

Information Paper 3

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SPC Regional Aquaculture Strategy



SPC REGIONAL AQUACULTURE STRATEGY

Purpose

This paper is presented to HOF 8 for noting on the outcome of the SPC/FAO Regional Aquaculture Scoping Mission Workshop in Nadi in October 2011 which results in the review of the SPC 2007 Regional Aquaculture Strategy and formulation of the draft SPC Regional Aquaculture Strategy 2013–2017.

SPC Heads of Fisheries

DRAFT SPC REGIONAL AQUACULTURE STRATEGY

The following are the general contents of the SPC Regional Aquaculture Strategy

1. Introduction
2. Highlights of the SPC 2007 Aquaculture Strategy
3. Snapshots of aquaculture status
4. Regional constraints and opportunities
5. The Strategy
 - Purpose
 - Vision
 - Guiding Principles
 - Programme and outcome
 - Implementation

1. INTRODUCTION

The Pacific region with its physical, natural, environmental, cultural and demographic endowments have been a source of comparative advantage or a cause of limited success in aquaculture development projects and enterprises.

The initial efforts by Pacific island nations to develop aquaculture industries were led by a number of key nations including French Polynesia, New Caledonia, Cook Islands and Fiji. These efforts were initially supported by the FAO Regional Aquaculture Development Programme which ran from the late 1980s to the 1990s.

The SPC aquaculture program was established in the early 2000s as the lead agency to provide technical services, coordinate capacity building and a clearing house for information. The efforts by national fisheries administrations, SPC and FAO have been augmented by those of other technical agencies including ACIAR, WFC, PIDP and JICA, FAO. For the most part, these activities lacked formal coordination mechanisms at a regional level.

On the 6th of December 2010, a five day regional conference was held in Papeete in the French Polynesia. The Tahiti Aquaculture 2010 Meeting which focussed on finfish and mariculture was attended by a number of Pacific Island countries and territories was also attended by participants from the Pacific, Asia and the French Overseas Departments and Territories. Among the issues that were discussed, one of the major outcomes from the Tahiti Aquaculture 2010 meeting included development of a regional biosecurity framework for SPC.

On 23 September 2010 during the FAO Global Conference on Aquaculture in Thailand an informal *'Evening on Pacific Aquaculture'* was held with five Pacific island countries. The meeting was also attended by representatives from other fisheries organisations and educational institutes. At that meeting it was decided that the islands of the Pacific should be regarded as a *'least aquaculturally developed'* region of the world deserving of special attention, and this was later reaffirmed at the FAO COFI meeting in Rome in 2011.

One key outcome of these events was an agreement to hold a *FAO/SPC Regional Scoping Workshop on Pacific Aquaculture* to assess the needs and map out a coordinating strategy and actions for all major and international agencies and other relevant stakeholders working on aquaculture development in the region. The meeting was held in Nadi, Fiji 11 to 14 October 2011 and developed the key elements of this strategy.

Since 2007 the work of SPC has been driven by the SPC aquaculture action plan. The plan is a vehicle for supporting SPC members towards fulfilling the potential of aquaculture in the region. It builds on the achievements that resulted in an earlier milestone for aquaculture in the Pacific – the first SPC aquaculture plan in 2002.

At the time of the FAO/SPC Regional Scoping Workshop, the 2007 action plan due for review and it was decided to combine the outcomes of the coordination workshop and a review of this document for provide a refreshed vision and mandate to support the development of aquaculture in the region.

While the 2007 plan is built around commodity groups rather than programmes, many of the key elements of that plan remain relevant, and will be included in the strategy.

2. HIGHLIGHTS OF THE SPC 2007 AQUACULTURE STRATEGY

The SPC 2007 aquaculture strategy sets the regional focus on aquaculture based on prioritizing commodities for livelihood and for food security in the region as well as identifying important cross-cutting issues surrounding the sector. These are presented below:

2.1. Highlights for commodities targeting livelihood

2.1.1 Pearl culture

- A significant drop in value of pearl production in the region from over USD140 million in 2007 to just over USD85 million in 2010 as a result of decline in production from French Polynesia and Cook Islands is related to a number of factors such as over-supply especially for lower graded pearls, poor market price and a number of environmental related problems such as water quality and disease.
- Developments in pearl culture continue and includes smaller and more specialist producers that target local tourism and local industry, for instance in Fiji and FSM.
- New research are underway in Tonga to produce round pearls from other pearl oyster species such as winged pearl oyster (*Pteria penguin*), and baseline studies of pearl culture are currently being investigated in PNG.

2.1.2 Seaweed culture

- Seaweed continues to be promoted as an important cash crop for the region as it is relatively simple to culture and requires little investment.
- Major producing country is Solomon Islands with 8,000 tonnes recorded in 2010 followed by Kiribati with 4,700 tonnes.
- Lack of suitable varieties and ice-ice disease are some of the constraints affecting seaweed producing countries such as Fiji and PNG.
- Improved strains of seaweed are being sought recently from Indonesia and are currently being cultured in Fiji with the aim that these would be distributed to countries who are interested in seaweed culture.

2.1.3 Marine ornamentals

- Opportunities for growth for giant clam and coral culture production targeting aquarium trade industry appears good especially for locations readily accessible to international airports. However, production coming from the region is not meeting the market demand.
- Focus continued to be on assisting member countries through regional workshops in 2010 and 2012 to meet their OIE reporting requirements.

2.1.4 Marine shrimp

- Shrimp being the next most valuable commodity to pearl is also successfully cultured in CNMI, Guam, Fiji, French Polynesia, New Caledonia, Papua New Guinea and Vanuatu.
- Shrimp value also declined from under USD25 million in 2008 to around USD 13 million in 2010. A major aspect has been on providing technical assistance to improving aquatic biosecurity aspect in the shrimp farming industry particularly in French Polynesia and New Caledonia.
- A major review of shrimp farming in the Pacific has been undertaken in 2010 ("Shrimp farming in the Pacific Island countries and Territories: status and trends in 2010"). Securing the availability and quality of breeders to supply post larvae to the farms through captive breeders in the key message to any aquaculture ventures including shrimp. Therefore reliance on availability of local wild shrimps or imported breeders or post larvae is a transitional measure.

2.1.5 Finfish culture

- A number of finfish species are being pursued for culture.
- Apart from PNG, introduction of barramundi (*Lates calcarifer*) into Vanuatu is a successfully being carried out by the industry and is now an established industry.

2.2 Highlights for commodities targeting food security

2.2.1 Tilapia culture

- Tilapia is commonly highlighted in national aquaculture strategic plans as a high priority species that has the potential to improve nutrition in both rural and urban areas of the Pacific.

- Targeted species for culture include GIFT tilapia and the hybrid red tilapia and are being cultured commercially, semi commercially and on a subsistence basis.
- Recent research to improve tilapia culture in the region include ACIAR funded tilapia genetic study to assess the strains which are being cultured in countries such as Fiji, Vanuatu, Samoa and the Cook Is.
- To improve tilapia production proper broodstock management plans and hatchery production plans should be developed at the national level.

2.2.2 Milkfish culture

- Successful milkfish culture is happening in countries such as Palau and Kiribati.
- Feasibility trials utilizing captured fingerlings from the wild are being cultured in Fiji and similar trials are being conducted in Solomon Islands.
- A subregional training on milkfish culture has been conducted in early 2012 to improve skills and capacity on milkfish farming.

2.3. Cross-cutting issues

2.3.1 Information

- The SPC's aquaculture portal continues to be an important source of media for sharing of practical information. This will continue to be further strengthened and improved to meet to members needs.
- Study tours have been an important source of exchange of information. Number of countries that have benefitted such as: Solomon Is delegation visit to PNG on freshwater aquaculture (2012), study tour for 4 persons from New Caledonia to Vietnam in 2008.

2.3.2 Training

This is a cross-cutting issue and has been central to the on-going core program of the SPC. Some key highlights for short-term non-formal trainings include:

- Regional OIE disease reporting workshop in 2010 and 2012.
- Subregional milkfish culture training in Vitawa, Fiji in February 2012.
- Training attachment of one French Polynesia Fisheries Officer on aquatic disease in 2010 (Australia) and 2012 (USA), training attachment for one person from Solomon Is to Fiji on tilapia culture.
- Pearl handicraft jewelry training workshop for Tonga in 2008.

2.3.3 Research and Development

- Feed-based aquaculture continues to be a challenge in the region but some form of aquaculture such as pearl culture does not require feed and is optional for low density culture systems such as milkfish and tilapia. Progresses have been made on feed based aquaculture such as ACIAR-SPC regional feed ingredient survey in 2011 that has been completed which provide valuable information for member countries to utilize locally available feed ingredients where possible.
- Continued supervision of postgraduate research students from University of the South Pacific (USP) through placement in Australian Center for International Agriculture Research (ACIAR) Projects. Postgraduate supervisory support have

been in a number of areas including shrimp cage culture, half pearl formation, prawn disease, rabbit fish farming, freshwater prawns and milkfish culture.

2.3.4 Biosecurity

The SPC is yet to put in place an SPC regional biosecurity framework. The concept has already been considered and approved by the 6th Heads of Fisheries Meeting in 2009. Despite the absence of a regional program, activities relating to aquatic biosecurity continued to be implemented and some include:

- Impact risk analysis conducted in a number of countries including: PNG for cobia introduction, Kiribati for sea cucumber sandfish introduction, Fiji for seaweed introduction.
- Development of a Micronesia biosecurity policy, a draft is recently produced.

2.3.5 Climate Change

The SPC's recent report "Vulnerability of Tropical Pacific Fisheries and Aquaculture to Climate Change" by Bell et al 2011 on climate change has Chapter 11 dedicated to aquaculture.

In terms of the overall vulnerability:

- Commodities for food security such as tilapia, carp and milkfish in freshwater ponds are likely to benefit from anticipated changes to subsurface climate.
- Commodities for livelihood such as pearls, shrimps and seaweed are likely to encounter production problems due to projected changes to occur in tropical Pacific Ocean.

2.3.6 Planning and Policies for sustainable aquaculture

- Progresses have been made in improving policies on aquaculture at the regional and national level. At the regional level, the outcome of the joint FAO/SPC regional scoping workshop on aquaculture was accepted by the meeting to form the basis of the revised SPC regional aquaculture strategy replacing SPC Aquaculture Action Plan 2007.
- At the national level, SPC member countries have incorporated aquaculture into their national legislations either as a stand-alone Aquaculture Act or part of the existing national Fisheries Act with the objectives to promote and safe guard aquaculture development and management at the national level Some countries such as Tonga have stand-alone Aquaculture Act. Fiji is in the final stages of producing a stand-alone Aquaculture Act. Vanuatu is currently drafting aquaculture legislation as part of its existing national Fisheries Act.
- Aquaculture strategies have recently been developed for Cook Is, Common Wealth Territories of the Northern Mariana Islands, Fiji, Guam, Nauru, Samoa, Solomon Is, Vanuatu, Wallis and Futuna.

2.3.7 Economics and marketing

- A major review has been conducted in the mariculture sector. The report titled "Opportunities for the Development of the Pacific Islands' Mariculture Sector" using five countries as case studies, namely Cook Islands, Fiji, Papua New Guinea,

Marshall Islands and Solomon Islands. It highlighted the need for rigorous assessment on the potentials for mariculture taking into consideration proper economic assessment being central in planning process when considering potentials for aquaculture.

- A new dedicated 4 year project funded by the European Union (EU) entitled Increasing Agricultural Commodity Trade (IACT) for the Pacific ACP States has an aquaculture component which funds one Aquaculture Officer position and focused on promoting small to medium scale aquaculture development to increase export of aquaculture products

3. SNAPSHOT OF AQUACULTURE STATUS

Aquaculture in the region in terms of production and value comes mainly from pearl and shrimp from French Polynesia and New Caledonia as well as pearl production from Cook Is. In 2007, pearl production was worth in excess of USD 173 million which accounted for 98% of total value of production in the region (Ponia 2010). The dramatic decline in total value of production in this region from 2008 on saw this drop in value of region’s production to an estimated USD 100 million in 2010 (Figure 1). This is mostly attributed to a reduction in pearl production value from over-supply, poor market price, disease/ and environmentally related problems.

Shrimp production also experienced a decline in value of production from under USD 25 million in 2008 to around USD13million in 2010. The decline came predominantly from main shrimp producing countries New Caledonia and French Polynesia.

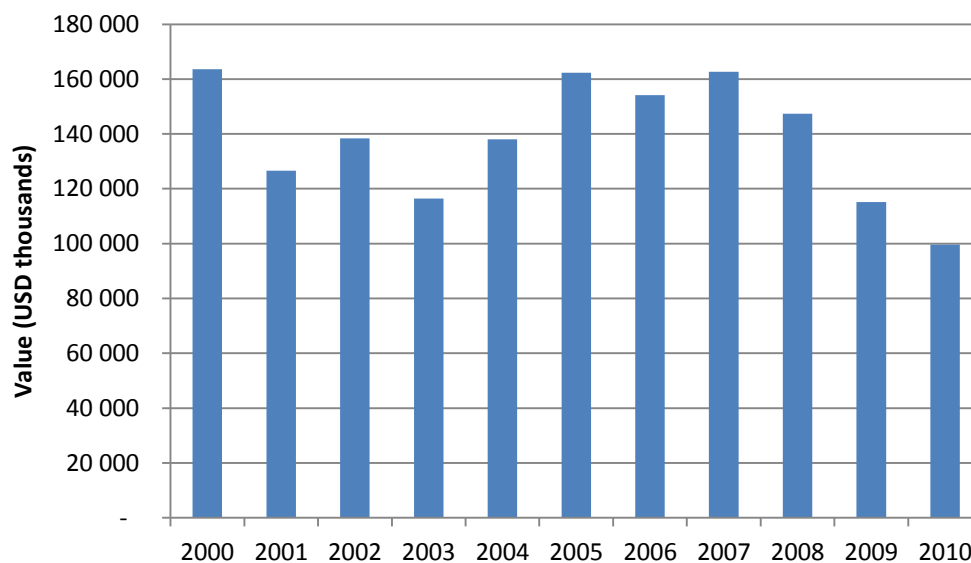


Figure 1. Value of aquaculture production in Pacific islands by year, from pearl, shrimp, milkfish, finfish and seaweed production (Source FAO FishSTAT).

4. REGIONAL CONSTRAINTS AND OPPORTUNITIES

The scoping workshop identified a number of regional constraints and opportunities as presented in Table 1 below.

Table 1. Regional constraints and opportunities facing the Pacific aquaculture sector.

Regional Constraints	Regional opportunities
<ul style="list-style-type: none"> • limited capacity to undertake risk analysis including biosecurity risks • limited technical capacities and lack of training opportunities • limited infrastructure and facilities • limited institutional (policy, legislative and financial) support (or political will) for aquaculture development • difficulties in accessing start-up and other capital needs • difficulties accessing some markets due to geographic isolation and compliance with trade requirements • complex land and water tenure arrangements • Limited data on market, production and input data and product prices • uncertainty surrounding impacts of climate change • difficulty to compete with other major aquaculture producers of low to mid range commodities, especially Southeast Asia and China • high cost of feed due to transportation costs and availability • requirement to maintain a unique and fragile biodiversity • limited profile of aquaculture and inconsistent political support 	<ul style="list-style-type: none"> • presence of local food ingredients, mini-mills and feedstock existing feedstock producers enable their use in the production process • ample capture-based supply of seed • regional opportunities for technology transfer, education and training using regional and other organisations/networks are present • regional cooperative arrangements to overcome problems of scale e.g. regional broodstock facility, regional feed mill production • presence of production, seaweed processing factory • domestic markets facing a decreasing supply of fish particularly in urban areas can lead to increased fish prices • high value emerging markets, including China for niche/high value/top shelf products • pristine environment and image help in marketing the products • rising value of other products enables the substitution into the sector’s products • insularity of the region provides biosecurity advantages • substantial past experience and lessons once challenges facing the sector arise • links to institutions in other regions provide a support network • general availability of a diverse range of ecosystems for aquaculture sites • presence of non-perishable products allow for opportunities for remote communities • availability of an educated and capable workforce ensure efficient production processes

5 THE STRATEGY

Purpose

The strategy:

- lays out key programme areas of work in support of the region’s aquaculture priorities for sustainable aquaculture development at the national level leading to livelihoods and food security in the Pacific;

- provides avenues to address shortfalls in human, infrastructure and institutional capacity;
- promotes the exchange of lessons learned and good practices, particularly between PICTs based on their aquaculture experiences;
- provides a framework for investment in aquaculture by donor agencies, national governments and the private sector; and
- builds upon and greatly expands the collaborative links with FAO, NACA, ACIAR and other international agencies.

Vision

A sustainable aquaculture sector that meets food security and livelihood requirements based on economically viable enterprises supported by enabling governance arrangements.

Overall outcomes

1. Successful, competitive and biosecure aquaculture enterprises, using and adapting proven technologies to meet local requirements [technical, social and environmental].
2. Recognition of the actual and potential contributions of the aquaculture sector towards regional livelihoods and food security [in response to the pressures of population growth, depleted/overfished inshore fisheries resources and climate change].
3. A framework for aquaculture development that builds cooperation among PICT government aquaculture institutions, national, regional and international agencies, farmer groups/associations, and other stakeholders.

Guiding Principles

1. private sector led development wherever possible, understanding and responding to the needs of the producers
2. best management practices and systems that take into account the impacts of climate change
3. science based approaches to the management of risk
4. health of ecosystems and environment must be protected
5. maintain current high level of disease-free status maintained
6. enterprises to be based on feasibility studies and economically viable
7. socially and culturally acceptable
8. food security needs met through business like approaches
9. support the aquacultural aspirations of individual PICTs, building on our strengths and comparative advantages
10. different ion – mention of top shelf e.g. knowledge/innovative based production

Programmes and outcomes

The following are the 6 major programme areas of the Regional Aquaculture Strategy

- Programme 1: Biosecurity
- Programme 2: Capacity building
- Programme 3: Feasibility assessment
- Programme 4: Statistics and data
- Programme 5: Markets and trade
- Programme 6: Technology transfer and improvement

Programme 1: Biosecurity

Outcome	Activities
Production and transfer of aquatic organisms with minimum biosecurity risks	i. Review current biosecurity arrangements to identify gaps
	ii. Develop minimum standards for biosecurity in the region, based on a compliance with international norms
	iii. Adopt protocols and procedures to meet the standards
	iv. Develop capacities in the region, including by building on existing facilities, networking and a biosecurity unit, for prevention (e.g. risk analysis), detection/diagnosis and notification of aquatic diseases
	v. Implement improved national strategies and inter-departmental linkages for aquatic animal health management and reporting
	vi. Improve national capacity to utilise available data collection and disease information systems

Programme 2: Capacity building

Outcome	Activities
Improved capacity at all levels among PICTs to develop aquaculture and manage strategic and technical issues	i. Strengthen networking among PICT government aquaculture agencies, national and regional institutions, farmer groups/associations, and stakeholders
	ii. Conduct an assessment of aquaculture training needs among PICTs and identify opportunities and gaps at all levels in the aquaculture sector.
	iii. To fill gaps, identify or develop sources of training, education and work experience/study tours/exchanges, or within the region, and in other regions.
	iv. Strengthen tertiary programmes on aquaculture in the region and strengthen relevant regional institutions linked into relevant research topics (e.g. the ACIAR mini-projects).
	v. In-country programmes to ensure multiple people are trained.

Programme 3: Feasibility assessment

Outcome	Activities
Commercial and non-commercial aquaculture that is economically, socially and environmentally viable with sustained and stable production.	i. Review and analyse the past successful and unsuccessful aquaculture enterprises and develop lessons learned.
	ii. Economic screening and advice during project development
	iii. Capacity building and feasibility study guidelines on business planning/economic analysis.
	iv. Improve access to market/production information.
	v. Improve access to capital by joint education and engagement of both farmers and financial institutions.
	vi. Risk profiling template developed for priority commodities.
	vii. Development of up to date financial models for aquaculture ventures.
	viii. Educating financial institutions and partners about aquaculture.
	ix. Provision of feasibility studies for sector commodities and farming strategies on demand.
	x. Careful analysis and review of subsidies to avoid market distortions or continuing dependence for economic viability

Programme 4: Statistics and Data

Outcome	Activities
Improved aquaculture policy and decision-making through the provision of knowledge of status, contributions and trends in the aquaculture sector	i. Review, and strengthen national policies, government commitment and capabilities in aquaculture statistics collection, storage, analysis and dissemination, including the use of data/analysis for knowledge transformation.
	ii. Ensure aquaculture statistics and data are readily available/accessible to both government, and the private sector to inform investment and other decisions.
	iii. Build capacity in data collection and storage.
	iv. Implement on-going data collection of production, value, impact and other parameters
	v. Develop a regionally harmonised aquaculture data collection using the aquaculture network, storage methodology and template
	vi. Collection and sharing of market information, and commodity and input prices.
	vii. Develop an one-stop shop for information on aquaculture commodities, inputs and prices etc
	viii. Establish an Aquaculture Knowledge Management Unit (AKMU).

Programme 5: Markets and Trade

Outcome	Activities
Increased trade [domestic and export] in Pacific aquaculture products	i. Determine break-even price for negotiation.
	ii. Complete market profiles for selected commodities.
	iii. Develop a Market Information System (MIS), utilizing and building on existing systems – e.g. Infofish
	iv. Adopt a market-led approach to aquaculture development.
	v. Scoping of opportunities for niche marketing, and value-adding.
	vi. Advice in export requirements/compliance and post-harvest standards/procedures (e.g. HAACP).
	vii. Explore opportunities for branding/accreditation/traceability/certification, based on Pacific attributes.
	viii. Use regional and/or international organisations to influence international trade agreements and certification-setting bodies.
	ix. Value chain analysis for main commodities to increase benefits to producers

Programme 6: Technology Transfer and improvement

Outcome	Activities
Improved production efficiency through adoption of appropriate, proven technology.	i. Analyse existing technology transfer mechanisms/strategies
	ii. Improve access and assimilation of existing and new technology and improved aquaculture strains, and delivery to the private sector.
	iii. Establish Centres of Excellence within the region, and links to Centres outside the region, in selected production technologies.
	iv. Closer connections with inter- and intra-regional partners (NACA/FAO/SPC/JICA/PICT national institutions, etc).
	v. Develop a trade directory for farm inputs (seed, feed, equipment, etc) and examine options for a 'one-stop shop' approach.
	vi. Strengthen and target applied-research to solve nationally-relevant constraints, with an emphasis on feed, seed and production systems.
	vii. Study visits for both govt and private sectors and other methods of demonstrating new/innovative methods of production.

Cross cutting issues

- Gender
 - Consideration of negative social outcomes from aquaculture for women
- Capacity building
 - Generic/cross sector capacity building under Programme 2
 - Detailed capacity building requirements to be included under programmes
- **Climate change and environmental sustainability**
- Governance
- Research
 - Detailed research requirements to be included under programmes

Implementation and monitoring

Implementation of the strategy requires strong commitments from PICTs, strong driver of the process and significant resources. Mechanisms for implementation and monitoring of the strategy including associated responsibilities as well as mobilizing funding resources shall be developed through a consultative process among relevant stakeholders.

Regional activities

FAO to continue to find resources and other appropriate mechanisms to take up some of the identified national and regional activities:

- Assistance in the development of a regional biosecurity framework to include assessment of capacity and performance survey
- Capacity building for fisheries and aquaculture statistics
- Joint effort with SPC to initiate action to establish a PICT's subregional aquaculture network and strengthen collaboration with other region

National level initiatives

- Report on the outcome of the workshop to the aquaculture authorities in the countries
- Establish/update national plans and consider the outcomes of the workshop and the regional strategy
- Develop proposals to generate funding support to implement some of the activities identified in the regional strategy