



# Technical Assistance Consultant's Report

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## Republic of Palau: Facility for Economic Infrastructure Management (Financed by the Japan Special Fund)

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For the Government of Palau  
Ministry of Finance

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**Asian Development Bank**

June 2008

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## Facility for Economic and Infrastructure Management Project

### Aquaculture and Fisheries Action Plan

**Final**



**PINZ**

*Education... Global Specialists*

**Prepared for:**  
**Government of Palau and**  
**Asian Development Bank**

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## **Acronyms**

AusAID	Australian Agency of International Development
BED	Bureau of Economic Development
BCD	Bureau of Commercial Development
BHRD	Bureau of Resource Development
BITTA	Bureau of International Trade & Technical Assistance
BLS	Bureau of Lands and Survey
BMR	Bureau of Marine Resources
BOA	Bureau of Agriculture
BOI	Bureau of Immigration
BPH	Bureau of Public Health
BRCT	Bureau of Revenue, Custom & Tax
BSP	Bureau of Public Safety
BTA	Belau Tourist Association
CITES	Convention on International Trade in Endangered Species of Wild Fauna & Flora
CCRA	Code of Conduct for Responsible Aquaculture
DEH	Division of Environmental Health
DFWP	Division of Fish and Wildlife Protection
DMLE	Division of Marine Law & Wildlife Protection
DT&C	Division of Transportation & Communications
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
JICA	Japanese International Cooperation Agency
MCT	Ministry of Commerce & Trade
MMDC	Micronesia Mariculture Demonstration Centre
MOF	Ministry of Finance
MOH	Ministry of Health
MOJ	Ministry of Justice

MOS	Ministry of State
MOU	Ministry of Justice
MNRET	Ministry of Natural Resources, Environment and Tourism
NGO	Non-Government Organisation
NASDP	National Aquaculture Strategy and Development Plan
NTFMP	National Tuna Fisheries Management Plan
OAG	Office of the Attorney General
OERC	Office of Environmental Response and Coordination
PACA	Palau Aquaculture Clam Association
PAN	Protected Areas Network
PCC	Palau Community College
PCOC	Palau Chamber of Commerce
PCS	Palau Conservation Society
PFAC	Palau Fisheries Advisory Committee
PICRC	Palau International Coral Reef Centre
PMDC	Palau Mariculture Demonstration Centre
PSFA	Palau Sports Fishing Association
PVA	Palau Visitors Authority
UNDP	United Nations Development Program
SPC	Secretariat of the Pacific Community
TNC	The Nature Conservancy

# 1. Executive Summary

1. This report provides an assessment of the strategies and priority actions to improve the sustainable development of the marine resource sector in Palau. The priority actions were developed through extensive stakeholder consultations and review of relevant literature. They are based on the information and rationale detailed in the separate FEIM report Aquaculture and Fisheries Review (PINZ, 2007). Stakeholders consulted included national and state government agencies, nongovernment organizations (NGO) and the private sector (Appendix 1 lists the stakeholders consulted).
2. The Aquaculture and Fisheries Action Plan set out in this report is divided into three sections. This includes a narrative explanation of the strategies and actions and two matrices. Matrix 1 summarizes the strategies and priority actions for this sector, indicating the level of priority (rank), responsibility for implementation, indicative cost and proposed timing. Matrix 2 provides more detail on how the priorities were established. Three criteria were used to set the priority action ranking described as: Support, Impact and Doable (SID). The SID selection criteria are described in more detail in Appendix 2.
3. In summary, it is necessary for the Bureau of Marine Resources (BMR) to streamline its policies, strategies and priority actions 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.
4. 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. There appears to be good income opportunities associated with the tourist sector for fishers (e.g. sport fishing, crew on boats) and aquaculture.
5. The priority action plans set out below identify key issues that need to be addressed in 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.

## 2. Strategies and Actions

6. The Goal of the BMR is The Sustainable Economic Development and Management of the Marine and Coastal Resources of Palau. The Strategies and Actions to achieve this goal are set out below.

### 2.1 Strategy 1: Improve Policy and Regulation

6. Clear and concise policy supported by practical legislation is imperative for the sustainable economic development and management of the marine and coastal resources. A strong institutional framework (supported by all stakeholders) articulated through a number of specific programs (e.g. single piece of legislation, aquaculture and fisheries development plans) is urgently required to be finalized and implemented to achieve Palau's fisheries goals. These policies, regulations and development plans provide the medium-term direction for the BMR. Eight priority actions were developed to enable the BMR to achieve the objectives of this strategy. These include:

#### 2.1.1 Action1. Finalize and Implement a Comprehensive National Fisheries Policy

7. Palau requires the finalization and implementation of a concise and well defined national fisheries policy that provides a clear understanding of this sector's development, regulation and management goals. This policy needs to be developed utilizing the "ecosystem approach" incorporating international standards of marine resource and environmental management, and sustainable economic development. It should include but not be limited to:
  - 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.
8. The BMR must be the lead agency that champions the development, completion and implementation of this policy. 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.
9. This action has reasonable support from all sectors and will require considerable stakeholder consultation. Finalization of the policy will require a consultant and donor funds.

### **2.1.2 Action 2. Finalize and Implement Comprehensive Fisheries Legislation**

10. This action requires the finalization and implementation of an updated single piece of fisheries legislation (National and State) based on sound environmental and sustainable development principles. The legislation should streamline regulations and define 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 being complex and difficult. Fisheries legislation needs to cover:
  - 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;
  - enforcement of regulations; and
  - quarantine issues.
11. The finalization of this legislation will enable a clear understanding of marine resource management, regulations and development issues and provide a regulatory framework for the long-term economic sustainability of this sector.
12. The 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.
13. This action has reasonable support from all sectors. It will require a consultant and donor funds to complete the action and will require considerable stakeholder consultation.

### **2.1.3 Action 3. Complete and Implement a NASDP including a CCRA and incorporate into the National Fisheries legislation**

14. The finalization and subsequent implementation of the development policies and management issues detailed in the draft National Aquaculture Strategy and Development Plan (NASDP) are required for the successful long-term sustainable development of this industry. The national Government, through the BMR and the Ministry of Natural, Environment and Tourism (MNRET), needs to finalize and adopt this document into legislation and implement the recommendations. The adoption of this plan into legislation is essential to help ensure that the development of aquaculture in Palau is economically and environmentally sustainable.
15. 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.

16. The development of aquaculture programs 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). The NASDP needs to include:
  - all aspects of aquaculture;
  - sustainable development protocols and regulations;
  - aquaculture and species assessments protocols;
  - technical manuals and culture practice protocols;
  - species specific management plans;
  - environment protocols;
  - quarantine protocols and management plans;
  - market opportunities; and
  - CCRA
17. This action has reasonable support from all sectors. It will require a consultant and donor funds to complete the action and will require considerable stakeholder consultation.

#### **2.1.4 Action 4. Finalize and Implement the NTFMP**

18. This action requires the finalization and implementation of the development policies and management plan detailed in the National Tuna Fisheries Management Plan (NTFMP). The adoption and implementation of all recommendations identified in this plan in legislation is essential for the sustainable environmental and economic development of the offshore fisheries resources of the nation.
19. 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 fishery. Similar entities are managing the offshore fisheries in neighbouring nations with success. The entity would need to manage the nation's requirements for:
  - international treaties and agreements;
  - fishing licenses;
  - managing compliancy issues;
  - collecting and managing revenues; and
  - collecting and managing the fisheries data (in partnership with the BMR and including national and regional observer programs and port sampling).
20. 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.

21. This action gained mixed support from all stakeholders. Further debate within the government needs to be undertaken to define the role of the offshore fishing industry, its management and organizational structure. Illegal fishing and non-compliance with regulations are major concerns to the sustainable development of this industry. The costs of managing this fishery should be self funded and generated by revenue derived directly from fishing licence fees and taxes. The continued collection and analysis of fisheries data are essential and require continued support from regional agencies (e.g. FFA, SPC).

#### **2.1.5 Action 5. Improve and Enforce Existing Fishing and Marine Regulations**

22. The Government of Palau (GOP) needs to improve existing marine and fisheries legislation to effectively address the current widespread non-compliance with regulations. Non-compliance (e.g. underreporting and illegal fishing) issues have plagued the offshore tuna fisheries since its inception. There is almost a complete disregard by the offshore fishing fleets to comply with regulations. Similarly, there are continuing small scale non-compliance infringements associated with inshore subsistence, artisanal and commercial fishing (e.g. fishing in protected areas, harvesting protected species and fishing in closed seasons).
23. 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. These issues need to be urgently and effectively addressed to ensure the credibility of regulations for sustainable fisheries policies.
24. 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. 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.
25. The BMR needs to facilitate and take a lead role to educate the fishing community on the regulations and support regulatory agencies to reduce non-compliance issues. State governments have a crucial role in resource management and need to be active participants in public awareness and enforcement. Nevertheless, enforcement is anticipated to remain problematic.
26. This suggested action gained reasonable support from all sectors but concerns were raised that full compliance may not be possible. Nevertheless support should be expected to improve with further community awareness programs and increased enforcement.
27. Programs highlighted for this action should be self funded for the offshore fishery and aquaculture sectors (licences, product sales) while funds to support this action for the inshore sector should be a combination of core government funds (national and state) and funds derived from programs (e.g. marine park entrances, protected areas network, PAN endowment fund).

### **2.1.6 Action 6. Re-assess the Shark Fishing Management Plan and Shark Finning Regulation**

28. The GOP needs to reassess its current regulation banning the sale of sharks and their products accidentally caught during the normal fishing practices of the offshore fishing fleet. Currently, all sharks caught accidentally are required to be released dead or alive (mostly dead). This constitutes a waste of resources and is in conflict with the current fisheries policy for the sustainable use of marine resources. As long as the industry operates, sharks will be accidentally caught.
29. 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.
30. It is proposed that the government removes the ban on the sale of shark products caught as a by-catch of the offshore fishing industry and allow the utilization of these products for commercial purposes. This will also lead to additional tax revenues for Palau and provide a mechanism to manage this fishery (e.g. data records).
31. There is an urgent need to consider adopting and implementing the BMR comprehensive shark management plan that articulates the capture and subsequent sale of sharks and their 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.
32. 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 through the management plan, 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).
33. All sharks caught must be reported and included in the fishing capture log sheets of each vessel. All laws and regulations associated with this offshore fishery must be strictly enforced.
34. This action has stimulated considerable debate and opinions diverge widely on this topic. Further debate (government, private sector and community) needs to be undertaken to define the role of the offshore fishing industry and management of these resources.

### **2.1.7 Action 7. Re-assess the Domestic Sale of By-Catch Products from the Commercial Offshore Fishing Industry**

35. It is recommended that the current regulations that prohibit the sale of any fish caught by the commercial offshore long line fleet in 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 in the local market should be considered.

36. It is currently illegal to sell any product directly in the domestic market. However, it is estimated that around 20-30 percent of the by-catch product is sold illegally in the domestic market. This is being driven by high demand (from locals and tourists) for this product.
37. The current provision that bans 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 and regulations were made and currently the local fishers are unable to meet the domestic demand.
38. Legalizing the domestic sale will provide a government tax revenue base (currently no tax is paid because sales are illegal) and produce legal opportunities for business to purchase the product. This will also be an opportunity to diversify and value added to these commodities (e.g. smoked, dried product). A study should be considered to assess the economic implications of these products on the economy of Palau.
39. This suggested action has general support from all sectors. Additional public awareness and further debate are required to define the economic value of legalizing the sale of this product. If the estimates of product entering the local market are correct, then there is economic justification to consider changing the current legal status of these products and increase livelihood options and the nation's tax base.

#### **2.1.8 Action 8. Improve the Economic Returns to Palau from the Offshore Fishing Industry**

40. An assessment of the current commercial offshore fishing tax and licensing systems needs to be undertaken to identify reforms that ensure reasonable returns are realized for Palau.
41. The current revenues 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. The major taxes that specifically affect the industry include:
  - annual license permit fee;
  - foreign labour fee;
  - foreign water vessel tax;
  - a fuel excise tax; and
  - fish export tax.
42. Table 1 in the offshore (V) section of the Aquaculture and Fisheries sector report provides a detailed summary of the proposed tax reforms and the recommended changes that directly affect this industry.

43. 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. It is also suggested that the following changes are made to the proposed fish export tax: USD1.00 per kilogram (kg) for “A grade”, USD 0.50/kg for exported tuna loins and USD 0.35 for all other products (including smoked, dried).
44. The recommended increases for the annual license permit fee proposed by the tax task 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. Furthermore, the consideration of auctioning the fishing licences to the highest bidder to generate direct revenues is an alternative measure that has been successfully used in neighbouring Pacific Islands (e.g. Vanuatu). It is recommended that the nature and size of an appropriate license fee needs further investigation.
45. The proposed action gained general support from all sectors in the industry, however a consensus on how this will be achieved has yet to be reached. Further debate within the government needs to be undertaken to define the economic value of the industry to Palau and what is a reasonable return.

## **2.2 Strategy 2: Institutional Development**

46. Strengthening the institutional capacity of the staff of the BMR to professionally manage this sector and provide information and guidance to stakeholders is imperative to the long-term sustainable development of the nation’s marine and coastal resources. Improved capacity of the BMR to manage data that will enable the continued development of resource management, fisheries and aquaculture development and the ability to provide this information to the general public through extension programs are core functions of the bureau. These programs have and are expected to continue to provide direct and tangible positive influence on the development of this industry. Further expansion of these services in conjunction with institutions of learning (e.g. PCC) and NGOs should be given a high priority and are seen as an important catalyst to initiate and maintain the development of this sector. Increased coordination and cooperation of these services will greatly assist in the development of this industry while reducing duplication and promoting better use of limited resources. Continued programs that enhance the knowledge and skills of the staff of the BMR and improve institutional operations are needed. The BMR needs to facilitate information sharing and cooperation between national and state government agencies, NGOs, community groups and the private sector to provide advice on the sustainable development and management of marine and coastal resources. Two key priority actions were identified for this strategy which include:

### **2.2.1 Action 9. Develop and Strengthen Fisheries and Resource Management Capacity**

47. This action provides recommendations to strengthen the capacity of the BMR to collect, collate and analyze fisheries data and to provide scientific information to

develop species-specific and ecosystem management plans and protocols for the sustainable development of the marine resources.

48. 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. The collection of fisheries data for all inshore resources needs to be improved. All species-specific and resource management plans need to be supported by legislation and recommendations implemented and enforced.
49. 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. The BMR will also need to facilitate and foster further cooperation among government agencies, NGOs and research agencies to define roles and ensure duplication of effort is minimized.
50. 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.
51. The BMR staff will require continued capacity building in all techniques associated with data collection and analysis and resource management. Past partnerships with regional agencies (e.g. SPC) should be continued. Continued community awareness programs need to be undertaken to increase community understanding and compliance with laws. This could be provided through the BMR extension programs.
52. This action has good support from all sectors, however concerns were raised on how these programs can be implemented and managed (including the enforcement component). Increased cooperation and coordination between all entities working in this area are essential for the development of this action. Cost sharing and information exchange need to be greatly improved. These programs should be self funded for the offshore fisheries and aquaculture sectors (licences, product sales) while funds to support this action for the inshore sector should be a combination of core government funds (national and state) and funds derived from programs (e.g. marine park entrances, PAN endowment fund).

### **2.2.2 Action 10: Develop and Improve Fisheries and Aquaculture Extension and Information Services**

53. This action provides recommendations to 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 goal of the extension program is to develop, through information exchange, a well informed industry based on sustainable economic and environmental principles.

54. 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 programs need 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.
55. 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 state governments, educational agencies (PCC), NGOs and community groups in the development and delivery of these programs.
56. 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.
57. This action has good support from all sectors, however concerns were raised on how these programs can be implemented and managed. Increased cooperation and coordination between all entities working in this area are essential for the development of this action. Cost sharing and information exchange need to be greatly improved. These programs should be self funded for the offshore fisheries and aquaculture sectors (licences, product sales) while funds to support this action for the inshore sector should be a combination of core government funds (national and state) and funds derived from programs (e.g. marine park entrances, PAN endowment fund).

### **2.3 Strategy 3: Increase Sustainable Production and Income Opportunities**

58. The development of the nation’s fisheries and aquaculture sectors are imperative to the further development of incomes and improvements to livelihoods for many people within Palau. Increased production and income opportunities resulting from this sector need to be based on principles of sustainable development employing a precautionary approach that is based on sound environmental and scientific data and driven by the nation’s policies and regulations. All development options need to be managed by the GOP to ensure the long-term environmental sustainability, however these commercial programs need to be driven by the private sector. The BMR should not be actively involved in commercial enterprises. Nevertheless, the BMR has an important role to assess and evaluate the potential of new fisheries and aquaculture opportunities and to provide assistance and advice to the private sector. Nine priority actions were identified for this strategy and are discussed below.

### **2.3.1 Action 11: Aquaculture Development and Diversification**

59. The BMR needs to further develop and diversify aquaculture production through research and extension to ensure the development of a sustainable industry that stimulates income opportunities. The development of these projects needs to be in accordance with the recommendations of the NASDP and be based on three interrelated and important considerations:
- The biology of the species;
  - The environmental and social issues; and
  - Economic viability.
60. 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 in Action 10) and promote the private sector development of economically and environmentally viable species.
61. The BMR needs to act as a facilitating agency to support the development of the aquaculture industry in cooperation with the nation's research agencies, state governments, farmer associations (e.g. PACA), communities and donor organizations to provide sound, environmentally safe aquaculture production information. This information then needs to be adopted and developed by the private sector.
62. 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 donor grants and small business development financing options. This action requires increased cooperation and coordination between all agencies with clearly defined roles and responsibilities to reduce duplication of effort.
63. 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.
64. The staff from the BMR will 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.
65. This action is a core function of the BMR and its development is essential to the long-term sustainable development of the nation's aquaculture industry. This action has reasonable support from all sectors and is expected to gain considerably more support with increased cooperation by all sectors.

### 2.3.2 Action 12: Privatization of Commercially Viable Aquaculture Commodities

66. The commercial development of aquaculture resulting from government initiative programs and partner agencies is a core function of the BMR and is essential to the long-term sustainable development of the nation's aquaculture industry.
67. The role of BMR is to act as a facilitating agency that supports the development of aquaculture through research and extension programs and to ensure the development is in accordance with national regulations and policies. Past aquaculture programs have been beneficial to the development of this industry and the BMR should continue this function. However, its role is not to be involved with commercial activities. The BMR needs to remove itself from the implementation stage of commercial aquaculture. The culture of giant clams and its commercial development needs to be urgently reassessed.
68. 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.
69. The production of giant clams at the PMDC needs to be urgently transferred to the commercial private sector. The BMR must redefine its roles and responsibilities for this activity and focus on other emerging aquaculture research and extension programs. Nevertheless, PMDC could consider culturing small numbers of giant clams to continue with reseedling programs. To achieve this, a two-step approach is recommended:
  - 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.

70. 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 (e.g. CITES). Current theft of cultured clams from farms needs to be urgently addressed and stopped.
71. This action has good support from all sectors and was allocated a priority ranking of 1.

### **2.3.3 Action 13: Develop and Diversify Inshore Fisheries Economic Development Opportunities**

72. This action provides recommendations to further 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.
73. The BMR should further facilitate the development of the industry through partnerships with research agencies, state governments, communities, NGOs, the private sector and donors. The provision of small business development advice and access to funds (grants, loans) should be further developed.
74. 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.
75. The BMR needs to increase extension services, information exchange and research programs on all aspects of inshore fishing and greatly increase the collection of fisheries data for management purposes and develop species specific management plans (as detailed in Action 10).
76. 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.
77. Suggested improved livelihood opportunities for inshore subsistence, artisanal and commercial fishers include:

### **2.3.4 Action 14. Improve fish quality through increased product handling and processing resulting in improved economic returns per fish**

78. BMR through its extension programs needs to continue to provide training programs to fishers to ensure quality of fish products attain high quality standards which in turn increase market acceptance and pricing. Continued donor assistance funds should be sought to provide equipment (e.g. coolers) and small scale infrastructure (e.g. ice plants, road access to harbours) to promote this action.

**2.3.5 Action 15. Promote inshore fishers to shift fishing pressure from inshore resources to target pelagic offshore fish resources through the use of FADs**

79. Replacing inshore fish demands with offshore species will result in less fishing pressure on reef associated finfish. This action is reliant on the deployment of FADs (requiring donor assistance) and the acceptance and willingness of the fishers to utilize these devices. Extension programs providing information on the fishing techniques required to be used and fish handling are essential. Consideration for safety at sea issues should be considered as a component of the extension programs.

**2.3.6 Action 16. Develop sports fishing both inshore (e.g. bone fish) and offshore (e.g. marlin and sailfish) using sustainable techniques (e.g. tag and release)**

80. This action will be driven by the private sector. However, BMR needs to play a lead role in developing the management practice of this fishery to ensure sustainable use of the resources. Training programs providing technical information detailing methods used to capture, tag and release these fish will be required. Donor assistance should be sought to develop these programs. Cooperation between these sectors is imperative to develop a sustainable industry.

**2.3.7 Action 17. Develop aquaculture opportunities that will provide additional income revenues to fishers**

81. BMR should continue its role as a facilitator to ensure practical and useful aquaculture research and extension programs are undertaken within the nation to provide the necessary information to develop this sector. BMR extension programs are essential for the development of this action.

**2.3.8 Action 18. Livelihood change: Stop fishing and gain employment in the tourism sector**

82. This action requires the tourism sector to further develop, thus creating alternative livelihood opportunities for Palauan fishers. The BMR in conjunction with the tourism associations and private sector need to coordinate the development of programs that will provide skills transfer to encourage participation of fishers in the tourism sector.

**2.3.9 Action 19. The government should consider the development of fishing cooperatives to assist in the sustainable development of fisheries**

83. These would need to be self funded from contributions of members. The BMR needs to take a lead role to ensure the nation's fisheries policies, regulations and management plans are fully understood and enforced by fishing cooperatives. In addition, the cooperatives and its members need to play an active role in providing BMR with fishery data (e.g. catch records, species numbers, size) to allow the Bureau to collect data to ensure the sustainable management of targeted species. It is hoped that past issues relating to fishery cooperative will not be repeated.
84. These actions have good support from all sectors but concerns were raised on how these initiatives will be implemented, managed (included enforcement

component) and what realistic options are available to fishers. Improved program coordination and cost sharing between agencies, fishers and the private sector are required.

### 3 Key Performance Indicators.

85. This section provides a summary suggested key performance indicators for the aquaculture and fisheries sector within the overall MTDS framework.

**Goal of the BMR: The Sustainable Economic Development and Management of the Marine and Coastal Resources of Palau.**

#### **Key Performance Indicators**

- Progress on each of the Actions as Specified in the Action Plan matrix.
- Completion and Implementation of the Policies, Legislation and Development Plans.
- Increased aquaculture production as a proportion of GDP
- Increase in GDP derived from the offshore commercial fishery
- Increase in employment in the private aquaculture and marine based tourist sector.
- Decrease in infringement and legal proceedings for inshore and offshore fishing sector.
- Increase in fisheries data collection and management programs.
- Increase in formal Qualification and training for BMR staff.

## Matrix 1. Aquaculture and Fisheries Action Plan

*See Appendix 3 for updated Action Plan as at December 2009*

**Goal: Sustainable Economic Development and Management of the Marine and Coastal Resources of Palau.**

Strategy	Action No.	Action	Overall Priority (Rank)	Responsibility	Cost USD	Timing
Improve Policy and Regulation	1	Finalize and Implement a National Fisheries Policy based on an “ecosystem approach” incorporating international standards of marine resource and environmental management and sustainable economic development.	1	Lead agencies: MNRET (BMR) & PFAC. Assisted by: MCT (BCD-DT&C), MOJ (OAG, BOI, BPS-DMLE & DFWP), MOF (BRCT), EQPB, OERC, PAN & MOH (BPH-DEH).	TA \$60,000C	Yr 1-2
	2	Ensure an updated single piece of fisheries legislation (National and State) based on sound environmental and sustainable development principles is and implemented. Complements the fisheries finalized, adopted policy.	1	Lead agencies: MNRET (BMR), PFAC, MOJ (OAG, BOI, BPS-DMLE). Assisted by: MCT (BCD, BHRD), MOF (BRCT), EQPB, OERC, PAN & State Governments	TA \$100,000C	Yr 1-2
	3	Complete, adopt and implement the development polices and management plans detailed in the draft National Aquaculture Strategy and Development Plan (NASDP) including the Code of Conduct for Responsible Aquaculture (CCRA)	2	Lead agencies: MNRET (BMR) Assisted by: MOS (BITTA), MOJ (OAG, BPS-DFWP), MOA, MOF (BRCT) MOH (BPH-DEH), EQPB, OERC, PAN & PCC.	TA \$60,000C	Y 2-3

Strategy	Action No.	Action	Overall Priority (Rank)	Responsibility	Cost USD	Timing
		and adopt into legislation.				
	4	Finalize and implement the development polices and management issues detailed in the National Tuna Fisheries Management Plan (NTFMP).	6	Lead agencies: MNRET (BMR) Assisted by: MCT (BCD, BHRD), MOJ (OAG, BOI, BPS-DMLE), MOF (BRCT), MOH (BPH-DEH), MOS (BITTA), EQPB, OERC, PAN	May require TA \$30,000	Y 2-3
	5	Improve and enforce existing fishing regulations to effectively address widespread non-compliance (offshore and inshore fisheries).	8	Lead agencies: MNRET (BMR) & PFAC, MOJ (OAG, BOI, BPS-DMLE & DFWP). Assisted by: MOF (BRCT), MOH -DEH (BPH), EQPB, OERC, State Government.	Increase operational costs \$5-10,000 R	Y 1-5 Ongoing
	6	Evaluate the shark finning regulation to reassess current regulation banning the sale of sharks and their products accidentally caught during the normal fishing practices of the offshore fishing. This should include the implementation of the actions highlighted in the BMR comprehensive shark management plan.	10	Lead agencies: MNRET (BMR) Assisted by: MOJ (OAG, BOI, BPS-DMLE), MOF (BRCT), MOS (BITTA), EQPB & OERC.	nil	Y 1
	7	Evaluate the domestic sale of by- catch products from the commercial fishing industry and consider a change to allow the sale of by-catch products from this industry onto the domestic market.	11	Lead agencies: MNRET (BMR) Assisted by: MOJ (OAG, BPS), MOF (BRCT), MOH (BPH-DEH), EQPB, & OERC.	TA \$30,000	Y 1-2

Strategy	Action No.	Action	Overall Priority (Rank)	Responsibility	Cost USD	Timing
	8	Improve the economic returns to Palau from the offshore fishing industry by undertaking tax and fishing license reforms to help ensure a reasonable return from offshore fishing resources is realized.	7	Lead agencies: MNRET (BMR), MOF (BRCT), PFAC, MOJ (OAG, BPS-DMLE). Assisted by: MCT (BCD, BHRD) & MOS (BITTA).	nil	Y 1-5 Ongoing
Institutional Development	9	Develop and improve fisheries and resource management capacity by strengthening 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 sustainable development of the marine resources and fisheries. Implement measures to up skill and to retain staff.	4	Lead agencies: MNRET (BMR) & PFAC. Assisted by: PCC & NGO (e.g. PICRC, PCS, TNC).	TA \$10,000 data base management Increase office equipment (computer training) \$5-10,000 every 3 years R	Y 1-5 Ongoing
	10	Develop and improve fisheries and aquaculture extension services and information exchange through strengthening the capacity of the BMR to improve the delivery and efficiency of sound scientific extension and information exchange programs for aquaculture, fisheries and resource	4	Lead agencies: MNRET (BMR) Assisted by: EQPB, PCC & NGO (e.g. PICRC, PCS, TNC).	Increased operational costs \$5-10,000 R	Y 1-5 Ongoing

Strategy	Action No.	Action	Overall Priority (Rank)	Responsibility	Cost USD	Timing
		management.				
Increase on production and sustainable income opportunities	11	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.	2	Lead agencies: MNRET (BMR) Assisted by: BOA (BLS), PCC, NGO (e.g. PICRC, PCS, TNC) and private sector.	Increased Operational costs \$3-6,000 R	Y 1-5 Ongoing
	12	Privatization of commercially viable aquaculture commodities (e.g. giant clams, hard and soft corals, grouper) produced at the PMDC. The BMR must redefine its role associated with proven commercial commodities and focus on other emerging aquaculture research and extension programs.	1	Lead agencies: MNRET (BMR), MOJ (OAG), BOA (BLS). Assisted by :PCC, PACA and private sector.	nil	Y 1-2
	13	Develop and diversify the BMR's programs for the economic development of subsistence, artisanal and commercial inshore fisheries and resulting livelihood opportunities. The development of a sustainable fisheries industry must be based on environment and economic best practices incorporating specific management, research and conservation programs.	3	Lead agencies: MNRET (BMR) Assisted by: MOJ (OAG, BOI, BPS), MOS (BITTA), PCC, NGO (e.g. PCRC, PCS, TNC) and private sector.	Increased operational costs \$5-8,000 R	Y 1-5 Ongoing
	14	Improve fish quality through increased product handling and processing resulting in improved economic returns per fish.	7	Lead agencies: MNRET (BMR) Assisted by: BOA (Quarantine), EQPB, MOH (BPH) and private	nil	Y 1-5 Ongoing

Strategy	Action No.	Action	Overall Priority (Rank)	Responsibility	Cost USD	Timing
				sector.		
	15	Promote inshore fishers to shift fishing activities and pressure from inshore resources to target pelagic offshore fish resources through the use of FADs.	9	Lead agencies: MNRET (BMR) Assisted by: fishing cooperative and private sector.	Funds needed for FAD's R	Y 2-5 Ongoing
	16	Develop both inshore (e.g. bone fish) and offshore (e.g. marlin and sailfish) sports fishing using sustainable fishing practises (e.g. tag and release). BMR to manage (management plans required), private sector to operate (tourism based).	3	Lead agencies: MNRET (BMR) Assisted by: Palau Sports Fishing Association (PSFA), fishing cooperative and private sector.	nil	Y 2-5 Ongoing
	17	Promote inshore fishers to shift livelihood activities from inshore fishing to gain employment in the tourist sector (boat captains, tour guides, sport fishing guides).	5	Lead agencies: MNRET (BMR) Assisted by: private sector (tourism), PCOC, PSFA, BTA, PVA.	nil	Y 1-5 Ongoing
	18	The government should consider the development of fishing cooperatives to assist in the sustainable development of the inshore fisheries. These would need to be self funded from contributions of members.	9	Lead agencies: MNRET (BMR) Assisted by: private sector.	nil	Y 2-3

## Matrix 2: Aquaculture and Fisheries Strategies, Actions and Priorities

### Goal: Sustainable Economic Development and Management of the Marine and Coastal of Palau.

Strategy	Action No.	Action	S(25%)	I (50%)	D(25%)	Overall Priority ( Rank)	Comment
Improve Policy and Regulation	1	Finalize and Implement a National Fisheries Policy based on an “ecosystem approach” incorporating international standards of marine resource and environmental management and sustainable economic development.	7	7	7	7.0 (1)	Reasonable support from all stakeholders. Will require donor funding assistance and consultant inputs.
	2	Ensure an updated single piece of fisheries legislation (National and State) based on sound environmental and sustainable development principles is finalised, adopted and implemented. Complements the fisheries policy.	7	7	7	7.0 (1)	Reasonable support from all stakeholders. Will require donor funding assistance, consultant input and requires extensive stakeholder involvement and community awareness and support.
	3	Complete, adopt and implement the development polices and management plans detailed in the draft NASDP including the CCRA and adopt into legislation.	6.5	8	4.5	6.75 (2)	Reasonable support by all stakeholders. Core government funding plus donor funding assistance.
	4	Finalise and implement the development polices and management issues detailed in the National Tuna Fisheries Management Plan (NTFMP).	6.5	7	4	6.1 (6)	Reasonable support, further debate within the government required, much of the contention rests with the

Strategy	Action No.	Action	S(25%)	I (50%)	D(25%)	Overall Priority ( Rank)	Comment
							removal of the offshore fisheries roles and responsibilities from the BMR to an independent entity.
	5	Improve and enforce existing fishing regulations to effectively address widespread non-compliance (offshore and inshore fisheries).	6	6.5	4.5	5.8 (8)	Medium support from all stakeholders, but should improve with community awareness. Enforcement is problematic.
	6	Evaluate the shark finning regulation to reassess current regulation banning the sale of sharks and their products accidentally caught during the normal fishing practices of the offshore fishing. This should include the implementation of the actions highlighted in the BMR comprehensive shark management plan.	5	6	4.5	5.4 (10)	Support varies and controversial issue. Further debate required to define the role of the offshore fishing industry and its management of these resources. Removal of the ban will increase government revenue.
	7	Evaluate the domestic sale of by-catch products from the commercial fishing industry and consider a change to allow the sale of by-catch products from this industry onto the domestic market.	4	5	4	4.5 (11)	Generally support. Further debate required to define the economic value of legalizing the sale of this product. Legalizing the sale of by-product catch would create income opportunities for business and raise the tax base.

Strategy	Action No.	Action	S(25%)	I (50%)	D(25%)	Overall Priority ( Rank)	Comment
	8	Improve the economic returns to Palau from the offshore fishing industry by undertaking tax and fishing license reforms to help ensure a reasonable return from offshore fishing resources is realized.	6	7	4	6.0 ( 7 )	Support to obtain reasonable and fair revenue. Consensus on how it can be achieved is yet to be reached. Effective collection of revenue requires considerable work and will provide long-term revenue to the government.
Institutional Development	9	Develop and improve fisheries and resource management capacity by strengthening 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 sustainable development of the nation's marine resources and fisheries. Implement measures to up skill and to retain staff.	6.5	7	5	6.3 (4)	Reasonable support by all stakeholders. Concerns expressed on implementation under current staffing/skills level at BMR. Core function of BMR. Increased program coordination and cost sharing between agencies and training/skills development for BMR staff.
	10	Develop and improve fisheries and aquaculture extension services and information exchange through strengthening 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.	6.5	7	5	6.3 (4)	Reasonable support by all stakeholders. Concerns expressed on implementation under current staffing/skills level at BMR. Core function of BMR. Increased program coordination and cost sharing between agencies and training/skills development for BMR staff.

Strategy	Action No.	Action	S(25%)	I (50%)	D(25%)	Overall Priority ( Rank)	Comment
Increase production and sustainable income opportunities	11	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.	7.5	8	3.5	6.7 (2)	Reasonable support by all stakeholders. Core function of BMR. Increased program coordination and cost sharing between agencies and training/skills development for BMR staff.
	12	Privatization of commercially viable aquaculture commodities (e.g. giant clams, hard and soft corals, grouper) produced at the PMDC. The BMR must redefine its role associated with proven commercial commodities and focus on other emerging aquaculture research and extension programs.	8	8	4	7.0 (1)	Strong support from private/community sector mixed support from BMR BMR core role is management, extension and research not commercial production.
	13	Develop and diversify the BMR's programs for the economic development of subsistence, artisanal and commercial inshore fisheries and resulting livelihood opportunities. The development of a sustainable fisheries industry must be based on environment and economic best practices incorporating specific management, research and conservation programs.	6	8	4	6.5 (3)	General support by all sectors but some concerns on how these initiatives will be implemented, managed (included enforcement component) and what options are available to fishers. Core function of BMR. Increased program coordination and cost sharing between agencies and training/skills development for BMR staff.
	14	Improve fish quality through increased product handling and processing resulting in improved	7	6	5	6.0 (7)	Reasonable support. Requires increased public awareness

Strategy	Action No.	Action	S(25%)	I (50%)	D(25%)	Overall Priority ( Rank)	Comment
		economic returns per fish.					and extension support.
	15	Promote inshore fishers to shift fishing activities and pressure from inshore resources to target pelagic offshore fish resources through the use of FADs.	7	6	4	5.75(9)	Reasonable support. Requires increased public awareness and extension support. Operational costs a major factor.
	16	Develop both inshore (e.g. bone fish) and offshore (e.g. marlin and sailfish) sports fishing using sustainable fishing practises (e.g. tag and release). BMR to manage (management plans required), private sector to operate (tourism based).	7	7	5	6.5 (3)	Reasonable support. Requires BMR to manage the resources through species specific management plans and catch release programs.
	17	Promote inshore fishers to shift livelihood activities from inshore fishing to gain employment in the tourist sector (boat captains, tour guides, sport fishing guides).	7	7	4	6.25 (5)	Reasonable support for the concept, however opportunities need to increase to provide benefits.
	18	The government should consider the development of fishing cooperatives to assist in the sustainable development of the inshore fisheries. These would need to be self funded from contributions of members.	7	6	4	5.75 (9)	Reasonable support however concerns raised over past failures. These issues need to be addressed.

## References

FEIM, 2007. Aquaculture and Fisheries Section Report. Facility for Economic and Infrastructure Management Project.

FEIM, 2008, Medium-Term Development Strategy for Palau. Facility for Economic and Infrastructure Management Project.

## Appendix 1. List of Stakeholders Consulted

<b>Name</b>	<b>Position</b>	<b>Agency</b>
Mr.Theo Isamu	Director	Bureau of Marine Resource (BMR)
Ms. Nannette Malsol	Fisheries Law Compliance Officer	BMR
Mr. Leon Remengesau	PMDC Manager	BMR
Mr. Jackson Ngiraingas	Peleliu State Govenor	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 Surveillace 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

<b>Name</b>	<b>Position</b>	<b>Agency</b>
Mr. Victorio Uherbelau	Director	Compact Review Commission
Ms. Anna Perez	Fisheries Officer	BMR
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. Sabo Tudong	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	BMR

## Appendix 2. Criteria for Setting Sectoral Priorities (from FEIM, 2008)

1. An important aspect that will need more consideration relates to the setting of priorities for policies, strategies and activities both within sectors and across sectors and major policy areas. This is because an effective medium-term strategy must recognize the economic, social, political and practical constraints that exist in making progress with an economic development plan. In formulating the MTDS the following criteria have been used to help set priorities for the MTDS:
  - **Support (S):** the proposed policies, strategies and actions must have or be likely to have the support of the community and elected officials. It may be the case that many proposals do not have immediate support but they are so important for economic development that there should be a committed effort to explain the benefits of proposals and ensure support for them. The support criterion refers to the extent that support could be expected assuming a reasonably effective communications effort.
  - **Impact (I):** the proposed policies, strategies and actions must have or be likely to have a substantial impact in terms of sustainable economic development of the specific objective under consideration. This criterion is self explanatory and will rely on the various sectoral and policy papers prepared by FEIM for the MTDS. However, it needs to be recognized that impact must also take account of implementation capacity which is to a large extent covered in the third criterion below.
  - **Doable (D):** the proposed policies, strategies and actions must be practicable and implementable having regard to the time and resource constraints that exist.
2. Separate annexes explain how the Support, Impact and Doable (SID) criteria were applied in different sectors and for economic policies and institutions. Tables are provided showing how the priorities were established for each of the specific actions recommended in the MTDS by applying the SID Criteria. The Impact criterion is given a weight of 50 percent and the other Support and Doable criteria are each given weights of 25 percent. Each action is given a ranking out of 10 with 10 being the highest score. Some comments on the rankings are also provided to aid in understanding. An overall score for each action was then obtained as a weighted average of the individual SID criteria using the weights just described. The actions were then ranked in accordance with the overall score and are shown in the action plans in each of the specific sectors in this paper. A ranking of 1 is the highest ranking.
3. The rankings can be changed if circumstances, assessments and priorities change or new actions are recommended as the MTDS is being implemented.

## Appendix 3. Aquaculture Sector Strategies, Actions and Priorities – updated December 2009

Goal: Sustainable Economic Development and Management of the Marine and Coastal Resources of Palau

Strategy	Action No.	Action	Current Status	ISSUES
1. Improve Trochus hatchery shed to mass produce trochus juveniles for reseeding at sanctuaries	1	To secure procurement of materials for trochus hatchery shed, to mass produce juveniles for reseeding, stock assessment, redesignation of state sanctuaries	The BMR has submitted development activities to the Minister and executive staff for review and funding.	Funding: with a 10% cut on the budget, allocation of funding is being sought outside and other means are being explored by the Bureau.
2. Continue to strengthen	2	Strengthen mass produce of clam seedlings, continue clam farm monitoring and stock assessment	Because of the funding constraints, Minister Fritz and Director Isamu are	Possible difficulty in the acceptance of charging the services to the public.

Strategy	Action No.	Action	Current Status	ISSUES
clam farming			discussing the possibility of charging the public for the services being rendered to the public. At present, BMR provides the seedlings plus farming materials for all interested citizens. Still in progress and a big change is as of 12/31/09 the Director has retired and work is being directly done with Minister and Nannete Malsol as the acting director.	
3. Improve Policy and Regulation	3	Complete, adopt and implement the development polices and management plans detailed in the draft National Aquaculture Strategy and Development Plan (NASDP) including the Code of Conduct for Responsible	Draft NASDP has been received but need more improvement to be based on the FAO CCRA. Need also to	

Strategy	Action No.	Action	Current Status	ISSUES
		Aquaculture (CCRA) and adopt into legislation.	draft Palau National Code of Conduct for Responsible Aquaculture	
4. Continue Dialogue with Taiwan, ROC for the BMR PMDC Extension Aquaculture Center at Ngatpang State	4	Finalize Dialogue with Taiwan, ROC on the process and finalization of approval for the establishment of the BMR PMDC extension aquaculture center.	Expert architectural design is tentatively to arrive end of November 2009.  Expert delayed arrival and confirmed date is yet to be confirmed.	
5. Increase on production and sustainable income opportunities	5	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.	NASDP being finalized and needs to be adopted as legislation. Minister and Director will be primary introducers of such to the Congress for adoption.	An effective campaign needs to be developed to stress the importance of NASDP and its purpose.

Strategy	Action No.	Action	Current Status	ISSUES
	6	Evaluate the costs and benefits of, and develop best approaches to, the privatization of commercially viable aquaculture commodities (e.g. giant clams, hard and soft corals, grouper) produced at the PMDC. The BMR, in collaboration with key stakeholders such as PACA, must define its role associated with proven commercial commodities and focus on other emerging aquaculture research and extension programs. Extension Center/Taiwan Vol.	On-going working relationship with PACA to assist in its capacity building.	PACA needs to organize effectively if its longterm goal is to be the provider of services to interested farmers.

The Aquaculture and Fisheries sector has experienced a fundamental change for the Director that I have been working with has retired and from Minister Fritz's request, he wanted Nannette Malsol to review the action plans as she is the Acting Director as of 12/31/09.

I have met with Ms. Malsol to discuss and have informed her that I cannot wait for her revised versions as I have to send over that I worked with with former Director, Theo Isamu. The input that I put was the change in directorship and I note here that Ms. Malsol is updating the Action Plans and has asked for extensive help in utilizing the Action Plans.

Ms. Malsol is well-equipped to review and update and we will further meet to discuss how this can be used in their performance reports.