of the bureau and its staff expertise. Due to the complex nature of this program (e.g. international treaty obligations, continental shelf claims) it is recommended that a specific assignment to the President's Office be developed with direct linkages to the nation's diplomatic office and be developed in association with deep sea oil and mineral prospecting programs.
- 20) Furthermore, the BMR needs to take on a more proactive role in divesting itself of programs and activities that should be managed and developed by the private sector. Several recommended actions are identified within this report. These include the short-term withdrawal of a number of current giant clam activities of the BMR to the PACA, and to the private sector. Options for these recommendations are presented below.

C. Fisheries Policies

1. Policy Issues

- 21) The development of a comprehensive fisheries policy clearly defining the roles and responsibilities of the BMR is urgently required.
- 22) Policies and legislation associated with fisheries and the marine resource sector of Palau have undergone a progression of amendments and changes since their inception during the former trust territory times. Each amendment articulated the government's stance at the time, driven mainly by current issues and in most cases focusing on economic development. This trend has continued over the past several decades, however, considerations for resource management and environmental protection have been progressively incorporated into the policy framework. The past decade has witnessed considerable change in the fisheries policy of the nation to reflect the global initiative for sustainable development.
- 23) To further articulate fisheries policy to reflect these issues, the Palauan government undertook a review of the nation's policy to develop a "comprehensive fisheries policy" (Kuemlangan, 2004) that would be based on an ecosystem approach, incorporating regional and international codes of conduct for responsible fisheries and further delineating the roles and responsibilities of the nation's agencies.
- 24) The nation is committed to developing a policy that provides for the sustainable use of its marine resources whilst ensuring the resources are managed and protected. These policies are fully supported and are essential for the long term economic development of the nation. Key issues that were highlighted from the review included: (Kuemlangan, 2004):
 - Fisheries development and management should be founded on a policy of sustainable development including conservation;

- There is a need for a strong institutional framework for the development and management of the fisheries sector, including the preference for an authority type management institution for the offshore commercial fisheries;
 - There is a need to consolidate and enhance the fisheries legal framework into a single piece of legislation;
 - There is need to increase stakeholder participation (particularly for state governments) in the management of fisheries; and
 - Sharing of equity realized from fishing activities and conservation program.
- 25) These development issues have been articulated through a number of recent and ongoing studies. These include, but are not limited to:
- National Tuna Fisheries Plan;
 - Draft Fisheries Legislation;
 - Draft National Aquaculture Strategy and Development Plan; and
 - Country Environmental Analysis.
- 26) These reports provide sound policy advice to achieve the nation's sustainable fisheries objectives whilst providing a framework for sustainable management. Unfortunately the adoption and implementation of these policies has yet to be realized. Therefore there is an urgent need to finalize the policy statements, incorporate this information into national and state legislation and implement programs. The implementation of these policies must be a priority and be fully supported with suitable funds and staff to deliver the desired outcomes.
- 27) Continued policy refinement and the implementation and subsequent enforcement of these principles are paramount for the long term development of this industry. Key actions required are discussed below or in the relevant sector in this report.

2. Fisheries Legislation

- 28) The main issues with respect to the fisheries regulations include the:
- development of a single concise piece of legislation;
 - consideration for a semi autonomous or autonomous entity to manage the offshore fisheries;
 - consideration for fish cooperatives for the domestic fishery;
 - increased enforcement and voluntary compliance to legislation; and
 - development and implementation of a nationwide quarantine strategy and development plan.
- 29) The adoption in principle of the draft fisheries legislation as detailed in Kuemlangan (2004) is endorsed. The proposed legislation provides a comprehensive revision and consolidation of the current legal framework into a single piece of legislation. The finalization of this process will require considerable time and a concerted combined effort from national and state regulatory agencies. Continued stakeholder discussions are required to further articulate and clarify the individual legislation articles. Care must be taken to ensure all changes are relevant to Palau and to ensure positive articles of the current legislation are included.
- 30) Regulations for all offshore, inshore and associated commercial, artisanal and subsistence fishing and aquaculture activities as detailed in Kuemlangan (2004) should be directly incorporated into the legislation and be based on the nation's current fisheries management and conservation plans. The inclusion of the nation's obligations and commitment to international treaties and conventions must be clearly incorporated. Similarly, provisions under this draft legislation to strengthen the institutional framework for fisheries management and the enforcement of these provisions is fully supported and needs to be applied in a consistent and

equitable manner. The BMR needs to take a lead role to encourage voluntary compliance with the legislation through increased emphasis on public education and awareness programs.

- 31) Current legislation empowering the BMR with the responsibility for all fisheries management and development functions (inshore, offshore and aquaculture) should be reassessed to determine the best government structure to manage this sector. Current staffing and budgetary allocations of the BMR have provided inadequate resources that have substantially reduced the agency's efficiencies. Redefining the BMR mandate in an appropriate manner including improved management protocols will provide the ability to focus on specific resource sectors and achieve meaningful results.

3. Independent Management of the Offshore Commercial Fisheries

- 32) The development of a semi-autonomous or autonomous fishery management entity that is responsible for the management of the offshore commercial fishery is recommended. The provision made within the draft fisheries legislation outlines the role and responsibility of this entity. Clear articulation of management powers, functions and staffing will need to be developed. The rationale to develop this entity is documented in Kuemlangan, (2004 pp 5-6) which is adopted from the National Tuna Fisheries Management Plan (refer to section 4.0 of this report). The development of this entity would allow the BMR to focus on managing and facilitating the development of the nation's inshore and aquaculture resources.

4. Inshore Fishery Cooperatives

- 33) The redevelopment of a number of inshore fishing cooperatives should be assessed. Such cooperatives if managed appropriately could provide a reliable service to the local fisherman by providing a mechanism to improve fish quality, quantity and provide a consistent supply of fish to the public. Cooperatives can be very important in terms of marketing to final buyers, the distribution of products, quality control and ensuring commercially viable prices. In addition, these cooperatives can be designed to play an integral component of the BMR inshore fisheries monitoring program by collecting fish landing data (e.g. species, quantity) and being an active participant in promoting public awareness and enforcement of the nation's regulations. Both functions will greatly assist the BMR to achieve resource management goals. The cooperatives should operate directly outside government funds utilizing fees derived from members to cover operational costs.

5. Enforcement

- 34) Legislation and its implementation need to be improved to address the non-compliance of the nation's fishers. Non-compliance issues have plagued the offshore tuna fisheries since its inception and remain a serious threat to the long-term sustainable management of these resources and securing legal revenues from this fishery. Current legislation and fishing licence agreements associated with this fishery are clearly identified. But in certain sectors there is blatant disregard for compliance. Voluntary compliance of regulations within this industry appears to be unattainable and therefore legislation and enforcement capacity need to be strengthened to provide harsher penalties, especially for repeat offenders. Licence suspensions and terminations should be considered as a mandatory penalty for these offences.
- 35) Similarly, there is continuing, widespread small-scale non-compliance infringements associated with the inshore fishery. Increased public awareness programs need to be undertaken to encourage voluntary compliance through community support. Enforcement of this legislation through on the ground community assistance should be increased and current penalties appear

to be fair for minor infringements. However, penalties should be substantially increased for repeat offenders. Infringements associated with the nation's protected areas and specific species management plans need to be stopped to ensure the long term management goals of these resources are attained.

6. Quarantine Issues

- 36) The performance of government agencies in assessing and managing quarantine risks associated with nation's fisheries (inshore and offshore) and aquaculture (marine, brackish and freshwater) activities needs to be urgently improved. Inadequacies in these sectors have the potential of inadvertently introducing a range of invasive marine species and pathogens that could have major detrimental effects on the nation's biodiversity, fisheries development prospects and food security.
- 37) The Bureau of Agriculture (BOA) is the lead agency responsible for the quarantine services within the nation. A nationwide quarantine strategy and development plan including detailed quarantine procedures should be completed and incorporated into legislation and actions implemented. Improved importation regulations for live organisms and effective enforcement will greatly reduce potential risks. The draft National Aquaculture Strategy and Development Plan (NASDP) incorporates a strategy to address quarantine issues associated with this industry and should be adopted. Enhanced assessment of vessel movements and inspections of ship hulls, bilge and ballast (if applicable) should become a standard protocol for the quarantine section.
- 38) The development and provisioning of a quarantine laboratory capable of testing for marine, freshwater and terrestrial invasive pests and pathogens is required. Professional staff capacity building and training are needed. Consideration for upgrading current government laboratories (e.g. Environmental Quality Protection Board - EQPB water testing laboratory, health services) and linkages to professional testing laboratories outside the nation should be investigated. Outside funding and technical expertise will be required to develop this service.

IV. Aquaculture

A. Priority Actions

- 39) The most important actions required to be addressed by the BMR to contribute to sustainable development of the aquaculture industry within the next 1-3 years include:
 - Complete and adopt the NASDP;
 - Develop and adopt a "Code of Conduct for Responsible Aquaculture" for Palau;
 - Incorporate the NASDP and code of conduct into the new fisheries legislation;
 - Implement and complete the NASDP programs including public awareness;
 - Increase the BMR role as a facilitator in the development of sustainable aquaculture by improving collaboration with government agencies and private-sector partnerships;
 - Facilitate the evaluation of new species through collaborating partnerships based on the principles of biology, environment and economic grounds;
 - Develop species-specific aquaculture management plans;
 - Increase technical training and extension services to community and private sector;
 - Privatize the giant clam program including the PMDC and further support PACA and private sector companies in this endeavour; and
 - Further develop the existing giant clam national law to include a ban on the domestic sale of wild clams.

- 40) These priority actions are described below along with a number of recommendations detailing issues to further articulate the role of the BMR based on current staffing requirements and budget allocations.

B. Background

- 41) Aquaculture has been promoted by the Palauan government to be an important national development sector, and an alternative livelihood and income generating opportunity for the nation. The development rationale that has stimulated the government's interest in this industry is a direct result of the increasing domestic (local and tourist) and international demand for seafood and the potential to reduce current fishing pressure on the natural inshore fish stocks.
- 42) The industry is in its infancy despite the financial and legislative support that has been provided to the sector for the past two decades (e.g. for giant clams). The industry has been led by the public sector supported by a range of government and donor funds. These programs have focussed on the biological issues associated with the culture of these commodities. More recently the commercialization of these commodities in association with the private sector has been addressed.
- 43) Through stakeholder discussions there appears to be a perception that the successful culture of an aquaculture organism directly leads to a commercially successful industry. However, this is clearly not the case because of the need to find buyers and realise sufficient sustainable revenues. There is also a perception that the production of organisms from aquaculture activities will play a lead role in assisting the nation to conserve and manage its natural resources through reseeded programs. However, this perception is not well founded because individual growers will not have incentives to stock a common resource.
- 44) Reef reseeded aquacultured products should not replace sound environmental based marine management protocols to maintained healthy natural stock populations.
- 45) To date the industry has had varying commercial success. Coral culture (hard and soft) has provided sustained economic benefits through the successful development of two Palauan based commercial aquarium companies whilst several other species are considered to have similarly good commercial prospects in the short- to medium-term (e.g. giant clams, mangrove crabs, milkfish, grouper, rabbit fish).

C. Development Needs and Principles

- 46) The successful and sustainable development of this industry faces many challenges over the next decade. It will require continued financial and technical support from the public and private sectors before the aspirations of this industry are attained.
- 47) The industry requires scientifically sound and applicable research that is taken up and developed by the private sector. These development requirements need to be supported and managed by the BMR in collaboration with all stakeholders. Past aquaculture projects developed solely on the biological attributes of a species must be phased out and replaced with an integrated approach.
- 48) The development of an aquaculture industry in Palau must be driven by three key principles:
- Biological and culture feasibility of each species;
 - Environmental and social implications; and
 - Economical viability.

- 49) The roles of the government and the private sector in applying these principles need to be clarified and supported by appropriate legislation and government functions.
- 50) The Aquaculture and Mariculture branch of the BMR is driven by three goals:
- To assist the development of the private sector aquaculture/farming of marine species and other viable aquaculture species;
 - To increase the wild stocks of endangered or economically important marine species; and
 - To train community in the arts of mariculture/aquaculture and to develop techniques for the culture of marine species of economic importance, or of importance for conservation.
- 51) These three goals reflect the three key developing principles and remain relevant for the future development of this industry. However, the BMR needs to limit its role as a project implementing agency and focus on supporting aquaculture development through research, training, extension and management.
- 52) Improved linkages and synergies between stakeholders, with special emphasis on the BMR acting as a facilitator to promote collaboration in relation to research and extension and fostering public-private sector relationships, are essential.

D. Policy and Strategy Issues

- 53) Government policy, legislation and development strategies must clearly reflect these principles, while providing an enabling environment that offers a realistic framework to develop an environmentally sustainable and commercially successful aquaculture industry.
- 54) The current national government policies and strategies do not adequately address these issues. However, the issues are currently under development through the working document titled "The National Aquaculture Strategy and Development Plan" (NASDP). This plan is currently at a draft stage and the highest priority should be given for its completion.
- 55) The draft NASDP provides a comprehensive account of the issues facing this industry and clearly articulates government requirements to provide a sound policy to develop and manage the industry. The central themes of this document are fully supported and endorsed by this author. These include:
- National Strategy;
 - Improving existing operations;
 - Supporting sustainable aquaculture (technical manuals, hatchery trials, and species stock assessments);
 - Environmental Assessment Policies (EIA, EIS) and national framework;
 - Environmental management (monitoring, assessments, and a number of guidelines to management and monitor all aquaculture projects);
 - Aquaculture zoning;
 - Aquatic animal health management including risk assessments and quarantine protocols; and
 - Human capacity building and training.
- 56) The policies and specific strategies identified in the NASDP need to be further clarified by the national law makers and incorporated into the nation's legislation under the proposed new fisheries legislation package (refer section 4.3). The inclusion of the aquaculture components needs to be amenable to state regulations. Regulations need to be robust and provide a clear process that allows the controlled development of the industry whilst incorporating measures

that maintain environmental and ecological functions. Provisioning for suitable enforcement protocols and penalties for infringements needs to be considered.

- 57) Appendix 3 provides a summary list of current issues and concerns that need to be addressed to ensure the long-term sustainability of the aquaculture sector within the nation. The majority of these concerns are currently being addressed by the BMR through the NASDP. Additional funds will be required to finalize this document and implement the recommended policies and strategies. Stakeholder endorsement and participation must be an integral component of the development of this document.
- 58) For the long-term, sustainable development of the Palauan aquaculture industry, the government of Palau should develop and incorporate into the NASDP a “Code of Conduct for Responsible Aquaculture” (CCRA). This code needs to be mentored by the BMR and developed through extensive government, community and private sector consultation. The code should incorporate international best practices identified in the FAO Code of Conduct of Responsible Fisheries (Articles 6, 9 and 12) and the International Commission for Exploitation of the Sea (ICES) code of practice on the introduction and transfer of marine organism.
- 59) Additional funds will be required to prepare the NASDP and the CCRA documents and implement the recommended policies and strategies. The BMR should champion this cause to secure funds through government channels with assistance from regional agencies, bilateral and multilateral donors.
- 60) The NASDP report recommendations associated with existing environmental policies, protocols and management systems directly associated with the development of aquaculture need to be expanded to provide a sound framework to foster the sustainable development and maturity of the industry. These environmental guidelines (e.g. environmental assessment, monitoring and management for aquaculture projects) need to be further articulated into Palau’s environmental regulations and protocols. Extensive public awareness programs will be required to ensure the proposed policies and regulations are understood and supported by all stakeholders. Additional environmental policy and legislative recommendations can be found in chapter 2 of this report.

E. Awareness and Education

- 61) The development of the “Aquaculture Information Package” by the BMR provides a step- by-step approach to assist the development of an aquaculture venture and clearly identifies the development issues. The continued development and implementation of these types of community assistance packages will continue to have a direct and tangible positive influence on the development of this industry. Government funded training and extension services provided through the BMR that provide the skills and knowledge to initiate the development of new aquaculture opportunities should be continued. Further expansion of these services in conjunction with institutions of learning (e.g. Palau Community College, PCC) and NGOs should be given a high priority and are seen as an important catalyst to initiate and maintain aquaculture projects within the nation. Increased coordination and cooperation of these services will greatly assist in the development of this industry whilst reducing duplication and promoting better use of limited resources.
- 62) Furthermore, the nation’s education system including institutions of higher learning and technical schools should consider the development of courses specifically designed for aquaculture. These courses should be designed specifically for the species applicable to the Palauan environment.

F. Access to Capital

- 63) Aquaculture is considered by the commercial banks as high risk. Nevertheless access to development capital from the private sector lending community for the development of small, medium and large scale private sector aquaculture ventures is available. The development bank through its small business loan facility has provisions for aquaculture loans at relatively low interest but subject to normal bank lending requirements for security. However as is the case generally in Palau, weaknesses in land tenure and collateral laws limit effective access to capital, especially for small entities. These weaknesses with respect to providing property as security need to be addressed as part of general policies for private sector development.
- 64) The development of an aquaculture venture, irrespective of size, must be looked at by all stakeholders as a private sector business and developed accordingly. Past “free” initiatives to stimulate interest in aquaculture have merit in certain circumstances. However, past performance has indicated that “free” programs do not promote private sector ownership or a long-term sustainable industry. These schemes need to be phased out.

G. Taxes

- 65) The aquaculture sector has been afforded a tax exemption (MRD Tax Incentives Rules, RPPL No. 6-42, Section 2554) clause that provides for a waiver for all taxes for the first five years of an operation (business over USD50,000). It is unclear why this sector was given this incentive while similar fisheries and agricultural business were not. The favourable treatment of the aquaculture sector is a matter to be considered under a comprehensive tax reform program.

H. Technical and Business Support Services

- 66) The inclusion of small scale business development skills and knowledge should be an integral component of all BMR aquaculture technical training programs and extension services. Capacity building in basic business management and accounting skills will greatly assist the potential economic and sustainable development of this industry. Linkages to current small scale business development programs within the nation need to be explored for the delivery and inclusion of these services into the BMR aquaculture programs.

I. Land and Water Leasing

- 67) Continued issues associated with access to and the leasing of land and water (fresh, brackish and marine) for aquaculture activities remain problematic and constitute a direct hindrance to the development of this industry. Streamlining the leasing process and ensuring lease agreements are honoured and enforceable through legislation will help the industry to develop.

J. Industry Development and the Role of the BMR

- 68) The further development of the aquaculture industry within the nation requires considerable improvement in the cooperation and communication of all sectors. The BMR needs to take a lead role and facilitate the development of the industry in cooperation with research agencies (e.g. PCC) and the private sector. Information exchange and technical training through the BMR extension services needs to be continued to address the needs of the industry. New species should be promoted and considered through appropriate research and development initiatives, incorporating environmental and economic assessments.

- 69) The private sector needs to develop the commercial aspects of the industry including diversification of commodities and the pursuit marketing opportunities. However, private sector development has been restricted because of the involvement of the BMR in commercial aspects of the industry.
- 70) During discussions, private sector stakeholders highlighted numerous past instances where the scope and potential success of their activities had been hindered by the activities of staff at the BMR, including instances where there were conflicts of interest as staff had an indirect interest in commercial production. In order to address these problems and potential conflicts of interest a two step plan has been outlined in this report (refer section 3.11).
- 71) Public private sector partnerships are essential for the development of this industry. Similarly, improved foreign investor confidence in Palau and improving the Foreign Investor Permitting process will provide a business environment conducive to further foreign investment in aquaculture within the nation. The issues of private sector participation and foreign investment are considered by other specialists as part of the Facility for Economic and Infrastructure Management (FEIM) project.
- 72) The further development and implementation of species-specific management plans for each aquaculture commodity cultured in Palau should be a mandatory function of the BMR. These plans need to clearly articulate development activities and be supported by the relevant legislation that provides a legal basis for the sustainable management and development of the resource. All imported commodities need to be regulated by strict quarantine protocols which should be an integral component of the species specific management plans. Management plans for giant clams, mangrove crabs, milkfish, rabbit fish and grouper need to be finalized as a matter of priority.
- 73) Several species are currently under research and development within the nation (e.g. milkfish, rabbit's fish, and grouper). Once suitable culture methods are developed and production is routine, partnerships with the private sector need to be developed to evaluate and finetune the economic viability of these species. The BMR should play a major facilitating role to ensure partnerships are developed to maximize the potential to develop industries for these species, while ensuring the correct management and adherence to regulations of these species is undertaken.
- 74) The continued development of the cultured coral industry and the privatization of giant clams, mangrove crabs, rabbit fish, milkfish and grouper need to be supported and developed. These key products appear to have reasonable opportunities to produce viable aquaculture commodities. Increased domestic and market assessments will be required to future develop these commodities.
- 75) Research and extension undertaken by the BMR have successfully developed a number of aquaculture programs that have directly led to private sector development and profitable economic returns. One such example is the culture of hard and soft corals. The original research work was undertaken at the PMDC (formerly Micronesian Mariculture Demonstration Center - MMDC) through grant assistance and government funds. Successful culture techniques were developed, training manuals produced, trial marketing undertaken and pilot programs in partnership with private sector companies developed through training and extension. The BMR relinquished its role to the private sector once skills were transferred and subsequently the culture of these animals has been finetuned by two private sector companies. The cultured products make up an important component of the nation's profitable aquarium export business. These types of programs need to continue to be identified and developed.

- 76) Current staffing and budget allocations for the BMR are insufficient to allow the successful delivery of required outcomes with respect to current aquaculture roles and responsibilities. These limitations are to a large extent due to the allocation of significant staff resources to the production of giant clams. It is envisaged that once the giant clam responsibilities are handed over to the PACA and the private sector (as recommended in Part 1 of this report), the BMR staff and budget allocations will be able to be allocated to other development programs.
- 77) Due to the long-term commitment of the government of Palau (GOP) to developing a commercial giant clam project, this commodity will be used as an example to highlight the concerns and constraints existing within the industry and provide a number of specific action plans to clarify a way forward.

K. Case Study - Giant Clams Industry

- 78) **Full privatization should be a priority.** The artificial culture of giant clams has been an ongoing research and development project for Palau for over two decades. The goals of this project were to develop the techniques required to culture these animals, delineate potential markets (both domestic and international) and their economic benefits, distribute this information through extension services to the wider community of Palau and ultimately “handover” the entire system to the private sector. The program has been successful in attaining these goals except for the final and most important step, the full privatization of the industry. There has been interest in the past to commercialize the production of giant clams from the private sector (nationals and expatriates), however agreements between the parties have yet to be reached.
- 79) The full privatization of this industry including the commercial activities of the PMDC should be a short term priority of the BMR and every effort should be undertaken to ensure this goal is attained. The BMR and respective government agencies need to specify the options for the private sector in terms of details for leasing and staffing arrangements for the current PMDC facility or the phasing out of clam production from this facility. PMDC and the BMR cannot be seen as competitors to a private sector company.
- 80) The involvement of an independent entity to manage the finalization of agreements between the BMR and private sector should be considered. The transition and finalization of these arrangements between the government and private sector must be fully transparent and follow international good governance protocols. The government funds allocated to the BMR annual budget designated for the production of giant clams through the PMDC could then be reallocated to fund other aquaculture priority research activities.
- 81) Through stakeholder discussions, numerous concerns were raised that there are direct and/or indirect conflicts of interests in the field production of juvenile giant clams associated with staff at the BMR. There is clearly a widespread perception of a conflict of interest associated with the functions of the PMDC and the BMR. The conflict identified was associated with the selection and distribution of giant clam juveniles from the PMDC directly to the clam farmers and the subsequent value of these animals when sold. These issues are not new, nor restricted to Palau. It is also unlikely that the conflict can be removed by banning BMR staff from having a direct or indirect interest in clam production and/or making their involvement transparent. The removal of the BMR staff and/or associates (e.g. spouses, family members) from participating in this industry may also be detrimental to the development of the industry. However, these issues would be resolved once the production of calms is fully privatized.
- 82) To allow this industry to progress, the BMR must adopt good governance principles and practices to allow the system and its processes to be transparent. Several options are available

to the BMR that will remove these potential issues and develop a framework that directly involves and integrates the private sector and relinquishes the government's role in the industry.

- 83) The immediate option is to allow the PACA to assume the role of the provision and distribution of all clams from the BMR to the nation's clam farmers and their eventual sale through the association directly or through another private operation. The BMR will still be required to produce the clams for this purpose and would need to provide technical assistance through training and capacity building programs to PACA to ensure the successful continuing development of the industry. These requirements should be phased out over the next 1-3 years and become an integral component of the daily functions of the PACA. However, the PACA requires urgent professional assistance to further define its functions and to develop a sound economic structure as detailed below.
- 84) Ultimately, over the short-term (1-3 years) the production of giant clams should be fully privatized. However, PACA would be expected to continue and to act as a management body to allow the coordination of the nation's clam farmers, including sales of the product. Appendix 4 provides a summary of the roles and responsibility of the PACA and development steps required to develop this association.
- 85) **Additional actions required for the development of the giant clam industry.** The following additional actions are required to ensure the development of the giant clam industry is successful from both an economic and environmental perspective:
- The collection of basic giant clam data from all farmers associated with PACA should be a mandatory requirement. The data required will need to be developed by the BMR and be used for the long term management of these resources, as well as to provide information required to trade in these animal (e.g. CITES).
 - The BMR should remain the government authority responsible for issuing all documentation required to export these commodities (e.g. CITES certificates).
 - Specific regulations should be developed through the appropriate national and state government regulatory agencies to prevent the sale of wild collected clams into the domestic markets, and provide regulations for the sale of cultured products. PACA could be used as a central distribution agent for the sale of all cultured clams.
 - The government's role to reseed giant clams onto the reef of Palau is supported, however the numbers that have been stated (5 million) are unrealistic and should be revaluated. The numbers should reflect realistic figures and be based on the age for each species that can be successfully left on the reef, and that require minimal maintenance (3-5 years). The current requirement of the PACA farmers to allocate a number of clams for this purpose is unrealistic. Clams cultivated by these farmers should be for their intended commercial use. Restocking programs should be the responsibility of the BMR.

V. Offshore Fisheries

A. Priority Actions

- 86) The most important action required to be addressed by the BMR and the government of Palau is to develop a policy that provides a sustainable framework for the offshore fisheries industry within the next 1-3 years. This policy should:
- Incorporate the issues associated with offshore tuna fisheries into the New Fisheries Legislation;
 - Implement the National Tuna Fisheries Management Plan (NTFMP);
 - Finalize the reform of tax and license revenue collection derived from the industry;

- Re-establish a semi-autonomous or autonomous offshore fishery entity to manage the industry;
- Increase enforcement and penalties to ensure compliance with regulations;
- Legalize the sale of by-catch to local markets;
- Reassess the Shark Management Plan and shark finning legislation;
- Develop value added products for domestic and international markets;
- Improve data collection protocols and observer programs.

87) These priority actions are described below along with a number of recommendations for development of this industry.

B. Background

- 88) Palau's offshore commercial fisheries sector has been extensively evaluated and studied over the past decade. Various reports document the impediments to the industry and suggest recommendations for the continued sustainable management and development of the sector (Chapman, 2000, National Government, 2001, Gillett, 2003, McCoy, 2004, Morishata, 2006 and Rodwell, 2006). Information detailed in these reports will not be repeated here however key issues that remain impediments to the sustainable development of this industry will be discussed. These reports should be referred to for any additional background information. Morishata (2006) provides a synopsis of the reports and documents key issues that need to be addressed.
- 89) Palau's offshore tuna based fishery is a regulated open access fishery that includes a number of bilateral fishing arrangements primarily utilizing long line fishing techniques targeting species of tuna. This includes fishing agreements with three locally based joint venture foreign companies (Palau Marine Industries Corporation-PMIC, Palau International Traders-PITI, Kuniyoshi Fishing Company-KFC) which utilize Taiwanese or Chinese based vessels, agreements with four Japanese fishing associations and one Palauan-flagged pole and line vessel operation (KFC). In addition Palau along with fifteen other Pacific Island nations is party to a multilateral treaty with the US to permit the operation of up to 50 tuna purse seine vessels to fish within Palauan waters. Two of the long-line fishing companies (PMIC and PITI) have large processing, chilling, freezing and ice making facilities adjacent to their wharfs whilst the third company (KFC) utilizes the main shipping port for its processing operations and uses freezer containers to store product.
- 90) Palau's Exclusive Economic Zone (EEZ) is located on the periphery of the south Pacific tuna fishing grounds and therefore production rates vary depending on the movement of fish stocks. Nevertheless, regional program reports indicate Palau can sustain a viable and profitable offshore fishing industry. Catch rates have fluctuated over the past several decades reaching peaks in the late 1980s and declining in the early to mid-1990s. Recent catch rates and discussions with fishing representatives have confirmed the industry has stabilised under the existing commercial sector and this is expected to continue. Detailed discussion of the industry can be found in McCoy (2004).
- 91) No Palauan company appears to be involved in tuna long line fishing activities nor is there any significant Palauan involvement in the shore-based processing and support services. As highlighted by Chapman (1999) there is a reluctance of Palauans to be involved in these economic activities with all positions currently filled by foreign labour. The desire of the GOP to increase Palauan involvement at all levels of this industry appears to be unrealistic and there would need to be a major shift in the mind set of the population and increased wage earnings before this situation could change. Similarly, the BMR has been unable to maintain Palauans as

fishery observers on these vessels due to wage and working conditions that they find unattractive.

- 92) Nevertheless, it is realistic to expect increased local involvement in professional, administrative and research roles, technical support services and small scale value added product development. Morishata (2006) recommends that once these activities have been undertaken, the knowledge and skills base would be set to stimulate higher goals and direct involvement in the fishery.

C. Issues Raised by Stakeholders

- 93) Stakeholder meetings identified specific priority issues that need to be urgently addressed before the offshore fisheries industry can mature and provide sustainable revenue to the nation. Specifically these related to:

- Widespread non-compliance of the Palauan regulations by the fishing community;
- Enforcement and penalties to ensure compliance;
- Current tax revenues realized from the industry;
- By-catch regulations and local sales;
- Shark management and finning regulation;
- Value added product development;
- Improved management of the fisheries (catch data, data bases, observer program);
and
- The need to increase local participation in the industry.

- 94) The dominating issue associated with the offshore fishing sector is the non-compliance with respect to regulations. This compliance issue has plagued the offshore tuna fishery since its inception and remains a serious threat to the long-term sustainable management of these resources and the nation's revenue generating opportunities. Palauan offshore fishing licences are based on best practices detailed in international conventions, regional policies and agreements and are comparable to neighbouring island nations. In essence they are fair and reasonable. In general, non-compliance issues have been reported to be associated with tax evasion, vessel monitoring system (VMS) tampering, un-reporting or falsifying catch records, offloading at sea and at distance ports, smuggling and illegal fishing (shark finning).

- 95) It is fair to say that the non-compliance issue vary between companies and contracted fisherman but there are certain entities that appear to exhibit a blatant disregard for compliance. It appears that voluntary compliance with regulations is unattainable within this industry at present and the only alternative is strong and consistent enforcement including fisheries license closure. These issues have resulted in low confidence and trust in the industry from Palauan regulatory bodies and the general community. These attitudes can only be changed when compliance has improved.

- 96) Therefore legislation needs to be strengthened to provide harsher penalties, especially for unscrupulous "rogue" fishers (repeat offenders) including licence suspensions and terminations as mandatory penalties for these offences.

D. Policies, Regulations and Plans

- 97) Generally, the policies, regulations and development plans associated with this sector over the past decade are well founded and do provide the basis for the long-term sustainable development and management of the nation's offshore resources., There are a number of

priority actions that need to be addressed and implemented to further develop this industry and meet the nation's expectations.

- 98) The first and foremost action required of GOP is to implement the NTFMP and develop a general consensus among all stakeholders for the future of this industry. The NTFMP has been adopted by the nation and has been incorporated into the policy framework. However, a number of recommendations and actions have yet to be implemented to allow the development and management of this fishery. Similarly, the NTFMP needs to be incorporated in its entirety into the new fisheries legislation and its implementation given high priority.
- 99) The resent bill proposed by the current government to terminate the offshore long line fishing industry needs to be carefully assessed. Prohibiting this industry to preserve the stocks of migratory fish species in Palau is problematic and unrealistic in attaining the goal of preserving the oceanic fish resources of Palau. Current widespread non-compliance issues associated with illegal fishing of unregistered vessels, shark finning, non reporting of catch data and offloading catch in distant ports would be expected to continue and most likely to increase. Therefore it is unrealistic, almost naive to assume by having a non fishing policy in Palauan EEZ waters that fishers would conform to this regulation. Rather it would be expected that fishing will continue to be completely unregulated within the Palauan EEZ (when fish are in this region) and provide no economic returns nor fisheries management information to Palau. Rather than prohibiting this fishery the GOP needs to implement and increase its management of these resources, improve regulations and enforce compliance that will continue to provide improved economic returns to the nation. Furthermore, the proposed bill would require a dramatic increase in enforcement capacity to support this policy. Under the current budget and staffing requirement of the nation's laws enforcement program this dramatic increase of funds, equipment and staffing is unrealistic.

E. Management and Regulations

- 100) In the past, the responsibility of managing and developing the offshore fishing industry was allocated to a semi-autonomous agency (Palau Maritime Authority). In more recent times the responsibility of managing this fishery was removed from this agency and given to the BMR were it remains today. The reasons for this change are unclear but appear to be the result of efforts to reduce budgetary costs for the national government.
- 101) Under the current management structure of the BMR, the management of this fishery is divided between two branches (Fisheries Development and Fisheries Management) relying on the limited staff to actively manage both inshore and offshore fisheries simultaneously. However, the offshore and inshore fisheries are very different and should be managed separately. This situation is not the best arrangement for both fisheries and therefore these factors have hindered the management and development of both sectors and are expected to remain problematic. Currently there are only two staff that are responsible for the management and development of the offshore fishery. Although both are competent and knowledgeable, the current resources available seriously undermine their roles and effectiveness.
- 102) Therefore the BMR program areas that are associated with the management and development of the offshore commercial fishery sector need to be urgently reassessed. Two options are available to the GOP. The first is to realign the bureau's work programs to develop a branch that is solely responsible for the management and development of the offshore industry which would require increased resources, budget allocations and staff to successfully manage the industry. The second is to remove the offshore fisheries management and development functions from the BMR to another entity.

- 103) The establishment of an autonomous or semi-autonomous entity specifically empowered to manage the offshore fishery is recommended. The supervision of the offshore fishery is a complex task and requires management of the legalities involved with licence agreements, enforcement, foreign fishing companies and maintaining regional and international management agreements and data collection programs.
- 104) The issues associated with the management and development of the offshore fisheries sector of Palau have been detailed in several recent assessment reports (McCoy, 2004, Palau Government, 2004). All have concluded that the management and development of this fishery should be undertaken by a separate semi-autonomous or autonomous fisheries management entity. This development strategy has been adopted by neighbouring nations (e.g. Federated States of Micronesia and the Republic of the Marshall Islands) with positive results.
- 105) The provision made within the draft fisheries legislation derived from the information detailed in the NTFMP, outlines the role and responsibility of this entity. Clear articulation of management powers, functions and staff will need to be developed while adopting actions that improve on past local and regional mistakes. The entity should be self funding through taxes and license revenues derived from the fishing industry and will need to be managed by a board comprising government, NGO and private sector representatives. In addition performance of the entity and board would need to be independently and regularly reviewed to ensure the goals and objectives of the nation's development plans and best interests are implemented.
- 106) The development of this entity would allow the BMR to focus on managing the nation's inshore resources and facilitating the development of livelihood programs for the nation. These functions are paramount to the long-term development of the nation's fisheries development and require considerably more input from the BMR. There should be a position on the entity's board for a staff member from the BMR. It would be reasonable to expect that the two staff currently working on the offshore fisheries within the BMR would take on similar roles within this entity.

F. Economic Contributions

- 107) The offshore fishery is the largest economic fishery sector in terms of volume and value in Palau and provides direct revenues to the nation, second only to the nation's tourist sector. The current non-compliance of the industry has adversely affected the nation's revenue earning capacity and the management of the fisheries. This includes:
- Direct shortfall in revenue to the nation (estimates range in the order of one to several million dollars annually);
 - Loss of indirect revenue and income opportunities to local business (through illegal refuelling and supply purchases outside of Palau);
 - Inhibited management decisions (poor fisheries catch and effort data);
 - Increased national security issues (illegal departure and entry into foreign countries and substitute fishers on crew without clearing Palauan customs and smuggling); and
 - Increased bio-security issues (invasive species).

G. Tax Reform

- 108) The GOP derives economic benefits from the industry through the collection of taxes in the form of: (1) access licences; (2) a kilogram tax on all fish exported; (3) gross revenue taxes by shore-based fish handling companies; and (4) indirect revenues derived from shore expenditures and operations of the fleet (Morishita, 2006). This includes all government associated taxes; foreign labour fees, fuel excise tax, business gross revenue tax. There has been considerable debate associated with these taxes and the net return to the nation.

- 109) The general consensus, based on stakeholder discussions (with the exception of the offshore fishing community), is that the revenues gained from this industry should be significantly increased, but remain regionally competitive. The GOP through a recent tax review task force has proposed increased tax revenues for this sector. The fishing community as expected, is firmly opposed to these tax increases, especially the proposed increase of tax levied on the annual license permit fee.
- 110) The tax increases directly affecting the industry relate to: the annual license permit fee, foreign labour fee, foreign water vessel tax, fuel excise tax and taxes levied on export (Table 1). The industry will also be indirectly affected by the changes to the tax system.

Table 1: Summary of current and proposed taxes directly affecting the commercial tuna fishing fleets.

Tax	Current tax USD	Task Force Recommendations	Consultant Recommendations
Annual License Permit Fee	Per vessel Below 50GRT \$4,500 50-75 GRT \$5,250 75-125 GRT \$6,000	\$2,000 per ton Below 50GRT up to \$100,00 50-75 GRT up to \$150,000 75-125 GRT Up to GRT 250,000	Increases appear to be excessive. Proposed changes need to be re-evaluated as part of a comprehensive tax assessment.
Foreign Labour fee	\$150 a year skilled \$125 a year unskilled Plus \$500 a year per employee FIB	All \$500 a year	Although a uniform fee is preferable the issue of foreign labour fees needs to be considered as part of the assessment of labor and immigration policies,
Foreign Water Vessel Tax	\$50 per vessels & annual tax \$250 per vessel	\$250 per water vessel weighing 0-50 tons \$500 for 50 tons and over annually	The task force recommendations appear to be reasonable.
Fuel Excise Tax	\$0.05 per gallon on all liquid oil	\$0.15 per gallon on all liquid oil.	The task force recommendations appear to be reasonable.
Fish Export Tax			
Whole Fish	\$0.25 per kg for all fish (whole)	\$1.00 per kg for all fish (whole)	\$1.00 for A grade (sashimi) fish (whole) \$0.25 for all other fish exported (whole)
Value added	\$0.25 per kg for all fish	\$1.00 per kg for all fish	\$0.50 for exported loined \$0.25 for all other fish products (dried, smoked etc)

Note: current taxes were as of November 2007. Since then the tax rate on fish was increased to USD 0.25 per kg.

- 111) The loss of revenue from this industry through the continued non-compliance by the fishing companies has been a major motivation for the increases in offshore fishing taxes and license fees. This includes the constant underreporting of catches, and unregulated and illegal fishing practice including the sale of product outside of Palau.
- 112) The recommended tax increases in the form of the foreign water vessels tax and fuel excise tax appear to be reasonable and are supported. Although a uniform fee is preferable for foreign labor fees, the issue of foreign worker fees needs to be considered as part of the assessment of labor and immigration policies. The development of a fishing licence auction should be considered. These auctions have been successfully undertaken in other parts of the Pacific (e.g. Vanuatu). In principle, licences are sold to the highest bidder under an enforceable management system. Concerns relating to the legally delivery of these auctions will need to be addressed and

are reliant on having a number of professional bidding companies to ensure reasonable incomes are generated to the nation.

- 113) The recommended tax increases levied on the annual license permit fee appear excessive (increasing from USD4,500 to USD100,000 for a 50 GRT vessel). These tax reforms need to be reevaluated as a priority issue through evaluation of a comprehensive tax reform program.
- 114) The task force recommendation to increase tax based on the weight of exported fish needs to be reassessed to incorporate a range of taxes based on the grade of the fish exported and whether the fish is exported as a whole animal or as a value-added product.
- 115) It is recommended that there be two different tax rates that should be directly linked to the grade and subsequent value of whole fish exported. This includes "A grade sashimi" and by-catch fish. The rationale behind this recommendation reflects the market value of the two products, 'A grade' quality fish gain premium prices which are considerably higher than revenues derived from by-catch whole fish. It is therefore suggested that the "A grade" quality whole fish exported have the tax increased from USD0.25/kg to USD1.00/kg while all other exported whole fish remain at the current export tax of USD 0.25/kg. The recent (2008) increase of "A grade" quality tuna from USD 0.25 to USD 0.35 falls short of recommendations and should be reassessed.
- 116) Similarly, there should be two different tax rates on all value added fish products exported based on the market value of the product. All tuna loined products exported should be taxed at USD 0.50/kg not at the recommended USD1.00/kg while all other exported value added products (e.g. tuna/marlin jerky, dried products) should be left at the current taxed rate of USD 0.25/kg not at the recommended USD1.00/kg. All domestic sales of fisheries products should fall under the nation's domestic tax laws.
- 117) The new tax recommendations are reliant on the collection of revenues based on data that is provided to the taxation office by the fishing companies. The collection of credible data and the timely payments of taxes will continue to be problematic and are open to data manipulation. Past unwillingness of fishing companies to comply with fishing fees may require additional enforcement measures. To simplify the tax collection processes and to ensure taxes are collected, the consideration for a single annual operational fee that is based on the estimated catch should be assessed. The details of this option should be evaluated as part of the comprehensive tax reform study

H. By-Catch Issues

- 118) It is recommended that the current regulations that prohibit the sale of any fish caught by the commercial offshore long line fleet into the Palauan domestic market be reviewed. The issue is related to rejected tunas and lower value by-catch species which make up a proportion of the catch and which are not sufficiently valuable to export.
- 119) Under existing fishing company licences rejected tuna and by-catch fish can only be exported (whole or loined) to international markets, consumed by the fishers, given away or dumped. These products are not legally allowed to enter the domestic market for sale. The value of these products on the international markets is considerably lower than what can be realized from "A grade sashimi" quality fish and are not exported. However, these fish are often sold illegally into the domestic market. The ability to sell these products legally into the domestic market should be considered.
- 120) Through stakeholder discussions, there appears to be an unknown but substantial amount of tuna and by-catch product illegally entering the domestic market through a number of illegal

channels to service the domestic food industry (driven by both local consumption and the tourist sector). Stakeholders suggested that between 25 percent-50 percent of total domestic tuna consumption is derived from the illegal sale of fish from the offshore tuna industry.

- 121) The provision to ban the domestic sale of fish caught by these companies was designed to provide a level of protection for local Palauan fisherman. This protection measure may have had merit, however the market demand for this product has increased considerably since the agreements were made and currently the local fishers are unable to meet the domestic demand. The fact that tuna is illegally entering the local market clearly indicates that the fish being supplied to the local market through local fishers is inadequate to meet current demand.
- 122) Therefore amendments to the foreign fishing company license agreements to allow the controlled and legal sale of by-catch fish into the local market should be considered. It is suggested that a review be undertaken to determine the approximate quantity and species composition of product that would enter the market and determine the effect this would have on the locally based inshore domestic fishers. The legal sale of these fish into the domestic markets would also provide a mechanism for the government to gain revenue and provide data for management purposes, while also providing high quality fish products for the domestic tourist and local markets. Currently, fish entering the markets illegally are not generating any direct sale tax revenues. In addition, the ban provides a disincentive to land the tuna catch in Palau, contributing to low compliance with taxation requirements.
- 123) Legalizing the sale of these fish resources for the domestic market will also provide a regular source of fish that can be purchased and utilized. It will also enable new processing methods to further develop a range of additional value added fisheries products for both domestic and international markets. The development of these will in turn create additional employment and tax revenue for the nation.
- 124) The development of value added fisheries products has been highlighted in a number of development plans for the nation and was given a high priority for development by Japan International Cooperation Agency (JICA) in 2000 (Project profile 5: fisheries Fi-03). This included the development of tuna jerky, smoked, salted and dry fish. However, the development of these products and the facilities required should be driven and funded by the private sector not the government as identified in the original report. Nevertheless the government agencies should facilitate the development of these options through extension and information exchange program by responding to private sector needs. However, the main contribution that government could make would be in removing the ban on the sale of by-catch in the domestic market in Palau.

I. Shark Management and Finning

- 125) Palau has for several decades been conscious of being seen by the international community as a nation that places a high value on the conservation and management of its resources. This is reflected in many of the nation's regulations and the nation's keen interest to portray this image to the international community. This policy has considerable merit and certainly should be continued for terrestrial and marine resources based on sound management policies and incorporated directly into resource management areas utilised by the tourist sector. However the implementation of conservation polices can be extremely difficult on the ground and effective conservation is not necessarily incompatible with economic use of fishing resources
- 126) One such example is the nation's shark finning law that bans the capture and subsequent sale of sharks within its EEZ by the commercial fishing fleets. These fleets are prohibited from fishing within 24 miles of the reefs of Palau and therefore, at least legally, do not accidentally catch sharks associated with reefs and those that generate money for the tourism sector. Sharks can

however be targeted and sold by local fishermen which, due to the nature of the local fishery means that they target reef associated species that are used by the tourist industry. It is understood that this is a small fishery activity practised by several communities for subsistence and small scale artisanal purposes. Nevertheless it is directly in conflict with the preservation of marine life for the tourist industry.

- 127) The shark fin debate is controversial. Through stakeholder discussions, it appears the national image and the potential loss of tourism dollars is perceived as more important than the economic use and management of this valuable marine resource. The shark regulations do convey to the international community the notion of a well managed and sustainable fisheries sector. However, the accidental capture of sharks in the course of commercial fishing is an unavoidable by-product associated with this activity. As long as the industry is operating, sharks will be caught and typically they will be dead when landed.
- 128) Currently the regulations specify that if a shark is accidentally caught, it must be released irrespective if the animal is alive or dead. In most cases the animal is dead and the carcass is thrown back into the water. This law in effect is promoting the waste of marine resources which directly contradicts the nation's marine policies for the sustainable use and development of the marine resources. This is because the animal is dead as a by-product of fishing but cannot be used for an economic purpose. The law does not stop the accidental killing of sharks as a by-product of fishing and so has no direct effect on sustainability but it means there is a lower economic value for the fishing resources. Furthermore, experience in other jurisdictions and in Palau suggests that outright banning is typically less effective than conservation management and leads to more resource depletion than conservation management and not less. In the case of the banning of shark finning it is likely that this encourages fishers to ignore the law by landing their catch outside Palau and there is a good chance that non-accidental shark finning is encouraged as well, conflicting with the goal of sustainability.
- 129) This law is regarded by the industry as a waste of a commercially valuable resource and thus is an impediment to the economic development and opportunities of this industry and to the nation. Furthermore, information gained through stakeholder discussions confirmed that if fishing vessels are capturing high numbers of sharks (i.e. poor tuna catches), there is a tendency for some operators to fin the animal and illegally sell the fins outside legal channels to derive an income from the fishing trip. So in effect, the law on the outright banning of shark finning is providing an environment conducive to illegal activities.
- 130) Thus, it is suggested that serious consideration is given to changing the law on the banning of shark finning to allow the sale of shark products from sharks caught accidentally in the normal operations of the commercial fishing industry. An assessment of possible mechanisms to monitor and manage the commercial sale of the accidental catch of sharks from this fishery should be undertaken to clearly identify the issues and approaches that could be adopted. The assessment should incorporate the management and enforcement practices of neighbouring island nations (e.g. Guam lands the whole shark) including correct reporting of shark captures in fishing log books.
- 131) A priority action should be to re-assess the implementation and adoption into law of the "Shark Fisheries Management Plan" (Walker, 2007). This plan clearly articulates the management of these resources, incorporates both the commercial offshore and artisanal inshore fisheries and is based on best practice resource management protocols and not purely emotional criteria. Inclusion of potential taxes on the export of sharks and/or shark products needs to be incorporated. The current shark legislation forcing the wastage of this resource is not a sound resource management practice.

J. Enforcement

132) Enforcement of offshore fishing licence agreements to address widespread non-compliance issues is extremely limited, as there is only one patrol boat and it is often not operational. The nation's capacity to enforce regulations must be strengthened if illegal activities associated with this industry are to be removed. Considerable improvement in field enforcement has occurred over the past decade through bilateral donor assistance. These programs need to be further developed and all agencies associated with enforcement need to have more political and judicial support. Voluntary compliance is the best option but as discussed above this is most likely not achievable for the offshore fishery. Increased cooperation with neighbouring nations associated with surveillance (water and air) and enforcement of VMS regulations will assist. Endorsement of stronger penalties including license suspensions and closure appear to be necessary to manage this fishery. Revenues gained from illegal fishing through fines should be used in part to fund the operations of the Palauan surveillance programs including the patrol boat.

K. Fisheries Management

133) Fundamental to the understanding of fish stocks and the management of these fisheries resources is the correct reporting of capture and effort data. These data are prerequisites for stock assessments and are paramount to the successful long term management of these fisheries in Palau and regionally. Therefore on-board log sheet coverage of fish capture data needs to be greatly improved within the offshore fishery before valuable information can be compiled and reliable assessments of the status of these fisheries can be made. In addition, improved on-board observer programs will greatly assist the collection of valuable data for these purposes. Unreliable and unreported catch data have constituted an issue that has plagued the industry since its inception and restricted the ability to manage the fishery.

134) Equally important is the collection of fish data when vessels are unloading at shore-based facilities. These data are used to support and confirm on-board fish catch records, provide morphological and commercial data. The collection and analysis of these data should be a central role of the BMR. The Palauan government through its responsibility to regional and international treaties and agreements has guaranteed these data will be collected and provided to regional agencies so that the meaningful information can be provided on this fishery.

135) The Palauan government will need to be an active participant in regional and global conventions and initiatives that address the long term sustainable management and conservation of these offshore fish resources. The NTFMP provides a list of international, regional and sub-regional treaties and agreements Palau has committed to and become party to (NTFMP, p.37). In addition to those listed in the NTFMP, Palau has committed to the Sustainable Development Framework for Pacific Fisheries, the FFA Ecosystem Approach, the Fisheries Management Framework and the directives of the Western and Central Pacific Fisheries Commission. Continued professional relationships with regional bodies (e.g. Community of the Pacific Countries-SPC and Forum Fisheries Agency-FFA) associated with the development and management of the offshore fisheries should remain. This responsibility will be a central role of the offshore fisheries management entity.

L. Value Added Processing Opportunities

136) Past report recommendations to consider the development of large scale onshore fish processing operations and canneries are not supported. Further detailed and credible economic, social and environmental assessments are required before such large scale operations should be considered. Current constraints associated with the source of fish required by these

operations and the labour requirements, including the policies for foreign workers would also need to be addressed

- 137) Further review and economic assessments are required before a determination can be finalised on whether the development of a specifically designed offshore long line port is required for Palau. Current congestion at the main fishing port is a concern. However, current non-compliance issues, the recent suspension of a PMIC fishing licence and the lack of long term commitment and investment into the development of the industry in Palau suggest that the development of a long line port should not be a priority.

VI. Inshore Fisheries

A. Priority Actions

- 138) The most important action required to be addressed by the BMR and government of Palau for inshore fisheries is to develop a policy that provides a sustainable framework that balances the needs of all users. The policy needs to consider the sustainable development of all fishery activities (subsistence, artisanal and commercial) while also ensuring the sustainable management and conservation of these resources. Key policy issues include:

- Ensure the economic and environmental sustainability of inshore fisheries, with emphasis on sustainable management and monitoring;
- Reduce resource conflict between user groups whilst providing for all users;
- Increase public awareness and encourage voluntary compliance with regulations;
- Continue to develop sustainable resource conservation and management areas and networks;
- Continue to develop species-specific management plans including exploitation and conservation;
- Enhance economic fisheries activities associated with the tourist sector (e.g. catch and release fishing);
- Reassess the potential to reinstate inshore fisheries co-operatives.

- 139) These priority actions are described below along with a number of development recommendations for the inshore fisheries sector.

B. Background

- 140) The inshore marine resources of Palau are important for providing food security and economic opportunities for Palauans. This sector includes subsistence, artisanal and commercial fishing activities and commercial activities associated with the tourist sector (e.g. SCUBA diving). Increasing anthropogenic pressures on these resources has degraded the environment. Key aspects of the environmental degradation that has occurred include inshore sedimentation due to terrestrial runoff, foreshore dredging and reclamation activities and over-exploitation of resources.

- 141) Inshore marine fish resources have been reported to be on a steady declining trend, as a result of increased fishing pressure driven by domestic (local and tourist) and international market demands. Advancements in fisheries technology, population increases and the development of the nation have further increased resource pressure on these biological systems.

- 142) As a result of these impacts the national and state governments of Palau in partnership with a number of NGOs, community groups and the private sector have instigated a nation-wide program to ensure the sustainable management and development of the inshore resources.

These programs have incorporated a wide range of activities including marine management and conservation areas and species-specific management plans which have been supported by legislation and enforcement. Recent advances in marine management and conservation programs (e.g. Protected Area Network- PAN) have assisted in the sustainable management of these resources. The continued development of these programs and improved community awareness and compliance to regulations are required.

- 143) The nation's tourist industry has been developed around the natural beauty of Palau's marine and coastal environments. The further development of this industry and the revenues earned are intrinsically linked to these resources. The importance of a healthy functioning inshore marine ecosystem is vital for the economic development of the nation and cannot be understated.

C. Issues Raised by Stakeholders

- 144) Stakeholder meetings identified specific priority issues that need to be urgently addressed before the inshore fisheries industry can provide a sustainable source of food, livelihood and revenue to the nation. Specifically these issues include:

- Conflicts between user groups for limited resources;
- Unsustained exploitation of certain species;
- Degradation of foreshores and reef areas from unsustainable development;
- The need to improve public awareness and voluntary compliance with regulations;
- The need to improve research and management of resources;
- The need to develop alternative income opportunities associated with the tourist sector for fishers.

- 145) The main challenge for the inshore fisheries sector is to maintain a sustainable compromise between all user groups that will provide for the conservation and management of all resources, while still providing for livelihood development opportunities.

D. Policies and Regulations

- 146) The policies, regulations and development plans associated with this sector over the past decade are in general, well founded and do provide the basis for the long term sustainable development and management of the inshore fisheries resources.

- 147) Palau has made considerable advances in developing policies and a legal institutional framework to protect, manage and use its inshore natural resources. These policies need to be further developed through stakeholder participation to reflect the conservation, management and economic use of these resources to achieve the nation's aspiration for this sector. These policies include; the Micronesian challenge to set aside 30 percent of the total inshore reef areas of the nation to be allocated to conservation and the Protected Areas Network (PAN) act.

- 148) The directives for these policy developments have been based on an ecosystem approach that has incorporated regional and international codes of conduct for responsible fisheries and resource management. These policies should be integrated directly into the proposed "comprehensive fisheries policy" for the nation and incorporated into legislation. The implementation of these policies is a key component to the successful management of the inshore fisheries and resources.

E. Actions Required

- 149) The management of the nation's inshore resources is complex and requires cooperation from national and state government agencies and communities. State governments have the legislative responsibility guided by national regulations, to manage and exploit the inshore resources. National government agencies (e.g. the BMR) roles and responsibilities are to provide advice and assistance to the state government agencies to implement sustainable management policies.
- 150) The BMR needs to take a lead role to facilitate the implementation of these fisheries policies and, in cooperation with NGOs, communities and private sector, encourage voluntary compliance with legislation through increased emphasis on public education and awareness programs.

F. Roles and Responsibilities

- 151) The roles and responsibilities of the three branches (Fisheries Development, Fisheries Management, and Conservation and Protected Areas) of the BMR work program are directly related to the management of the inshore fisheries resources and remain relevant for the future development of this industry. The fourth branch, Aquaculture is discussed in Section 4 of this report also plays important part of the inshore resources sector.
- 152) The BMR needs to reassess and adjust its roles and responsibilities to focus on priority resource management issues to ensure the sustainable development of the nation's inshore fisheries (the effective management and development of these resources is paramount to support long-term livelihood opportunities associated with this sector). Therefore the sustainable management of these resources should be the priority action of the BMR inshore fisheries program.
- 153) These program activities are included in the goals of the Fisheries Development and Fisheries Management branches of the BMR. The further development and improvement of linkages and synergies with other government agencies, educational institutions (e.g. PCC), NGOs, the private sector and communities are required to attain the objectives of these programs. Above all, the BMR needs to urgently improve its internal management systems to focus on these issues and deliver these services to the nation. A program that needs to remain directly managed by the BMR is the trochus industry. This industry provides valuable economic opportunities to the communities through the wild harvest of specific size shells. The BMR manages this open and closed fishery through long-term stock assessments to determine the standing stock of harvestable animals and monitors the harvest through specific open and closed fisheries.
- 154) The BMR program activities that are associated with the Marine Conservation and Protected Area branch are equally important to the sustainable development of the inshore resources. The BMR should continue its support and assistance in relation to the sustainable management of all conservation programs. However, the bureau needs to reduce its roles and responsibilities associated with the "on the ground" management of these programs and focus on the collection of sound environmental and resource data. This data is essential for the effective management of the inshore resources. It is therefore recommended the BMR encourage NGOs and community groups to assume the responsibility in conjunction with state governments of the day-to-day management of these conservation programs. The BMR should assume its role as an advisory agency, not an implementation agency.
- 155) Currently the functions and delivery of the roles and responsibility of Marine Conservation and Protected Area branch are not being met. The program manager is currently on educational

leave (this is a positive step for the long-term development of the staff and agency) however the program duties are not being completed. This is an internal management problem and needs to be addressed if the goals of this program are to materialize.

G. Management

- 156) Fundamental to the understanding of fish stocks and the management of these fisheries resources is the correct reporting of capture and effort data and information obtained from resource assessments, research and monitoring programs. This data is a prerequisite for stock assessments and is paramount to the successful long-term management of the inshore fisheries of Palau. It is therefore vital that the BMR through the fisheries management branch in conjunction with research agencies (e.g. Palau International Coral Reef Centre), NGOs (e.g. Palau Conservation Society, The Nature Conservancy) state governments and fishers (e.g. cooperatives) continues to collect fish and inshore resource data. This data needs to be collected for all subsistence, artisanal and commercial fishing activities associated with the inshore waters of Palau. All agencies need to be conscious of staff availability and funds to undertake these programs. Coordination of project staff and funding opportunities will greatly reduce the burden of data collection on a single agency. BMR should take a lead facilitating role to address these issues.
- 157) Fishery data collected must form the basis for the management of these resources and be fully incorporated into fisheries policies and regulations. The BMR should continue to support and facilitate ecosystem and species-specific research that provides information that can be utilized to successfully manage these fisheries.
- 158) Targeted high value fish species (e.g. grouper) should be the focus of intensive baseline data collection programs to develop species-specific fisheries management plans. The data required include life history data parameters (e.g. reproduction, recruitment, stock size and numbers), fisheries data (e.g. total catch, exploitation rates, fishing methods) and market assessments. Through stakeholder discussions the further development of time series and/or area closures for species management plans are more practical for Palau than regulations associated with size classes and bag limits. The current species-specific capture bans on ecologically important and endangered species (e.g. Māori wrasse and collection of turtle eggs) are fully supported. These programs should be further developed to include sound ecological management plans for additional threatened and unique species.
- 159) The BMR needs to take a lead role liaising with regional (e.g. SPC) and international agencies (e.g. FAO) to provide continuing technical assistance. The BMR should consider taking on the responsibility of acting as a central storage house for all research and fisheries information and further develop the distribution of this information. An upgrade of the BMR office hardware and library capacity will be needed.
- 160) The BMR and partner agencies (e.g. BOA, EQPB, attorney offices) need to incorporate quarantine issues into the management and monitoring programs associated with the inshore marine environments. The potential threat to the inshore marine biodiversity from accidental introduction of invasive species is real. The further development of protocols, requirements and enforcement programs is needed to address these issues. The draft NASDP provides a series of protocols that should be enforced for the movement of aquaculture species. These protocols need to be adopted, expanded to include other mechanisms of invasive species movements (e.g. boats), and integrated into policies and regulations. The installation of a laboratory capable of testing for marine invasive species and pathogens should be considered. The recent

development of a marine and terrestrial invasive species task force is appropriate and the BMR will need to play an active role.

H. Development Issues and Future Prospects

- 161) It is commonly agreed that the inshore fisheries sector has limited expansion opportunities and current fishing activities need to be carefully managed to prevent further declines in fish and resource stocks. Furthermore, conflicting resource use for the inshore resources between the fishers and the tourism sector has directly affected fisher livelihoods and economic opportunities. The challenge to satisfy both opportunities remains problematic and will remain a major issue for this sector.
- 162) If subsistence fishing was undertaken in compliance with the national laws it would be unlikely to threaten the longterm sustainability of the marine resources. However, artisanal and commercial inshore resource activities can and have added to resource stock depletions and the degradation of the environment. Careful monitoring of these fishing practices and strict compliancy with regulations can be effective in addressing these issues but market demands place increasing pressure on these fishers to fish.
- 163) The tourist industry demands reef fish and invertebrate resources for consumption. However, the industry relies on healthy reef systems that provide the visual aesthetics for delivery of these services. The conflicts between these aspects of resource use are difficult to manage. Nevertheless there are several opportunities that need to be explored that have the potential to increase income earning capacities from subsistence, artisanal and commercial fishing while still maintaining healthy reef fish and resource populations. The BMR should take a lead role in assessing the viability of these opportunities. Direct income opportunities from existing fishing include:
- Value adding and improving the quality of the inshore fish currently caught to increase the value of the fish product. Fishing co-operatives can play a major role in providing this service;
 - The further deployment and use of Fish Attracting Devices (FAD) positioned in offshore waters that allow local fisherman to target pelagic fish. The FADs reduce fuel and time to catch the fish and provide an indirect voluntary management measure for reducing fishing pressure on reef fish stock.
- 164) Indirect income opportunities for fishers include but are not limited to:
- Incorporating by-catch fish from the commercial offshore fishing industry to supplement pelagic fish entering the market (satisfy market demand but decrease fishing pressure) and provide for value adding development opportunities (e.g. smoking, drying);
 - Further developing inshore (e.g. bone fish, trevelly) and offshore (e.g. marlin, sailfish, wahoo, tuna) sports fishing charters using only catch (tag) and release protocols;
 - Fishers changing livelihood roles and using their water and boat skills to be gainfully employed in the tourist sector (e.g. boat captains, deck hands); and
 - Fishers involvement in sustainable aquaculture opportunities.
- 165) Past recommendations to investigate the potential resource stocks of the deep water fish (e.g. red snappers) should be examined. If suitable fishing grounds are located careful management of these resources will be required to prevent over exploitation. The management of the fishery should consider limited entry and focus on the delivery of a high quality product for the domestic and international markets.

- 166) Furthermore, the reinstatement of state based inshore fishing cooperatives should be assessed. These cooperatives can provide a reliable service to the local fishers by providing a mechanism to improve fish quality, provide for a consistent supply to the public, obtain better prices, provide a marketing advantage for the fishers and reduce costs of services items. In addition, these cooperatives can be designed to play an integral component of the BMR inshore fisheries monitoring program by collecting fish landing data (e.g. species, quantity, location etc) and be an active participant in public awareness and enforcement of the nation's regulations. Both functions will greatly assist the BMR to collate fisheries data to manage these resources. The development of fishing cooperatives will need to be self funding through financial support and in-kind contributions of the members.
- 167) The BMR needs to be more proactive with all stakeholders and needs to facilitate the development of these opportunities in cooperation with other agencies, NGOs and the private sector. Information exchange through extensions services and hands on technical programs will be required.

I. Enforcement

- 168) Through stakeholder discussions it was indicated that non-compliance with inshore fisheries legislation is widespread. Infringements range in severity and include small scale subsistence issues (e.g. the capture of fish in a closed area) to illegal commercial scale fishing activities (e.g. extraction of reef fish at night using spear guns on SCUBA). Enforcement and awareness of these regulations needs to be improved and systems that are applicable to Palau need to be developed. Increased public awareness and information exchange programs (e.g. BMR extension program) detailing fishing and resource regulations need to be further developed to instigate a change in the way marine resources are perceived by the public to encourage voluntary compliance. Further improvements in field enforcement operations need to continue with all agencies associated with enforcement requiring more political and judicial support.
- 169) Current penalties appear to be fair for minor infringements. Voluntary compliance and community enforcement methods are the best options to manage minor infringements. However, formal methods of enforcement are still required and will need to be further developed to curtail illegal fishing activities. Penalties should be substantially increased for repeat offenders and for non-compliance by commercial size operations.
- 170) Infringements associated with the nation's conservation areas and specific species management plans (e.g. protection of grouper spawning grounds) need to be substantially reduced and preferably eliminated. Protection of these areas and species is essential to ensure these resources can provide long term benefits to the communities.
- 171) The BMR should continue to liaise and work in conjunction with other government and NGOs to provide advice on the management of the inshore resources. Management plans that incorporate a range of fisheries management tools and conservation plans should be further articulated to support the long term sustainability of these resources. This should be a central focus of the BMR inshore section.

J. Access to Capital and Business Support Services

- 172) Small- to medium-scale inshore fishery projects are considered by the commercial banks as medium to high risk but funds are available from the National Development Bank to assist in the development of these operations. The Development Bank through its small business loan facility has provisions for aquaculture and other inshore fisheries loans at relatively low interest but subject to normal bank lending requirements for security. However, as is the case generally in

Palau, weaknesses in land tenure and collateral laws limit effective access to capital, especially for small entities. These weaknesses with respect to providing property as security need to be addressed as part of general policies for private sector development.

- 173) The inclusion of small scale business development skills and information exchange should be an integral component of all BMR fisheries technical training programs and extension services. Capacity building in basic business management and accounting skills will greatly assist the potential economic and sustainable development of this industry. However, the BMR is not likely to be best suited to provide such business training which is more likely to be effective if provided through the Palau Community College or the US funded Small Business Development Corporation.
- 174) The development of a fishing venture, irrespective of size, must be looked at by all stakeholders as a private sector business and developed accordingly. Past “free” initiatives (there have been many) to stimulate interest in this sector may have had some merit in certain circumstances to some extent, however past performance has indicated that “free” programs do not promote private sector ownership nor promote a long term sustainable industry. These schemes need to be phased out.

Appendix 1: List of Stakeholders Consulted

Name	Position	Agency
Mr.Theo Isamu	Director	Bureau of Marine Resource
Ms. Nannette Malsol	Fisheries Law Compliance Officer	Bureau of Marine Resource
Mr. Leon Remengesau	PMDC Manager	Bureau of Marine Resource
Mr. Jackson Ngiraingas	Peleliu State Governor	Peleliu State Government
Mr.Danny Celis	General Manager	Palau Marine Industries Corporation (PMIC)
Mr. Harvey Renguul	Coastal Program	Bureau of Marine Resource
Mr.Genaro G. Torres	Book keeper	Kuniwo Fishing Corporation
Mr. Jeff Ye	Fleet Coordinator	Palau International Traders Incorporation (PITI)
Mr.Gustav Aitaro	Director of the Bureau of International Trade and Technical Assistance	Ministry of State (MOS)
Mr. Ellender Ngiramketii	Chief of Marine Law Enforcement	Ministry of Justice (MOJ)
Mr. Donald Dengokl	Assistant Executive Officer	Environmental Quality Protection Board (EQPB)
Dr. Patrick Tellei	President	Palau Community College (PCC)
Mr. Dave Hannah	Maritime Surveillance Advisor	Australian Advisor to the Government of Palau
Mr. Larry Goddard	President Advisor	Office of the President, ROP
Mr. Christopher Hale	Assistant Attorney General	National Government
Mr. David Fifer	Palau Legal Consul	National Government
Mr. Casmir Remengesau	National Planner	National Government
Mr. Victorio Uherbelau	Director	Compact Review Commission
Ms. Anna Perez	Fisheries Officer	Bureau of Marine Resources
Ms. Bernice Ngirkelau	President	Palau Aquaculture Clam Association (PACA)
Ms. Amormia Haruo	Administration Assistance	PACA
Mr. Masato Ushibata	Treasurer	PACA
Mr.McVey Kazuyuki	Board Member	PACA
Mr. Baudista Sato	Board Member	PACA
Mr. Hiromi Nabeyama	Board Member	PACA
Mr. SaboTudong	Board Member	PACA
Ms. Florah Tewid	Secretary	PACA
Ms. Jenifer Yano	Director	Belau Aquaculture
Ms. Jennifer Koskelin	Board Member	Palau Chamber of Commerce
Mr. Peter Gaymann	Board Member	Palau Chamber of Commerce
Mr. Mark Vereen	Board Member	Palau Chamber of Commerce
Mr. Tmetuchl Baules	Board Member	Palau Chamber of Commerce
Mr. Greg Gordon	Board Member	Palau Chamber of Commerce
Mr. Ken Uyehara	Board Member	Palau Chamber of Commerce
Dr. Eric Verheij	Protected Area Specialist Network Advisor	The Nature Conservancy
Ms. Tiare Holm	Executive Director	Palau Conservation Society
Ms. Lati Shmull-Palacios	Assistant national Data Recorded Offshore Section	Bureau of Marine Resource

Appendix 2: Priority Issues Matrix for the Marine Resources Sector

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
1. Finalize and Implement the Comprehensive National Fisheries Policy	<p>Provides a policy for BMR to development and ensure resources are sustainably managed.</p> <p>The draft plan consolidates and articulates policy issues that provide clear function of the BMR, its roles and responsibilities.</p> <p>Draft near completion. Limited progress since FAO study.</p> <p>No allocations from the government of time or finances to complete.</p>	Awaiting government to finalize and implement the policy.	<p>Policy draft being considered by government.</p> <p>Requires BMR to champion the importance of this plan.</p> <p>Plan needs approval by MNRET and then adopted into legislation and implemented.</p> <p>Limited BMR staff and skills to complete</p>	<p>Finalize and implement the comprehensive fisheries policy to help ensure all resources are managed on a sustainable economic and environmental basis.</p> <p>The policy needs to be based on an ecosystem approach incorporating international standards of resource management and development, including:</p> <ul style="list-style-type: none"> • sustainable natural resource development; • a stronger and more useable institutional framework; • consolidate and enhance legislation; • improved stakeholder participation and equity sharing; • suitable enforcement regulations to ensure compliance. <p>The BMR needs to further clarify its Roles and Responsibilities based on current and expected budgetary allocations and staffing and incorporate this information into the policy. The BMR needs to be the lead agency that champions the development and completion</p>	<p>Funds are required to finalise, adopt and implement the policy. Funds could be a combination of government allocations (BMR and MNRET) and external assistance.</p> <p>A consultant needs to be contracted to finalize the policy.</p> <p>Funds and assistance from regional agencies (e.g. SPC, SPREP) and international agencies (e.g. FAO, UNDP, UNESCO) should be investigated.</p>	Yr 1-2

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
				of this policy. Considerable stakeholder involvement is required and all drafts need to be circulated for comments before adopted.		
2. Finalize and Implement a Comprehensive Fisheries Legislation	<p>To ensure a single piece of legislation covers all fisheries legislation. Current legislation is piecemeal and located throughout a number of legislations.</p> <p>The new legislation provides BMR the power to regulate the development of fisheries and aquaculture to ensure resources are sustainably managed.</p> <p>Draft near completion. Limited progress since FAO study.</p> <p>No allocations of attorneys or consultant time proposed.</p>	<p>Study recommendations are being considered.</p> <p>General agreement that a single piece of legislation is required to streamline fisheries.</p>	<p>Yet to be finalized. Needs to be classed as a high priority by the regulatory bodies to instigate completion.</p> <p>Requires BMR to champion the importance of this plan.</p> <p>Plan need approval by MNRET and then adopted into legislation and implemented.</p> <p>Limited BMR staff and skills to complete.</p>	<p>Ensure an updated single piece of fisheries legislation is finalized, adopted and implemented. The legislation should streamline regulations and define the functions of the government for all aspects of fisheries that require legislation. Current legislation is located in a number of articles and acts within the national legislative system with interpretation complex and difficult.</p> <p>The single piece of legislation needs to be concise but incorporate all regulations associated with the sustainable development and management of the fisheries sector. It needs to cover:</p> <ul style="list-style-type: none"> • inshore and offshore fisheries; • aquaculture; • marine protected areas; • a semi autonomous or autonomous fishery entity to manage the offshore fishery (if this is considered appropriate); • inshore fisheries cooperatives; 	<p>Funds are required to finalize, adopt and implement the legislation. Funds could be a combination of government allocations (BMR and MNRET) and external assistance.</p> <p>A consultant needs to be contracted to finalize the legislation.</p> <p>Funds and assistance from regional agencies (e.g. SPC, FFA) and international agencies (e.g. FAO) should be investigated.</p>	Yr 1-2

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
				<ul style="list-style-type: none"> • enforcement of regulations; and • quarantine issues. <p>The new legislation needs to provide the BMR the power to regulate the development of fisheries and aquaculture to ensure resources are sustainably managed.</p> <p>The legislation should consider including:</p> <ul style="list-style-type: none"> • an amendment to the existing giant clam regulations to extend the ban on the sale of all species for the internationally to include domestic sales; and • a Quarantine Strategy and Development Plan for all aquatic resources incorporating the aquaculture quarantine recommendations made in the draft NASDP. <p>The BMR needs to be the lead agency that champions the development and completion of this legislation. Considerable stakeholder involvement is required and all drafts need to be circulated for comments before being adopted. Both state and national legislation agencies need to develop the plan in</p>		

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
				agreement and ensure useful existing regulations are included.		
3. Complete, Adopt and Implement the NASDP and CCRA	<p>Defines the development policies and management issues associated with the sustainable development of aquaculture within Palau.</p> <p>Essential document for the sustainable and environmental development of Aquaculture within the nation.</p> <p>Needs to be completed as a priority, adopted into legislation and actions implemented.</p> <p>Limited progress since current draft submitted. Project requires considerable additional work to finish. Needs both local and international</p>	<p>Report draft being considered.</p> <p>Project stalled.</p> <p>No allocations of time or finances from the BMR to complete.</p> <p>Government through the BMR and MNRET need to champion the finalisations of this document and should stimulate its development.</p>	<p>Time required coordinating government agencies to allocate staff and funds for the next steps.</p> <p>Time restrictions on international agencies assisting on the program.</p> <p>BMR needs to mark the completion of this document a priority and fully engage international agencies to respond accordingly. The BMR may require external assistance to complete their roles.</p>	<p>Finalize and implement the development policies and management issues detailed in the “National Aquaculture Strategy and Development Plan”. The adoption of this plan into legislation is essential to help ensure that the development of Aquaculture in Palau is economically and environmentally sustainable. The development of the aquaculture industry should be put on hold until the document is finished and adopted by regulatory agencies and recommended protocols are implemented.</p> <p>The development of all aquaculture as outlined in this policy strategy needs to be based on an ecological approach incorporating international best culture and management practices and requires the development of a National Code of Conduct for Responsible Aquaculture. The NASDP includes</p> <ul style="list-style-type: none"> • sustainable development protocols and regulations; • aquaculture and species assessments protocols; • technical manuals and 	<p>International funding assistance has been proposed and is understood to be available.</p> <p>Consultants will be required to assist with the finalization of the plan.</p>	Yr 1-2

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
	inputs.			<p>culture practice protocols;</p> <ul style="list-style-type: none"> • species specific management plans; • environment protocols; • quarantine management; • market opportunities. <p>The national Government through the BMR and the MNRET need to finalise and adopt these documents into legislation and implement the recommendations.</p>		
4. Complete and Implement the NTFMP	<p>Defines the development policies and management of the offshore tuna fisheries.</p> <p>The plan has been adopted but several major recommendations have not been implemented.</p> <p>Implementation needs to be completed and fully adopted into Legislation.</p>	<p>Government has adopted the plan into regulations but has not implemented all of the recommendations</p> <p>The BMR, MNRET and President's office have yet to adjudicate on the implementation of all recommendations of the management plan.</p> <p>Offshore fisheries remain managed by two staff at MNRET with minimal logistical</p>	<p>Major issues are associated with the establishment of a semi-autonomous or autonomous offshore fisheries entity to manage these resources on behalf of the nation.</p> <p>Reluctance of the BMR and ministry to relinquish its management powers.</p> <p>Government still considering the development and establishment of this entity.</p> <p>The entity should be developed to</p>	<p>Finalize and implement the development policies and management issues detailed in the "National Tuna Fisheries Master Plan". The adoption and implementation of all recommendations identified in this plan into legislation is essential for the sustainable environmental and economic development of the offshore fisheries resources of the nation.</p> <p>The NTFMP specifies the development and management policies for the nation's offshore tuna fisheries. This includes the collection of fair revenues for the nation and the international standards of resource management that are to be followed.</p> <p>One of the major</p>	<p>The independent entity responsible for offshore fisheries should be self funded by revenue derived from fishing licence fees and taxes generated by this industry.</p> <p>The collection and analysis of fisheries data should be the responsibility and be funded by the entity. The role of the BMR should be limited.</p>	Yr 2-3

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
		support and minimal powers.	<p>increase the management of the offshore resources.</p> <p>The BMR can reallocate staff and funds to the management of inshore resources</p>	<p>recommendations of the NTFMP that has not yet been implemented is the removal of the offshore fisheries roles and responsibilities from the BMR to an independent semi-autonomous or autonomous entity that would assume all management responsibilities for the offshore commercial fisheries. Similar entities are managing the offshore fisheries in neighbouring nations with success.</p> <p>The entity would need to manage the nation's requirements for:</p> <ul style="list-style-type: none"> • international treaties and agreements; • fishing licenses; • managing compliancy issues; • collecting and managing revenues; • a partnership with the BMR, collecting and managing the fisheries data (including observer programs and port sampling). <p>The development of this entity would allow the BMR to focus its resources and attention on the management and development of the nation's inshore resources including aquaculture. The management</p>		

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				of these resources must be the central goal of the BMR.		
5. Improve and Enforce Existing Fishing Regulations	<p>Increase compliance through all legal methods available. Uses police, community rangers, patrol boat and attorneys from state and national.</p> <p>Reduce non-compliance issues with offshore and inshore fisheries. Offshore fisheries plagued by non-compliance issues including:</p> <ul style="list-style-type: none"> • unregulated fishing • underreported fish • illegal fishing <p>Large loss of government revenue from tax (offshore), poor fish capture date or unreliable data resulting in poor management ability of BMR.</p>	<p>Enforce compliance through regulations to curtail current illegal fishing activities.</p> <p>Penalties and business closures have been enacted to reduce non-compliance and to attain lost government revenues associated with the offshore industry.</p> <p>Need improved community awareness and understanding of regulations for inshore fisheries to gain voluntary compliance.</p> <p>Penalties for inshore infringements, harsher for commercial illegal activities.</p>	<p>Lack of enforcement staff, funds and boats to successfully apprehend offenders.</p> <p>Need to work with regional agencies and countries to enforce fishing agreements.</p> <p>Use VMS tracking systems and log sheets to monitor vessels.</p> <p>Unwillingness of community to conform to regulations.</p> <p>Complete disregard of offshore fishing companies to conform to regulations.</p>	<p>Legislation and its implementation need to be improved to address widespread non-compliance with legislation.</p> <p>There is an unwillingness of inshore subsistence, artisanal and commercial fishers and the general community to conform to regulations whilst there is an almost complete disregard by the offshore fishing companies to conform to regulations.</p> <p>Non-compliance (e.g. underreporting and illegal fishing) issues have plagued the offshore tuna fisheries since its inception. Similarly, there are constant small scale non-compliance infringements associated with the inshore fishery, including fishing in protected areas, harvesting protected species and fishing in close seasons. Illegal fishing remains a serious threat to the long-term sustainable management of these valuable resources and there is a large loss of government revenue from non-compliance with offshore tax requirements. Non-compliance issues need to be urgently and effectively</p>	<p>Funds to manage offshore enforcement should be derived from government revenues from fishing licenses and from penalties for non-compliance. These funds should be managed by the proposed offshore autonomous fishing entity.</p> <p>Funds to manage inshore enforcement should be derived from a combination of national and state government funds and marine park entrance fees.</p> <p>The proposed PAN endowment fund should assist in financing inshore resource management.</p> <p>Developments of additional “ranger” programs are recommended, incorporating a large component of public awareness and</p>	Yr 1-5 Continuous

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
	Inshore illegal fishing jeopardizing long-term management and conservation goals of inshore and offshore resources.			<p>addressed to ensure the credibility of policies for economically and environmentally sustainable fisheries policies.</p> <p>Public awareness programs detailing regulations for the inshore fisheries need to be improved to encourage voluntary compliance through community support. However, strengthened enforcement of legislation and penalties for repeat offenders and commercial operations are needed.</p> <p>Voluntary compliance to regulation does not appear to be a viable option for the offshore commercial fishing fleets, highlight the importance of better enforcement and higher penalties. Fish license suspension and closures should be mandatory to force compliance.</p> <p>The BMR needs to facilitate and take a leading role to educate the fishing community of the nation's regulations and support regulatory agencies to reduce non-compliance issues.</p>	education for the inshore resources.	
6. Re-assess the shark	Proposal to allow the sale of shark	Shark capture and sale of	There is a general perception within	The government of Palau needs to reassess its current	The removal of the ban on shark finning	Yr 1

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
fisheries Management Plan and Shark Finning Regulation	<p>and its products accidentally caught during normal fishing practices of the offshore fishing fleet.</p> <p>Currently all accidental sharks caught are to be released dead or alive. No shark or product can be sold.</p> <p>Resulting in a waste of resources and a contradiction to fisheries policy of sustainable use of the marine resources.</p>	<p>product is illegal. As long as the industry operates, sharks will be caught and therefore current regulations are promoting the waste of a valuable resource.</p> <p>Furthermore, it appears it has led to illegal activities. Sharks fins have been reportedly harvested and the products are sold through illegal channels outside of Palau. Boats are travelling to distant ports in Philippines to sell all catches. This is against their fishing agreements with Palau. The process is considerable reducing tax revenues to the nation.</p>	<p>the nation that by banning the sale of sharks and shark products this will directly relate to decreased sharks caught within this fishery. This notion is not correct.</p> <p>In this case it appears the government is more concerned about its international environmental image (banning shark finning) than the sensible usage of the nation's marine resources.</p> <p>The current practice of wasting sharks does not fit in with these ideals.</p>	<p>regulation banning the sale of sharks and their products accidentally caught during the normal fishing practices of the offshore fishing fleet. Currently all accidental sharks caught are required to be released dead or alive. This constitutes a waste of resources and is in conflict with the nation's fisheries policy for the sustainable use of marine resources. As long as the industry operates sharks will be caught accidentally.</p> <p>Furthermore, the banning of shark finning prohibiting the legal revenue from this resource has encouraged fishing operations to land all of their catches at distant ports rather than in Palau. This is in breach of fishing agreements with Palau and leads to considerably lower tax revenues to the nation.</p> <p>Therefore, it is proposed that the government removes the ban on the sale of shark products from sharks that are accidentally caught by the offshore fishing community and allows the industry to utilise these products for commercial purposes. This will also lead to additional tax revenues for Palau.</p>	<p>for sharks that are accidentally caught in the course of the normal operations of offshore fishers is considered likely to help in generating more tax revenue from the offshore industry.</p>	

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
				<p>The BMR urgently needs to develop a comprehensive shark management plan that allows the capture and subsequent sale of shark and its products through a carefully managed and monitored fishery. The plan needs to incorporate the current legal shark capture laws for Palauan fishers and include this artisanal fishery in the management plan. The proposed semi-autonomous or autonomous offshore fishing entity would be the correct agency to manage the plan.</p> <p>The management plan needs to incorporate penalties and should consider whether the whole animal or parts of the animal need to be brought to port. The capture of pelagic shark species should be allowed while reef associated species should not. The reef associated shark species currently provide an income to the nation through its tourist industry (as well as their ecological functions).</p> <p>All sharks caught must be reported and included in the fishing capture log sheets on each vessel. All laws and regulations associated with this offshore fishery must be strictly enforced.</p>		

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
<p>7. Re-assess the Domestic Sale of By-catch from Commercial offshore Fishing</p>	<p>Proposal to allow the domestic sale of by-catch products from the offshore commercial fishing fleet.</p> <p>Currently it is illegal to sell any product from this industry domestically.</p> <p>However a proportion (30%-50%) of the by-catch product is illegally sold into the domestic market. Driven by high demand (citizen and tourist) for this product.</p>	<p>Currently illegal activities are undertaken.</p> <p>Authorities are aware.</p> <p>Regulations are not enforced promoting an illegal industry.</p>	<p>Currently it is illegal to sell the by-catch domestically, therefore regulations controlling fishing agreement need to change.</p> <p>Reluctance of the fishing companies to request agreement change. Involves alteration to their Foreign Investment License with the FIB, and would most likely require additional information associated with by-catch numbers and species caught (currently this data is at best poorly recorded). Therefore companies are not willing to provide this data as it could possibly be traced back to tax evasion related to the underreporting of catch.</p> <p>There is a perceived competition with</p>	<p>It is recommended that the current regulations that prohibit the sale of any fish caught by the commercial offshore long line fleet into the Palauan domestic market be reviewed. Amendments to the foreign fishing company license agreements to allow the controlled and legal sale of by-catch fish into the local market should be considered.</p> <p>Currently, it is illegal to sell any product from this industry domestically. However, it is estimated that around 30-50 percent of the by-catch product is illegally sold into the domestic market which is being driven by high demand (citizen and tourist) for this product.</p> <p>The current provision to ban the domestic sale of fish caught by these companies was designed to provide a level of protection for local Palauan fisherman. This protection measure may have had merit, however the market demand for this product has increased considerably since the agreements were made and currently the local fishers are unable to meet the domestic demand.</p> <p>Legalizing the sale will provide</p>	<p>Legalizing the sale of by-product catch would create income opportunities for business and raise the tax base.</p>	<p>Yr 1-2</p>

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
			local fishers supplying product.	a government tax revenue base (currently no tax is paid because the sales are illegal) and produce legal opportunities for business to purchase the product. This will increase the tax base and provide opportunities to diversify and add value products derived from these resources (e.g. smoked, dried product).		
8. Improve the Return to Palau from the Offshore Fishing Resource	<p>Provides an amendment of the existing taxation laws associated with the commercial offshore foreign fishing companies.</p> <p>To realize to the nation an equitable value from its resources.</p>	<p>Through tax reform assessments a new tax base has been developed for the nation with specific reform for the commercial fishing fleet. The major driver for this has been the constant non-compliance of the industry decreasing the legal revenues from this industry.</p> <p>The tax reforms cover a wide range of taxes however the major taxes that specifically affect the industry include;</p>	<p>The fishing companies are strongly against the proposed increases, especially the annual licence permit fee.</p> <p>The ability of the government to realize the tax from these companies. The needs to be a major improvement in compliance of the industry before full legal tax revenues are obtained. Enforcement of licence agreement is required.</p> <p>The suggested tax increases are</p>	<p>Undertake tax and fishing license reforms to help ensure a reasonable return from offshore fishing resources is realized for Palau.</p> <p>The revenues that Palau receives from the offshore fishing industry are considered to be very small. There are proposals to increase taxes and license fees for this sector that if realised would increase revenues significantly. However, more detailed consideration of the impact of proposed tax reforms is needed.</p> <p>The major taxes that specifically affect the industry include:</p> <ul style="list-style-type: none"> • annual license permit fee; • foreign labour fee; • foreign water vessel tax; • a fuel excise tax; 	More resources are needed to enforce existing tax requirements. Alternatively license fees could replace taxation as they are easier to collect.	Yr 1-5 Continuous

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
		Annual license permit fee, foreign labour fee, foreign water vessel tax, a fuel excise tax and fish export tax.	recommendations but are currently being considered.	<ul style="list-style-type: none"> • fish export tax. <p>Table 1 in section 4.7 of the main report provides a detailed summary of the proposed tax reforms and the recommended changes that directly affect this industry.</p> <p>In summary the task force recommendations on the foreign water vessel tax and a fuel excise tax are supported as interim measures until more comprehensive reforms can be introduced.</p> <p>In addition it is suggested that the following changes are made to the proposed fish export tax:</p> <ul style="list-style-type: none"> • USD1.00/kg for “A grade” • USD 0.50/kg for exported tuna loins • USD 0.25 for all other products (including smoked, dried). <p>The recommended increases for the annual license permit fee proposed by the tax force seem to be excessive and well above regional averages. However, the weak enforcement and extensive non-compliance that have characterized the offshore</p>		

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				fishing industry mean that license fees may be a better means of securing a reasonable return for Palau from the fish resource. It is recommended that the nature and size of an appropriate license fee need further investigation.		
9. Develop and Strengthen Fisheries and Resource Management Capacity.	<p>To strengthen the capacity of the BMR to collect, collate and analyse fisheries data to provide scientifically sound management protocols for the nation's marine resources.</p> <p>The BMR needs to act as a facilitator to assist government agencies, NGOs, and the private sector. To advice on the sustainable development and management of inshore resources.</p> <p>The BMR, through international agreements</p>	<p>BMR to continue to collect relevant data in conjunction with other government agencies, NGOs and communities to develop species specific and resource management plans.</p> <p>Incorporate these management systems into law and educate the community for compulsory compliance.</p> <p>Work with and support Protected Area Network (PAN) programs to increase agencies linkages and community support.</p>	<p>Lack of human resources and logistical requirements hinders the collection, analysis and distribution of data and management actions developed from these data.</p> <p>Unwillingness of fishers to provide data and comply with regulations (very poor compliance for offshore fisheries).</p> <p>Data paucity for offshore fisheries is a concern and must be rectified (enforcement).</p> <p>Time required instigating management</p>	<p>Strengthen the capacity of the BMR to collect, collate and analyse fisheries data to provide scientifically sound information to develop species-specific and ecosystems management protocols for the nation's marine resources.</p> <p>The BMR should act as a facilitator to assist national and state government agencies, NGOs, community groups and the private sector to advise on the sustainable development and management of inshore resources, specific research programs and aquaculture.</p> <p>Information collected should include the systematic and regular recording of data on fish landings for subsistence, artisanal and commercial operations and include regular resource assessments and monitoring programs for all inshore resources. This will help in the development of</p>	<p>Funds to collect data and manage the inshore resources and aquaculture should be derived from a combination of national and state government funds, agency grants, and marine park entrance fees. The proposed PAN endowment fund should assist in financing inshore resource management.</p> <p>Funds to manage the offshore data collection should be derived from revenues from fishing licenses and from penalties for non-compliance. This is proposed to be managed by the offshore fishery autonomous entity.</p> <p>Funding is required to</p>	Yr 1-5 Continuous

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
	collects offshore fisheries data (log books, catch records, port sampling) and provides this to regional agencies for management.		<p>recommendation into legislation and gaining community support.</p> <p>Unwillingness of some components of the community to fully support the management regimes, perverting to maintain illegal exploitation of resources.</p>	<p>species-specific and resource management plans for inshore fisheries and aquaculture species.</p> <p>All species-specific and resource management plans need to be supported by legislation and recommendations implemented and enforced.</p> <p>The BMR will need to facilitate and foster further cooperation among government agencies, NGOs and research agencies to define roles and ensure duplication of effort is minimized.</p> <p>The BMR staff will require continued capacity building in all techniques associated with resource management. Past partnership with regional agencies (e.g. SPC) should be continued to assist in undertaking these tasks. Continued community awareness needs to be undertaken to increase community understanding and compliance and this could be provided through the BMR extension programs.</p> <p>The BMR in cooperation with the recommended offshore</p>	up-grade existing computer hardware and soft ware to enable the data to be assessed.	

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
				<p>fisheries management entity needs to improve the mandatory collection of offshore fish data and provide this data to the regional agencies for the analysis and management of this fishery. This includes correct completion of fish log books, port sampling and onboard observers programs. The BMR should take an advisory role and assist this entity through mutual assistance programs.</p>		
<p>10. Develop and Improve Fisheries and Aquaculture Extension Services and Information Exchange.</p>	<p>To provide sound scientific information on aquaculture, fisheries development and management to government agencies, NGOs and the private sector.</p> <p>To develop and create through information exchange, a well informed industry based on economic sustainable principles.</p> <p>Through the BMR extension programs develop</p>	<p>Continue to inform and educate the nation on all aspects of marine resources.</p> <p>Information to be developed and delivered through extension and training programs.</p> <p>Include hands on practical training programs incorporating regulative information and fact sheets.</p> <p>To increase the knowledge base, to assist in the</p>	<p>Lack of human logistical resources to deliver the programs required.</p> <p>Extension staff availability and time required to develop programs, train stakeholders through extension programs is limited.</p> <p>Lack of stakeholder's awareness of program availability and misunderstanding of development opportunities especially associated with aquaculture.</p>	<p>Strengthen the capacity of the BMR to improve the delivery and efficiency of sound scientific extension and information exchange programs for aquaculture, fisheries development and resource management. The programs should be delivered to national and state government agencies, NGOs, communities and the private sector. The goals of the extension programs are to develop and create through information exchange a well informed industry based on economic sustainability principles.</p> <p>Through the BMR, the extension and information exchange programs need to be developed and delivered in a coordinated manner and</p>	<p>Funds could be a combination of government allocations (the BMR and MNRET) and external assistance.</p> <p>Government funds should be used to develop and manage these programs. Extension services should be a core function of the BMR and funded accordingly.</p> <p>Funding assistance from international donor agencies is needed to support specific projects.</p>	<p>Yr 1-5 Continuous</p>

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
	and deliver training programs and modules for specific activities (e.g. coral farming) including regulative processes required for development.	development and management of these industries		<p>include modules for specific activities (e.g. conservation area management, coral farming). The extension program needs to develop additional species-specific training programs especially for the aquaculture sector which should include; information fact sheets, production manuals and the delivery of training courses suitable for Palau. The “aquaculture package” developed by the BMR is a good example.</p> <p>The BMR needs to act as the facilitating agency to develop and deliver programs that address industry needs and support the development of farmers/fishers associations (e.g. PACA) and cooperatives. Increased cooperation and coordination between all agencies is required with clearly defined roles and responsibilities to reduce duplication of effort. These programs should fully integrate educational agencies (PCC), NGOs and community groups in the development and delivery of these programs.</p> <p>The BMR staff require continued capacity building in all techniques associated with</p>		

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				extension and information exchange programs and the information to ensure knowledge and skills are transferred and delivered to stakeholders. Past partnership with regional agencies should be continued to assist in undertaking these tasks and information delivered should be based on regional and international best practices and further linkages with these agencies should be developed to acquire expertise to attain the project goals (e.g. SPC, FAO).		
11. Aquaculture Development and Diversification	<p>To develop and diversify aquaculture production through research and extension to develop a sustainable industry.</p> <p>Industry still in its infancy, requires continuing research, extension and public sector buy in before it can reach it goals. Some commercial successes (e.g. coral cultivation).</p>	<p>Further diversify aquaculture species through pilot research programs suitable for Palau</p> <p>Increase extension programs to educate the public on sustainable aquaculture.</p> <p>Adopt the NASDP and base the development of aquaculture on these recommendations .</p>	<p>Lack of a clear government (industry) policy in place.</p> <p>Much interest in aquaculture but limited knowledge and skills in the private sector to develop projects.</p> <p>Hindrance by government (conflicts of interest), insufficient extension and information exchange.</p>	<p>Develop and diversify aquaculture production through research and extension to ensure a sustainable industry. All aquaculture projects need to be developed in accordance with the recommendations of the NASDP and be based on three interrelated and equally important principles:</p> <ul style="list-style-type: none"> • the biology of the species; • the environmental and social issues; • economic viability. <p>The aquaculture industry is still in its infancy and requires continued research, extension and public sector support before it can reach it goals.</p>	<p>The extension and research program of the BMR could be funded by a combination of external grants and internal staffing.</p> <p>Increased program coordination and cost sharing between agencies is required to develop the industry.</p> <p>Commercialization of potential species should be left to the private sector.</p>	Yr 1-5 Continuous

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
	<p>New species have been trialled with promising results (e.g. mangrove crab, milkfish, rabbit fish, grouper).</p> <p>Limited community and private sector exposure and understanding of aquaculture.</p>		<p>Industry has not been driven by the private sector.</p> <p>Conflicts with other user groups and environmental concerns. Past importation issues.</p> <p>Land and water lease agreements difficult to obtain, lack of community respect of leases and unwillingness of regulative bodies to support lease arrangements.</p>	<p>There have been several successes (e.g. coral cultivation) and several species appear to show promising results (e.g. giant clams, mangrove crabs, milkfish, grouper). The BMR should regulate the development of the industry through the NASDP, provide extension and information services (outlined above) and promote the private sector development of economic and environmentally viable species.</p> <p>The BMR will need to increase community and private sector awareness of the opportunities and constraints of aquaculture and incorporate access to supporting funds through small business development financing options.</p> <p>The BMR needs to facilitate the development of the aquaculture industry in cooperation with the nation's research agencies to provide sound, environmentally safe aquaculture production information. This information then needs to be adopted and developed by the private sector. The BMR needs to remove itself from the implementation stage of</p>		

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				<p>commercial aquaculture and focus on the facilitation of research and development activities.</p> <p>All staff members at the BMR require continued capacity building in all techniques associated with aquaculture (marine, brackish and freshwater). Past partnership with regional agencies (e.g. SPC) and bilateral donors (e.g. AusAID, JICA) and international agencies (e.g. FAO) should be continued to assist in the development and diversification of aquaculture species based on internationally accepted codes of conduct and best practices.</p>		
<p>8. Privatization of Commercially viable Aquaculture Commodities.</p>	<p>To produce all seven species of giant clams at the PMDC to develop a private sector industry and to restock reefs.</p> <p>The PMDC has been successfully culturing clams since 1980s and can produce all species on a semi commercial production basis.</p>	<p>To continue to culture all species of giant clams to:</p> <p>(1) Provide juveniles to the private sector to develop a viable giant clam commercial industry and reef restocking program.</p> <p>(2) Provide an extension service to train local</p>	<p>Unwillingness of the BMR and government to relinquish its roles for the production of giant clams to the private sector.</p> <p>Conflicts of interest with staff privately culturing clams and unsubstantiated reports of government clams being sold for person gain.</p>	<p>The Palau Mariculture Demonstration Center (PMDC) has successfully cultured all Palauan endemic species of giant clams for over twenty years and can produce all species on a semi-commercial production basis. These techniques are transferable. The production of these animals is well documented and international (aquarium, adductor muscle – food and ornamental) and domestic (food and ornamental) markets are well established. The goal of the PMDC should be to produce all seven species of</p>	<p>Current government funding will need to continue till the PACA or the private sector takes over the role of juvenile clam production and sale. Current government grant allocations that provide clams and equipment for free will need to terminate in the short- to medium-term. PACA would need to be self funding, acquiring operational funds from the income generated</p>	<p>Yr 1</p>

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
	<p>All culture techniques have been developed and are transferable. Moreover, the production of these animals is well documented and international (aquarium, adductor muscle –food and ornamental) and domestic (food and ornamental) markets are well established.</p>	<p>farmers in the juvenile culture of these animals,</p> <p>(3) Provide advice on the marketing opportunities and</p> <p>(4) To “handover” the entire program for the commercial production to the private sector.</p> <p>More recently the BMR is to support and train staff of the PACA to assume the BMR responsibilities of training clam farmers in all aspects of juvenile culture.</p> <p>PMDC retains the role of producing the clams.</p>		<p>giant clams, to develop a private sector industry and to restock reefs.</p> <p>The production of giant clams at the PMDC needs to be urgently transferred to the commercial private sector. The BMR must reduce its roles and responsibility for this industry and focus on other emerging aquaculture research and extension programs. To achieve this, a two-step approach is recommended:</p> <p>(1) The PMDC should continue to culture clams to provide the juvenile clam to the Palau Aquaculture Calm Association (PACA) which should then take over the responsibility to distribute clams to the farmers who should on-grow them to market size. The PACA should represent the clam farmers and market the product through commercial buyers. This should be implemented immediately. The BMR must relinquish its control over the clams once they are provided to the PMDC.</p> <p>(2) The hatchery production of giant clams should be</p>	<p>from clam sales.</p> <p>The BMR should continue to be responsible for providing permits and extension services.</p> <p>The privatization of the clam industry should mean that MNRET resources, currently involved in production and distribution, could be reallocated to strengthen other work program areas.</p>	

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
				<p>taken over by the private sector, so that the private sector is responsible for both production and distribution of clams. The private sector would either lease the PMDC or develop a new facility. This should be undertaken as soon as possible. Currently one company has expressed an interest. However, the exact form of privatization and the role of PACA in this second step are issues that need further investigation if full privatization is to be successful.</p> <p>The BMR will still need to remain involved in the clam program to ensure information exchange on all aspects of giant clam culture technology is effectively transferred to the private sector through extension programs. However, in time this extension role should be undertaken by PACA. Similarly, the BMR should remain the government agency responsible for the issuing of export permits.</p> <p>Issues associated with perceived conflicts of interest between the PMDC staff and the sale of clams and the</p>		

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
				unwillingness of the BMR and government to relinquish their involvement in the production and sale of giant mussel must change. The prospects for the commercial success for giant clams appear to be high and full privatization of the industry should be a priority.		
13. Develop and Diversify the Inshore Fisheries Economic Development Opportunities.	<p>To develop and diversify the economic and product base for subsistence, artisanal and commercial inshore fisheries. This will be done through research, extension and training targeting the domestic (local and tourist) and international markets.</p> <p>Develop a sustainable fisheries industry based on environment and economic best practices. Incorporating specific management and conservation programs.</p>	<p>Further diversify fisheries products and fishers capacity to increase revenues whilst decreasing resource conflict, over exploitation and past illegal activities.</p> <p>Fully integrate fishers into the protected areas development network programs, ensure full understanding of the principals of sustainable resource management and the implementation of these into subsistence, artisanal and commercial inshore fisheries.</p>	<p>Limited expansion in existing fisheries, requiring improved sustainable management e.g. trochus fishery</p> <p>Subsistence fishing is perceived to have minimal impacts on the resource if undertaken within the law.</p> <p>Artisanal and commercial fisheries have over exploited resources in the past and have been found to undertake illegal activities to meet high demand requirements.</p> <p>High monetary incentives for fishers to exploit</p>	<p>Develop and diversify the BMR's programs for the economic development of subsistence, artisanal and commercial inshore fisheries. The development of a sustainable fisheries industry must be based on environment and economic best practices incorporating specific management and conservation programs.</p> <p>The BMR should further facilitate the development of the industry through partnerships with research agencies, state governments, communities and private sector. The provision of small business development advice and access to funds should be further developed.</p> <p>There is over-fishing of inshore fisheries and there needs to be improved compliance with legislation.</p>	<p>Extension, research and information exchange programs delivered by the BMR funded by a core bureau funding and supplemented by external grants and marine park entrance fees. The planned PAN endowment fund has been proposed to assist.</p> <p>Increase program coordination and cost sharing between agencies, state governments, community and the private sector.</p> <p>Enforcement and education programs funded by core government funds, revenues from non-compliance penalties and grants.</p>	Yr 1-5 Continuous

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
	<p>Removing past non-compliance issues of illegal and over exploitive fishing practices.</p> <p>Reduce user conflict for resources and develop better working relationship with all users to provide better fisheries products and sustainably manage resources.</p>	<p>Increase extension programs to educate fishers and public on sustainable fishing protocols, regulations and applications associated with marine resource management.</p> <p>Through extension and information improve voluntary compliance to regulations.</p> <p>Promote and develop alternative livelihood opportunities for fishers (e.g. tourism sector).</p>	<p>resource.</p> <p>Poor voluntary compliance and enforcement agencies ignoring small non-compliance issues.</p> <p>Conflicts with other resource user groups especially tourist sector.</p> <p>Limited community and private sector understanding of business practices and sustainable fisheries development principles.</p>	<p>All existing fisheries and development opportunities need to be extended through research, extension and training targeting the domestic (local and tourist) and international markets. All fishers need to be active partners in the continued development and compliance of protected areas and management systems.</p> <p>Improved livelihood opportunities for subsistence, artisanal and commercial fishers include:</p> <ul style="list-style-type: none"> • Improving fish quality through increased product handling and processing resulting in improved economic returns per fish; • Promoting inshore fishers to shift fishing pressure from inshore resources to target pelagic offshore fish resources through the use of FADs. • Develop both inshore (e.g. bone fish) and offshore (e.g. marlin and sailfish) sports fishing using sustainable fishing practices tag and release; • Promote inshore fishers to shift livelihood activities from inshore fishing to gain employment in the tourist sector (boat captains, tour 		

Objective, strategy or activity	Goal, Status and Progress	Existing Proposed Actions	Implementation Issues	Recommended Actions	Funding and Costing Implications	Indicative Timing
				<p>guides).</p> <ul style="list-style-type: none"> The government should consider the development of fishing cooperatives to assist in the sustainable development of these fisheries. These would need to be self funded from contributions of members. <p>The government should consider the development of fishing cooperatives to assist in the sustainable development of these fisheries. These would need to be self funded from contributions of members.</p> <p>The BMR needs to increase extension services, information exchange and research programs on all aspects of inshore fishing. They also need to greatly increase the bureau collection of fisheries data for management purposes and develop species specific management plans (as detailed above).</p> <p>Strengthen enforcement through community education and awareness programs to ensure voluntary compliance. Improve regulations, increase enforcement and penalties for repeat offenders and commercial operators.</p>		

Appendix 3: List of Current Aquaculture Issues and Concerns

A list of current issues and concerns that need to be addressed to ensure the long- term sustainability of the aquaculture sector within the nation includes (but is not limited to):

- Policy and regulation reform, development and enforcement,
- Institutional strengthening and cross sectoral linkages and cooperation,
- Research (scientific and applied) development,
- Technology innovation and development,
- Species development,
- Broodstock domestication and genetic developments,
- Private sector development and support,
- Access to finance (e.g. credit schemes),
- Business development and planning (e.g. business plans),
- Commodity marketing (including supply chain, processing, value adding),
- Environment (management and protection and rehabilitation),
- Quarantine and disease detection, prevention and management,
- Common resource ownership, access and management,
- Integrated and participatory planning and management,
- Commodity and environmental control, including chemical usage,
- Training needs assessments,
- Training program development (linkages with government, NGO and private sector),
- Extension program development,
- Information dissemination,
- Stakeholder participation, and
- Association developments (e.g. producers, processes, marketing PACA).

Appendix 4: Palau Aquaculture Clam Association (PACA)

This appendix provides additional information to the members of the PACA to aid in the development of the association and its goal of commercially culturing giant clams. It is by no means exhaustive but addresses key issues that were raised during stakeholder workshops and discussions.

PACA has been in existence as a private sector commercial entity for approximately one year and has developed its articles of incorporation, board of directors and designated positions. The association is committed to developing a sustainable economic model that provides technical and financial assistance to the nation's clam farmers through a direct management support network. The association has roughly 50 members and 30 clam farmers and has direct government assistance from the line ministries of BMR and the Bureau of Economic Development (BED) designated by the president.

The BMR through its mandates are specifically tasked with providing the following direct assistance to PACA:

- The supply of cultured juvenile clams. Currently the BMR staffs select the clam farmer and clams for the distributions to all farmers. Each farmer receives free of charge 5000 one year old clams and can request an additional 5000 at a cost of \$250. This role of the BMR needs to be urgently transferred to the PACA.
- Provide technical extension assistance and advice on all aspects of clam culture, including site inspections, training courses, animal husbandry and farm design. BMR staff are currently training PACA staff and farmers to assume this role in the medium term future (2-3 years).

The BED is mandated to provide the following direct assistance to PACA:

- Allocating funds from a Taiwanese grant for the procurement of materials to develop the farms;
- Providing assistance to market the clams (including local and international markets). BMR has also provided assistance in this area; and
- Providing advice on the economic development of the association including opportunities for assistance through government and private sector funding sources.

These government assistance roles have been designed to diminish over time, as the technical capacity, skills and income generated of PACA staff developed. The association must be self funded and operate on a commercial basis, receiving operational funds through its membership from the sale of clams.

Through consultations with PACA, in conjunction with government line ministries and the private sector it is clear that the association currently requires urgent technical, managerial and marketing assistance before it can attain its goals. Therefore assistance through government support programs and outside donor granting opportunities needs to be secured and includes;

(1) Economic and financial assessments of clam farming covering:

- the functions of the association including financial, labour and logistical requirements to meet its objectives;
- cost of production and labour requirement models for clam farmers;
- market opportunities (domestic food, ornamental shell trade and live international aquarium trade) and potential returns for the different species;
- the requirements needed to market these products. Including an assessment of the capacities and best options available to PACA.

- (2) Technical assistance to the farmers to improve the skills and knowledge on all aspects of giant clam husbandry. The BMR has been tasked to undertake this role, however staffing and budget constraints within the bureau and the large number of farmers requiring assistance suggest that there is a need for outside assistance to improve the capacity of the farmers. This should be a priority as production is the basis of the industry. Funds to acquire this assistance should be sought.
- (3) Funding to provide a full time small business development advisor to train PACA staff in the day-to-day management and operational functions of the association, (book keeping and small business development skills). There are a number of potential avenues to seek this assistance (e.g. Volunteer networks- Peacorps, JOVC, AVA, AESOP, small business development office).
- (4) Funding for other activities of PACA.

Until skills in all areas within the association are attained it is recommended that PACA focuses on the production of clams. This would include training and capacity building of its members to provide a consistent high quality product. The development of a partnership with a third party private export company should be considered to take on the responsibility to market the clams, at least initially. This arrangement is essential for the development of this industry.

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