



**PACIFIC PERSPECTIVES ON FISHERIES
AND SUSTAINABLE DEVELOPMENT**

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PACIFIC PERSPECTIVES 2014

Pacific Perspectives on Fisheries and Sustainable Development





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Foreword

Healthy oceans and seas are vital to sustainable development, for both current and future generations. The strong support for a dedicated sustainable development goal on oceans, seas and marine resources is evidence of the importance placed by the global community on the conservation and sustainable management of oceans and seas, both in areas of national jurisdiction and as a global common good.

Pacific Perspectives on Fisheries and Sustainable Development has been prepared by ESCAP to contribute to the dialogue about strengthening approaches to coastal and off-shore fisheries management in the Pacific to better support sustainable development.

Pacific small island developing states face significant structural challenges to economic growth and sustainable development. These combine with the impacts of global climate change and ocean acidification to threaten almost every dimension of development in the Pacific islands.

In this context, fisheries remain the most important ocean resource for livelihoods, employment, nutrition and opportunities for economic growth in the Pacific subregion. Fisheries can, for example, play an important role in domestic resource mobilisation for public investment in sustainable development, through access fees for instance, that fairly compensate Pacific countries for the exploitation of their valuable resources.

The promotion of regional connectivity and knowledge-based economies to enhance regional competitiveness are key priorities in our efforts to promote economic diversification across the region. Asia and the Pacific is already a highly connected region, but much more can be done to ensure and sustain the benefits of connectivity between Pacific island countries and territories with wider Asia. The significance of Asian markets for fisheries products, including the Bangkok Tuna Market as well as the growing demand and direct involvement in Pacific fisheries of East Asian markets, demonstrates the important interdependence of communities across the Asia-Pacific region on the sustainable management of Pacific fisheries.

The Rio+20 outcome reaffirmed the need for sustainable development to be guided by the purposes and principles of the Charter of the United Nations, including the rule of law and good governance, which are critical enabling conditions for the post-2015 development agenda. Sustainable management of fisheries must be built on the effective implementation of these important principles. Strong national and sub-regional governance, including bold leadership, will be central to the management of shared ocean resources based on solidarity and common interest.

This publication begins with an analysis of Pacific island fisheries, including technical aspects of coastal and off-shore fisheries. This will provide a useful baseline to inform the regional policy dimensions of fisheries and sustainable development which follow.

Better managed and more sustainable fisheries will make a valuable contribution to food security as well as to better livelihoods and sustainable development in the Pacific, as we advance the post-2015 development agenda.



A handwritten signature in black ink, which appears to read 'Shamshad Akhtar'.

Dr. Shamshad Akhtar

Under-Secretary-General of the United Nations and
Executive Secretary, United Nations Economic and Social Commission
for Asia and the Pacific

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Acronyms

ACP	African, Caribbean and Pacific
ADB	Asian Development Bank
EEZ	exclusive economic zone
ESCAP	Economic and Social Commission for Asia and the Pacific
FAD	fish aggregating device
FAO	Food and Agriculture Organization of the United Nations
FFA	Forum Fisheries Agency
GDP	gross domestic product
IUU	illegal, unreported and unregulated
Mt	metric ton
MPA	marine protected area
NGO	non-governmental organization
PIFS	Pacific Islands Forum Secretariat
PNA	Parties to the Nauru Agreement
SPC	Secretariat of the Pacific Community
SPREP	Secretariat of the Pacific Regional Environment Programme
UNICEF	United Nations Children's Fund
USP	University of the South Pacific
VDS	Vessel Day Scheme
WCPFC	Western and Central Pacific Fisheries Commission
WCPO	Western and Central Pacific Ocean

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Executive Summary

The Pacific Ocean is vital to the health of Pacific communities and Pacific economies. Fisheries represent the most important ocean resource for livelihoods, employment, nutrition and economic opportunity. This report provides an overview of fisheries resources, the institutional and policy arrangements for the development and management of the resources, major issues and challenges in Pacific island fisheries, and key issues for improving the economic and social returns from fisheries.

Coastal fisheries and offshore fisheries in the region are fundamentally different from each other, including in the following areas: sizes of the vessels involved; participants in the fishing; the degree of foreign involvement; the resources targeted; management and institutional arrangements; the flow of benefits; and opportunities for expanding benefits. Most of the benefits related to employment and nutrition — which directly affect Pacific islanders — come from the coastal zone. The broader macroeconomic benefits (contribution to GDP, exports and government revenue) tend to come disproportionately from the offshore area. There are also significant differences in the nature and extent of involvement of men and women in coastal and offshore fisheries, though gender is equally neglected in policymaking for both. For this reason, it is logical to discuss coastal fisheries and offshore fisheries separately. The various attributes of these two categories of fisheries are examined in terms of resources, fishing and management.

An attempt is made to highlight the major fisheries issues and challenges in the region. These challenges are grouped by coastal fisheries, offshore fisheries and those that are cross-cutting. The major issues concerning coastal fisheries include:

- population pressure
- coastal fisheries management: need and benefits
- small-scale fishers and the large tuna resources of the region

- management distractions
- lack of adequate data on coastal fisheries
- economic analysis: the need to have some economic reality
- non-governmental organization (NGO) involvement in coastal fisheries management
- sea safety: the large number of accidents in small fishing boats at sea
- offshore fisheries management improvements at the expense of coastal fisheries
- coastal marine protected areas (MPAs)
- rural fisheries centres.

The major offshore fishery issues are considered to be:

- regional solidarity breakdown
- bigeye tuna resource condition and lack of effective action
- economic problems in the southern albacore longline fishery
- problems in the Western and Central Pacific Fisheries Commission (WCPFC)
- illegal, unreported and unregulated (IUU) fishing
- balance between access fees and domestic industry development
- purse seine Vessel Day Scheme (VDS)
- market access.

Cutting across both coastal and offshore fisheries are the issues of poor governance of the fisheries sector, and the impact of external demands on Pacific island fisheries.

Fisheries and poverty

Coastal fisheries appear to contribute more to welfare in rural areas, whereas most of the contribution from offshore fisheries is in urban areas, the location of bases for the offshore fishing vessels and where most tuna processing occurs. The coastal fisheries impact is to some degree limited to the welfare of the fishers and their families, with different impacts on women and men. Offshore fisheries also impact the welfare of the participants, but there are wider aspects to this. The access fees (\$135 million in 2011) can be used by sensible Governments to support areas that would enhance the welfare of all citizens (for example, through education and health services) or promote general economic development. What is good for the economy is often good for poverty reduction.

Fisheries and climate change

Warmer air and sea surface temperatures, ocean acidification, rising sea levels and greater rainfall are expected to cause significant losses of the coral reef, mangrove, seagrass and intertidal habitats, which provide shelter and food for coastal fish and shellfish. This is expected to cause reductions in the productivity of coastal fisheries. Tuna are likely to move progressively to the east, and this shift in the distribution would have mixed implications. Contributions from tuna to government revenue and GDP should eventually increase for countries in the central and eastern Pacific, and decline for those in the west. While recognizing the need to address the causes of climate change and other existential threats to the Pacific Ocean and fisheries, the best adaptation strategy and reduction options over which the Pacific has good leverage is to get fisheries in the region in the best possible shape to cope with the stresses coming.

Fisheries management and sustainable development

Conventional fisheries management is in the process of being modified from being oriented towards single-species maximization (for example, maximum sustainable yield) to one that is much broader in scope, encompassing biological, environmental, economic and social objectives. This more holistic approach is often referred to as the ecosystem approach to fisheries management. In the Pacific islands region, oceans are used for many other activities besides fishing. The ones that currently have a substantial interaction with fisheries are marine-oriented tourism and recreation, aquaculture, waste assimilation and transport. Deep-sea mining is likely to become important in the future. In coastal fisheries, the focus should be on preserving existing benefits (especially related to food security) through better management, rather than on generating additional benefits. For the offshore fisheries of the region, considerable potential exists for increasing benefits in increasing access fees and/or domestic tuna industry development. There is, however, the overriding provision that such attempts for obtaining additional returns should not involve increasing the catch of yellowfin and should involve decreasing the catch of bigeye.

Issues for the consideration of policymakers

In the Pacific, there are significant opportunities for improving the contribution of fisheries to inclusive and sustainable development, including a focus on sustaining economic returns despite significant pressure from climate change and ocean acidification. To take advantage of these opportunities from fisheries resources (or preventing the erosion of the existing benefits), a priority must be to have more effective government fisheries agencies, and capacity development programmes by development partners that help balance the needs of coastal and offshore fisheries. The following are considered to be the priority areas for the consideration of policymakers in fisheries, as well as in finance and national planning entities:

A. Improving the weak management of coastal fisheries

The number of well-managed coastal fisheries in the Pacific islands is surprisingly small. Ineffective coastal fisheries management is a real threat to sustainable development, as it is these fisheries that currently provide Pacific islanders with most of their nutrition and employment from the fisheries sector. Governments need to establish policies that protect fisheries resources and allow the continuing flow of marine foods to coastal communities. In addition, there should be recognition by the agencies involved in the management of coastal fisheries that the alternatives to the difficult task of restricting fishing effort are often ineffective distractions from the real task of protecting resources and the associated flow of benefits to coastal communities.

B. Enhancing regional solidarity in fisheries

For several decades, a major feature of the Pacific islands region was the solidarity among countries on fisheries issues. The region has nurtured effective processes for cooperation between countries, especially in dealing with distant-water fishing nations. For the future, most favourable outcomes on the use of the region's tuna resources are reliant to some degree on regional solidarity. For various reasons, this fisheries solidarity appears to have decreased – some countries have departed from their obligations under regional agreements, and the potential for using solidarity in future negotiations has decreased. The Forum Fisheries Agency (FFA) and Parties to the Nauru Agreement (PNA) are in a difficult position. For improving the solidarity situation, direction must come from a level higher than that of fisheries officials. Pacific island leaders need to reaffirm their commitment to regional solidarity in fisheries.

C. Strengthening the focus on gender in fisheries

Women play critical but still poorly understood, undervalued and underappreciated roles in fish supply chains. Gender issues are not on the policy agenda, which is sustaining a vicious cycle where only limited resources are dedicated to understanding the gender dimensions of fisheries and how to address them. While small-scale fisheries, women's livelihoods and nutritional security are strongly linked, much more attention needs to be given to recognizing, strengthening and protecting the role of women in both coastal and offshore fisheries.

D. Improving the governance of the fisheries sector

Poor governance of the fisheries sector in the Pacific island region is characterized by inefficient national fisheries institutions and, in some countries, corruption. A fundamental problem is the low capacity of national fisheries agencies.

E. Greater use of the offshore tuna resources for domestic purposes

From several perspectives, there is justification for the countries in the region to use more of the offshore fish for domestic consumption, including compensation for declining food resources from coastal fisheries, adaptation to climate change and benefits to small-scale fishers. This would require countries in the region to push management measures in WCPFC that encourage industrial fishing vessels to offload at least some catch in Pacific island ports and to support small-scale tuna fisheries.

F. Strengthening the Vessel Day Scheme

A management scheme for purse seine fisheries, based on limiting the numbers of purse seine fishing days (rather than the former system based on the number of seiners), has been adopted and implemented by PNA. The scheme has been successful in increasing the access fees received from purse seine vessels. VDS should be supported and strengthened – but not just to increase purse seine access fees further. A strengthened purse seine VDS sets a powerful precedent for introducing a similar scheme for longliners. In addition, the benefits from a more effective scheme would help to reinvigorate regional solidarity.



1. Background

“The ocean is the next frontier in the pursuit of sustainable development. While we have failed to protect our land and atmospheric environments from our human demands we must make sure that the ocean does not meet with the same fate...”

- President Anote Tong of Kiribati, sixty-eighth session of the United Nations General Assembly

At its sixty-ninth session, ESCAP adopted resolution 69/17 on ‘Sustainable management, conservation and use of ocean resources for the development of Asia-Pacific small island developing States’, which requested the Executive Secretary, in collaboration with United Nations bodies and specialized agencies, international financial institutions, other regional and subregional organizations and bilateral donors to “undertake analysis in order to develop the evidence base for determining how the sustainable use of oceans and seas and their resources can contribute to poverty eradication and sustained economic growth in Asia-Pacific small island developing States”. The present report has been prepared in response to this resolution.

The development and management of fisheries resources have formed the core of the work programmes of the Pacific regional agencies involved with fisheries for many decades, and much has been written on the subject. This report is an attempt to consolidate information on regional fisheries and to present it in a useful and digestible form that can be used to inform work on poverty reduction or employment promotion and the debate surrounding the post-2015 development agenda and its implementation. The sustainable use of oceans encompasses challenges and opportunities much greater than that of the fisheries sector. Deep-sea minerals, tourism and transport are of considerable importance in the region, and they deserve greater attention than what is possible in a publication that covers adequately the complex fisheries situation in the Pacific islands. For this reason, the present report is confined to ocean fisheries.

Some clarification of fisheries terminology is required. In this publication, the following applies:

- “Management” is defined as interventions in support of established objectives.
- “Industrial fishing” is equivalent to large-scale commercial fishing and concerns mostly vessels (often over 15 m in length) that offload at a processing plant or cold storage facility at sea or in port.
- “Small-scale fishing” has three components, namely subsistence (or non-commercial), artisanal (or small-scale commercial) and sport fishing (both recreational and for commercial tourism purposes).
- “Fish” is considered to be both finfish and invertebrates (such as lobsters or clams).
- The “region” for fisheries purposes can represent very different areas, from the 200-mile zones of independent Pacific island countries to the much larger Western and Central Pacific Ocean (WCPO) used for tuna management purposes (which includes Hawaii in the United States of America and some South-East Asian countries). Unless otherwise indicated, in this report the “region” refers to the area of the 200-mile zones of the Pacific island countries and territories of Fiji, Kiribati, Marshall Islands, Micronesia (Federated States of), Nauru, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu, as well as American Samoa, the Cook Islands, French Polynesia, Guam, New Caledonia, Niue and the Northern Mariana Islands.

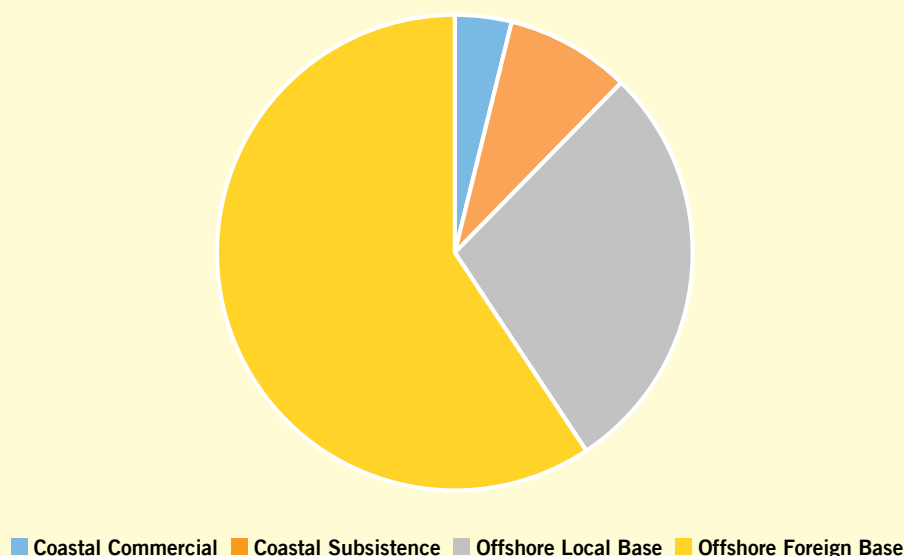
2. General information on Pacific island fisheries

Fishing activities in the region can be neatly divided¹ into two very different types:

- Coastal: operations that take place in lagoon, reef, deep-slope or shallow sea areas. This category also includes fish caught by trolling/handlining from small vessels in the open sea adjacent to islands.
- Offshore (sometimes called “oceanic”): operations that take place in the deep sea, usually beyond territorial waters, and almost exclusively by industrial-scale vessels.

Figure 2.1 shows the volumes of fish from coastal (subsistence and commercial) and offshore fisheries (based both locally and outside the region). It can be seen that the offshore fisheries produce over eight times the volume of catch as that of the coastal fisheries.

Figure 2.1. Annual fishery production in the Pacific islands region



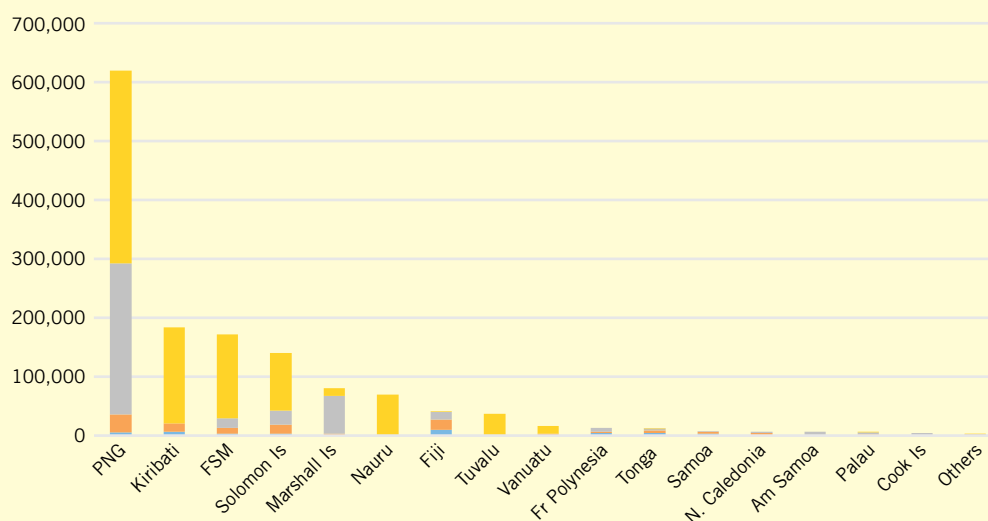
Source: Extracted from data in Gillett (2009), based on data from 2007 (the last year for which comparable data for coastal and offshore fisheries are available).

Note: The relative amounts are based on volume (that is, tons).

¹ There are two small exceptions to this tidy division: (a) there is some industrial-scale shrimp trawling in Papua New Guinea; and (2) occasionally small vessels fish for snappers/groupers on offshore seamounts.

The 19 countries and territories in the region have vastly different levels of fishery resource endowments due to several factors, including the size of their zones and habitats. Figure 2.2 shows the main producing countries and territories in the region.

Figure 2.2. Annual fishery production levels for countries and territories in the region



Source: Extracted from data in Gillett (2009), based on data from 2007 (the last year for which comparable data for coastal and offshore fisheries are available).

Note: The unit is tons.

Coastal fisheries and offshore fisheries in the region are fundamentally different from each other, including in the following areas: the sizes of the vessels involved; the participants in the fishing; the degree of foreign involvement; the resources targeted; management and institutional arrangements; the flow of benefits; and opportunities for expanding benefits. For this reason, it is logical to discuss coastal fisheries and offshore fisheries separately.

2.1 Coastal fisheries resources and fishing activities

Coastal fishing is of fundamental importance in the Pacific islands. Much of the region's nutrition, welfare, culture, employment and recreation are based on the living resources in the zone between the shoreline and the outer reefs of the region. The continuation of current lifestyles, opportunities for future development and food security are all highly dependent on coastal fisheries resources. Although dwarfed in both volume and value by the offshore tuna fisheries, the region's fisheries based on coastal resources provide most of the non-imported fish supplies to the region and hence have a crucial role in food security.

Coastal fishery resources include a wide range of finfish and invertebrates. They are characterized by their shallow water habitats or demersal lifestyles, the restriction of individual movements to coastal areas, and, in most cases, restricted larval dispersal. Because of their relative accessibility, these resources form the basis of most of the region's small-scale fisheries. An important characteristic of the coastal fisheries in the region is the diversity of the catch; they take a very large number of species. For example, it has been stated that subsistence fishing in Samoa makes use of 500 species. The term "tropical multi-species fisheries" is often used to describe the situation, as well as to allude to the difficulty in managing such a heterogeneous array of species.

The coastal catch can be divided into finfish, invertebrates and others:

- A study of coastal fisheries in the region (Dalzell and Schug, 2002) showed that a typical small-scale commercial reef fishery in the region may harvest between 200 and 300 finfish species, although it is likely that only a few species will dominate landings. Approximately one third of the coastal catch total is comprised of emperors (Lethrinidae), surgeonfish (Acanthuridae) and snappers (Lutjanidae).
- The most-landed invertebrate food species groups in the region are giant clams and bêche-de-mer, followed by much smaller amounts of crabs, lobsters, strombus, turbo, arc shell, other bivalves/gastropods, trochus, urchin, octopus, shoreline gastropods, beach bivalves and land crabs (SPC, 2008b). Bêche-de-mer, trochus and pearl oysters are important invertebrate exports.

- Seaweeds are considered a “fishery” resource in most Pacific island countries. They are mainly used for local food, but exported from a few countries (such as Tonga). “Live rock”, which is a portion of reef rock covered with attached organisms, particularly coralline algae, is considered to be a fishery resource in several countries.

Coastal fishing methods reflect the diversity of the target species, and include activities while walking, wading, swimming and fishing from non-motorized and motorized vessels. Popular techniques include gleaning, spearfishing, trapping, gillnetting, hook/line dropline fishing and trolling.

In general, coastal fishery resources are heavily fished and often show signs of overexploitation, especially in areas close to population centres and for fishery products in demand by the rapidly growing Asian economies. Coastal fisheries are also negatively affected by habitat degradation, which occurs from destructive fishing practices, urbanization, siltation from mining or logging, and competing uses of the coastal zone.

Coastal fisheries statistics are weak in most countries in the region. Typically, government fisheries agencies give low priority to estimating the total amount of domestic catches. In general, the smaller the scale of the fishing, the less is known about the production levels, with quantitative information being especially scarce for the subsistence fisheries in most countries. Samoa, where a survey of village fisheries was completed a few years ago, is a notable exception. A major lesson from almost 30 years of such support for establishing and enhancing national fisheries statistical systems is that, once external support is withdrawn, the systems usually degenerate and eventually become dysfunctional. Despite the importance of such data, the reality is that (a) in the prioritization of scarce government funding, the ongoing routine collection of fisheries data has not received much priority, and (b) it is quite unlikely that any of the active donors in the fisheries sector in the region would be willing to fund such systems over the long term. Another issue is that most of the countries in the region attach great importance to their subsistence and small-scale commercial fisheries. However, it is these fisheries that present the greatest difficulties for the collection of production information. Also to be considered is that many fisheries specialists have questioned the cost-effectiveness and practicalities of regular and extensive detailed data collection from small-scale fisheries in the Pacific islands.

The management of coastal fisheries resources in many Pacific island countries is a mixture of several systems:

- Traditional management: This is the most prevalent in rural areas and characteristically involves village leaders restricting the fishing by those outside the community and by various controls on fishing by community members.
- Central government management: All Pacific island countries have a fisheries law giving wide powers to the government fisheries agency in controlling fishing activity. For various reasons, the system is often ineffective. There is some degree of success, for example, in central Governments applying point of export restrictions on those products that are exported.
- NGOs: In recent years, NGOs have taken the lead in creating awareness in villages of the need for, and benefits of, the community-based management of fishery resources – using primarily MPAs as the main management tool.

Current coastal fisheries management measures (both centrally administered and community-driven) tend to be non-quantitative and are intended to protect stocks in a generalized way. These include MPAs, size limits (both minimum and maximum), gear restrictions (minimum mesh sizes for nets, bans on torch fishing at night), prohibitions on the use of destructive fishing methods (blast fishing, poisons), prohibitions on the taking of berried females and seasonal or area closures.

2.2 Offshore fisheries resources and fishing activities

The offshore fisheries resources in WCPO include tunas, billfish and allied species, as well as the by-catch obtained during the capture of those fishes. They are characterized by an open-water pelagic habitat and often extensive movements of individual fish.

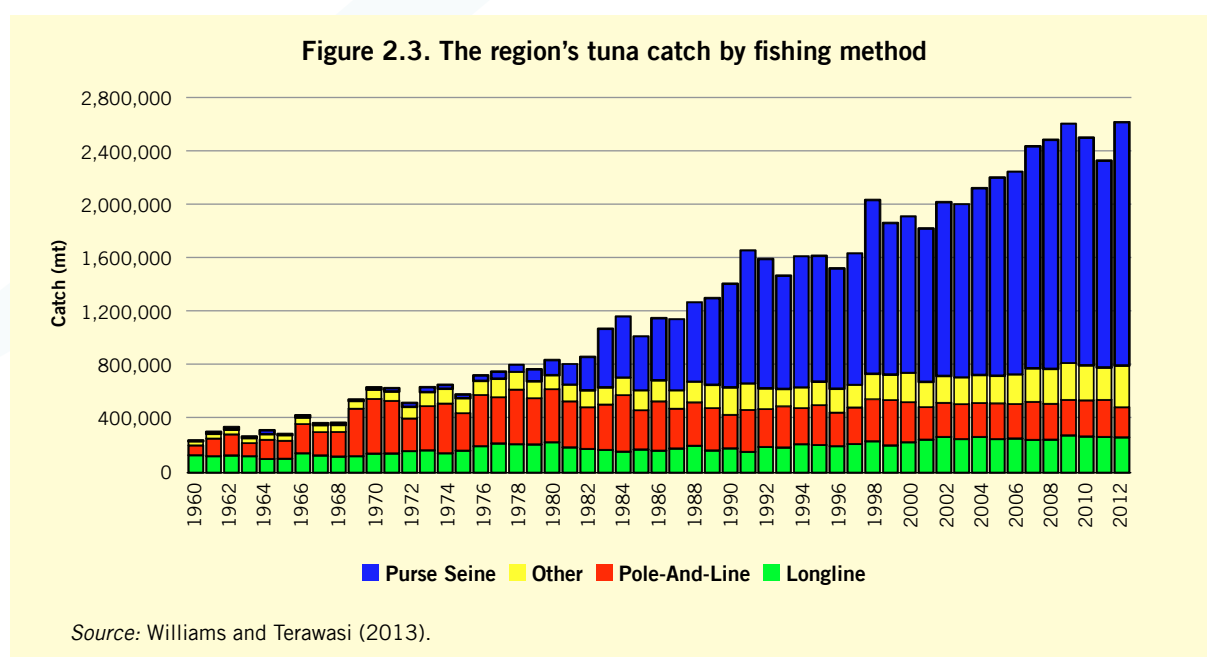
In 2012, about 2.5 million tons of tuna were caught in the waters of WCPO. Tuna is not a single species of fish, but rather several species. Scientists often use the term “tuna and tuna-like fish” to refer to a total of 61 species, 14 of which are considered “true tuna”. Four species are of major commercial importance in the Pacific islands: skipjack (about 64 per cent of the total tuna catch in 2012), yellowfin (25 per cent), bigeye (6 per cent) and albacore (5 per cent) (Williams and Terawasi, 2013). Additional information on these four important species of tuna is given in appendix 1.

Although there is general recognition that the tuna resources are important in the Pacific islands region, it is not often appreciated that the amount of tuna captured in the area is about eight times the harvest of all coastal fish in the region combined. It also is noteworthy that the average annual tuna catch in WCPO during the past 10 years is almost as much as the total annual tuna catches of the other major tuna fishing areas combined (that is, catches in the Eastern Pacific, Indian and Atlantic oceans).

Fortunately, those Pacific island countries that are in the most difficult development situation (according to the human development index of the United Nations Development Programme) appear to be the countries with the greatest tuna resources available for future development. The seven lowest ranking countries in the Pacific region (including Kiribati, Papua New Guinea and Solomon Islands) are endowed with the greatest tuna resources.

The vast majority of offshore fishing in the region targets tuna, with a relatively small amount of activity targeting billfish and sharks. Almost all of the offshore fishing is industrial in scale. The main methods of tuna fishing are purse seining (surrounding an entire fish school with a net), longlining (a line with thousands of baited hooks attached at regular intervals), and pole-and-line fishing (catching fish by a pole with a single hook while broadcasting live bait). These fishing methods are described in more detail in appendix 5.

The total tuna catches in WCPO have expanded steadily during the past 50 years. Figure 2.3 shows this growth.



Purse seining has increased remarkably in the last few decades, from being largely experimental in the early 1980s to forming about two thirds of the total tuna catch at present. Most of the purse seine catch comes from vessels flagged in four economies: Japan; the Republic of Korea; Taiwan Province of China; and the United States. The total number of purse seiners has been increasing, and in 2012 reached a record number of 297 vessels. The number of purse seiners flagged in Pacific island countries gradually increased to 94 vessels by 2012. The total number of longline vessels involved in WCPO fisheries has generally fluctuated between 3,000 and 6,000 during the last 30 years (Williams and Terawasi, 2013). Although about 120 pole-and-line vessels were based in Pacific island countries 30 years ago, there are currently fewer than 5.

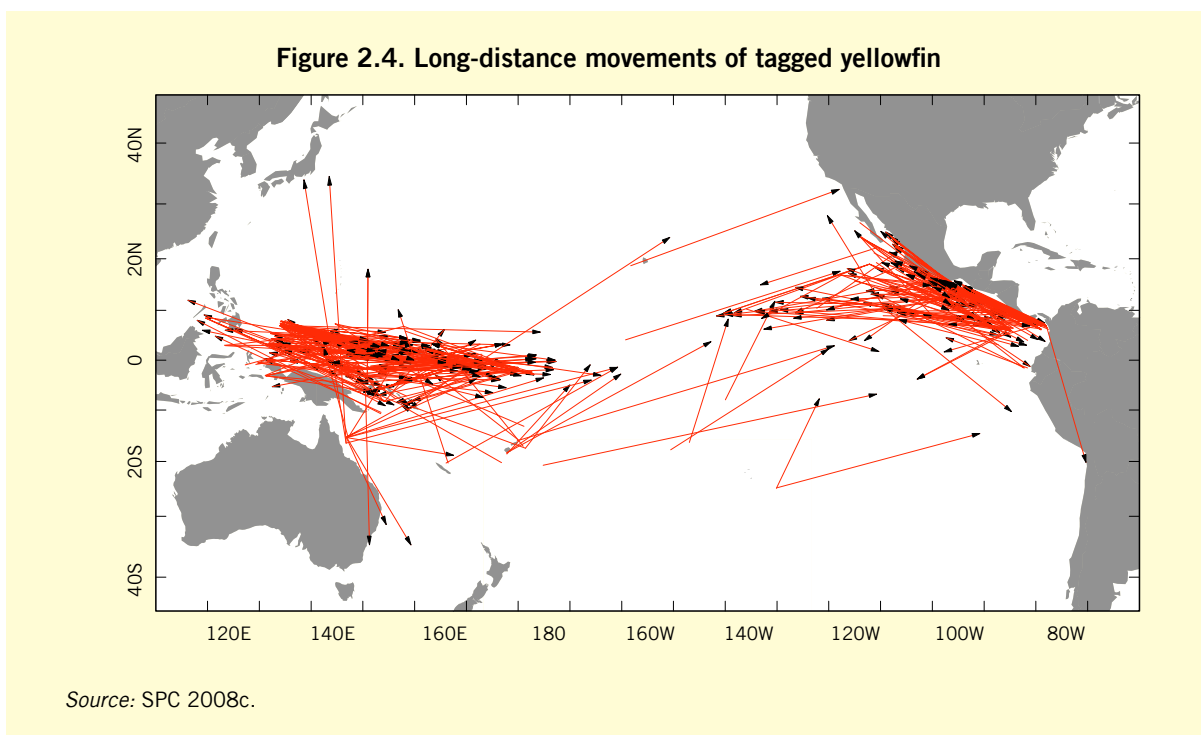
The main product flows from the tuna fisheries of the region are:

- Purse seining: The vast majority of the catch is for canning and subsequent consumption in North America and the European Union. Some lower-quality canned products are sold in the domestic markets of Fiji, Papua New Guinea and Solomon Islands.
- Longlining: There are two main subcategories – fresh and frozen. The prime quality fresh tuna is exported primarily to Japan, with markets in Hawaii and mainland United States of secondary importance. Frozen longline tuna is divided into high-value sashimi quality (almost all for Japanese markets) and lower-value cannery grade (mostly for North America and the European Union)
- Pole-and-line: Over 95 per cent of the production in the region is from Japan-based vessels and is consumed in various forms in Japan. The remaining is for canning (Solomon Islands) or local consumption (Palau).

- Small-scale: Virtually all production is for domestic consumption in the country of capture, with Kiribati catching/consuming more than half.

Processing is an important part of tuna product flow. Minimal processing is required for fresh longline tuna (mainly grading/packaging). The purse seine and canning-grade longline tuna can be (a) trans-shipped out of the region (mainly for canning in Bangkok for markets in the European Union and the United States), (b) processed into loins in the region for canning in a developed country, or (c) canned in the region. The balance between these three channels is constantly shifting due to market conditions, fishing areas, processing facility requirements and other factors. As loining/canning facilities are labour-intensive (employing up to 3,500 people at a single plant), many Pacific island countries have sought to attract such facilities. However, the majority of the workforce of processing plants performing low-skilled tasks are women, and as processing occurs in areas where jobs are in great demand, processing companies often pay little attention to important health, safety and wage equity concerns (Sullivan and Ram-Bidesi, 2008). Most new facilities in the region have been constructed in Papua New Guinea, mainly due to that country having obtained from the European Union derogation to the standard rules of origin for fish processed and exported to the European Union.

An important aspect of the offshore fishery resources is that many species of fish are highly mobile. As an example of the ability of tuna to move, figure 2.4 shows the net displacements of tagged yellowfin. Consequently, many aspects of the assessment and management of the major tuna species are best undertaken on a regional rather than national basis.



The offshore statistical systems are in relatively good condition, both at the national and regional levels. As a component of the fisheries services of the Secretariat of the Pacific Community (SPC) to the region, the Oceanic Fisheries Programme has a fisheries monitoring section. The activities of that section include the compilation of estimates of annual catches of target tuna and billfish species, the estimation of annual catches of non-target species, the compilation of operational (logsheet) catch and effort data, data processing on behalf of member countries, the provision of technical support for port sampling programmes and observer programmes in member countries, training in fisheries statistics and database management, the development of data collection (which form the publication of the *Tuna Bulletin* and the *Tuna Fishery Yearbook*), statistical analyses, and the provision of statistical support to the Scientific Committee of WCPFC. Several of these activities are conducted through the Ocean Fisheries Programme under contract to WCPFC.

Most types of fishing, including tuna fishing, involve catching fish and other animals besides those that are intended to be captured. These are collectively known as non-target catch or by-catch. Some have value and are retained and sold, some are discarded dead, and some (especially those species of concern) are released alive. Global awareness of by-catch in fisheries is increasing – over the past few decades a public consensus has developed that by-catch can have significant consequences for populations, food webs and ecosystems. The amounts and types of non-target species from offshore tuna fishing in WCPO vary among the different fishing methods. SPC studies have shown that,

in purse seine fishing, from 0.35 to 0.77 per cent of the total catch for fishing of tuna schools not associated with floating objects is by-catch. For sets of tuna aggregating around floating objects, the level is higher, at an estimated 3.0 to 7.3 per cent. With longline fishing, over 50 non-target fish species have been observed in the catch in the tropical and subtropical waters of WCPO. Non-target fish species can be categorized into shark (21 species), non-target tuna (7 species), billfish (6 species) and other fish (21 species). The blue shark has been observed to be the most common shark species taken throughout WCPO. The report of the August 2013 meeting of the WCPFC Scientific Committee (WCPFC, 2013a) indicated that two species of sharks, the silky shark and the oceanic whitetip shark, are overfished.

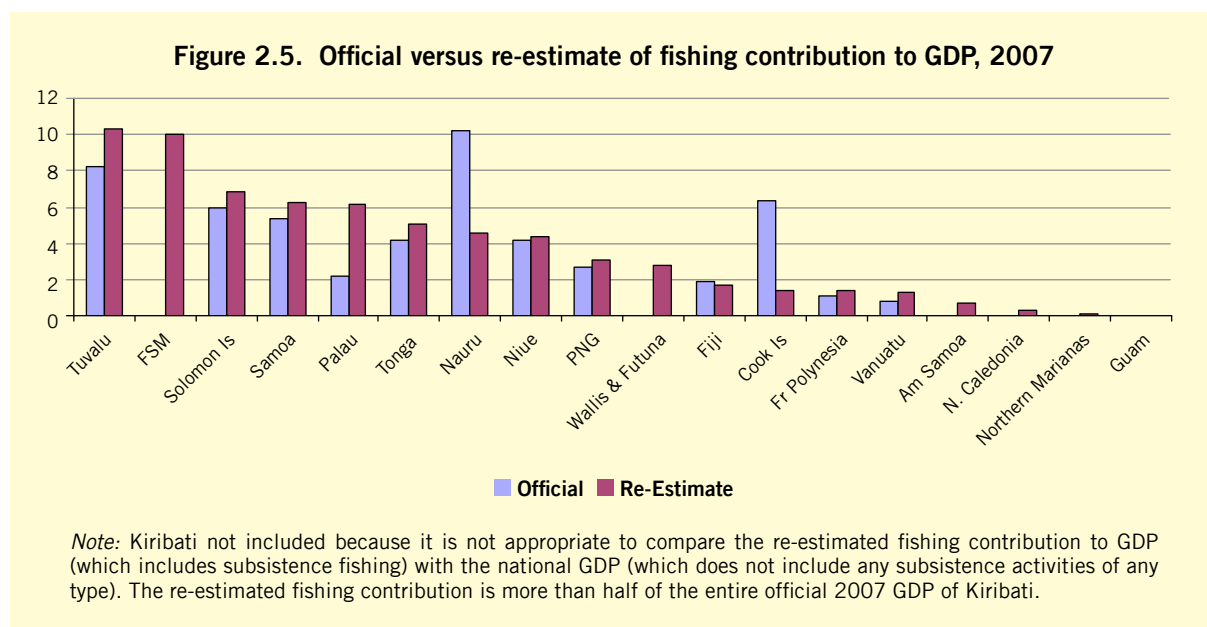
Safeguarding the sustainability of the tuna resources in the region was the major reason for establishing WCPFC (see section 3.2). Although the work on assessing the condition of the tuna stocks has progressed well (see appendix 1), the Commission has encountered considerable difficulty in translating the assessments into management measures acceptable to its member countries – which have very diverse interests. A critical issue is the Commission’s inability to halt the increase in purse seine and longline fishing capacity in the view of the declining condition of bigeye and yellowfin.

2.3 Summary of benefits from fisheries resources

A study by the Asian Development Bank (ADB) attempted to quantify the Pacific islands region’s benefits from fisheries. The work focused on the contributions from fisheries to GDP, government revenues, employment, exports and nutrition.² Overall, a major finding of the study is that most of the benefits relating to employment and nutrition — aspects that directly affect Pacific islanders — come from the coastal zone. The broader macroeconomic benefits (contribution to GDP, exports and Government revenue) tend to come disproportionately from the offshore area.

2.3.1 Contribution to GDP

Official figures and re-estimates of the contribution of fishing to GDP in each Pacific island country and territory is provided in figure 2.5. The contributions may seem small, but it should be noted that by, international convention, the “sector” is fishing (rather than fisheries)³ and does not include post-harvest activities (for example, tuna canneries), which are important in the Pacific islands and likely to grow in importance.

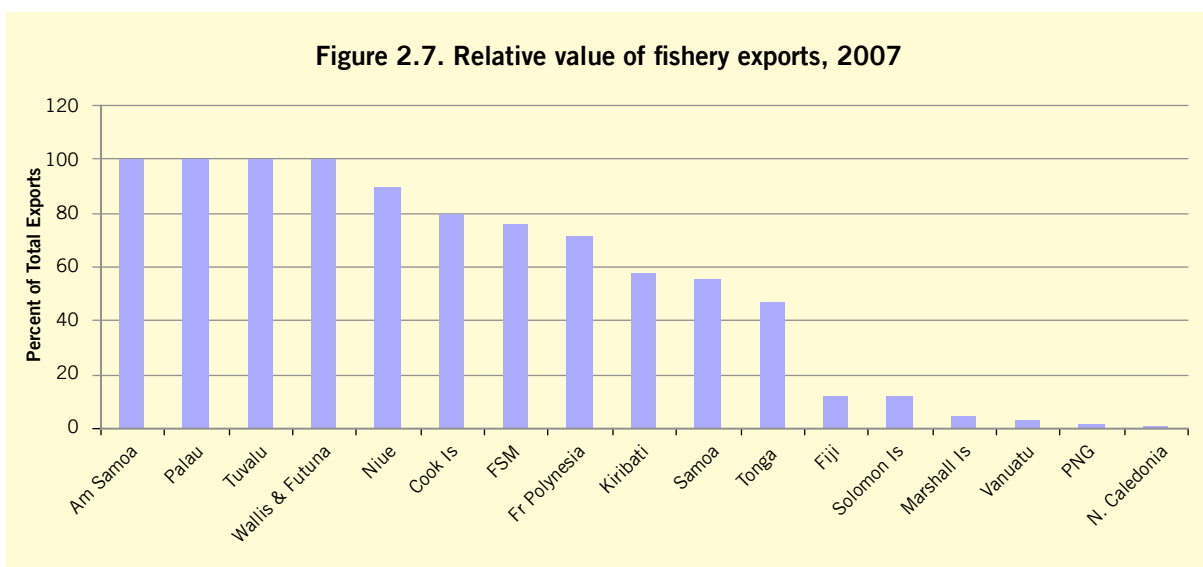
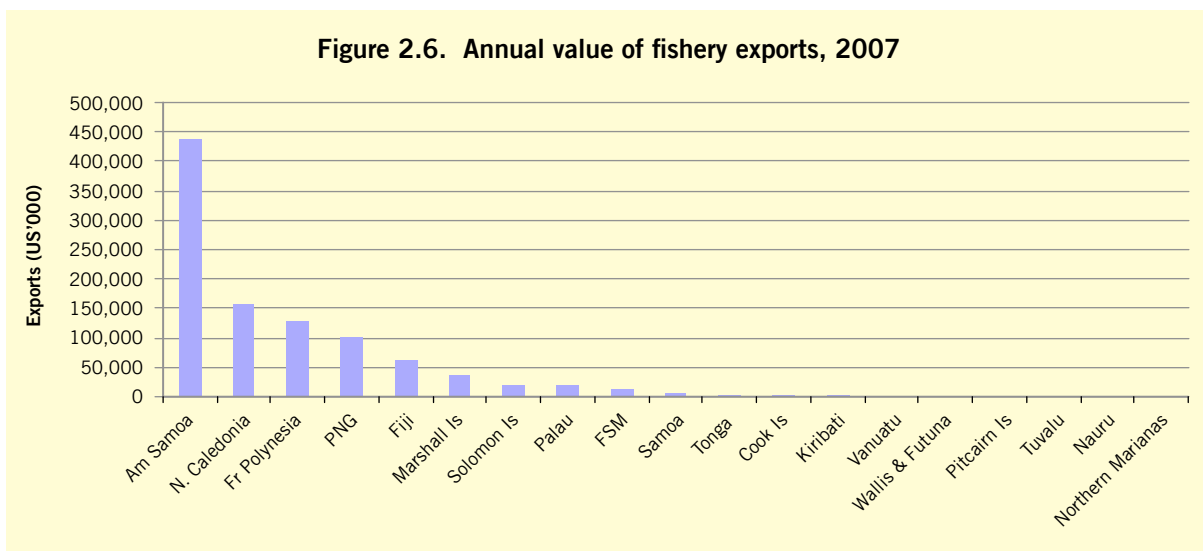


2 The full report of the study (Gillett, 2009) is available on the ADB website. (<http://www.adb.org/publications/fisheries-economies-pacific-island-countries-and-territories>).

3 Iceland provides a good example. Iceland’s economy is highly dependent on fish and fishing. Fishery products made up 40 per cent of exports in 2007. Despite this importance, the fishing sector contributed only 7 per cent to GDP in 2007. This is because many fishing-related activities are accounted for in other sectors, such as manufacturing, and much of the economic activity generated by fishing is attributed to other sectors, such as retail trade.

2.3.2 Fishery exports

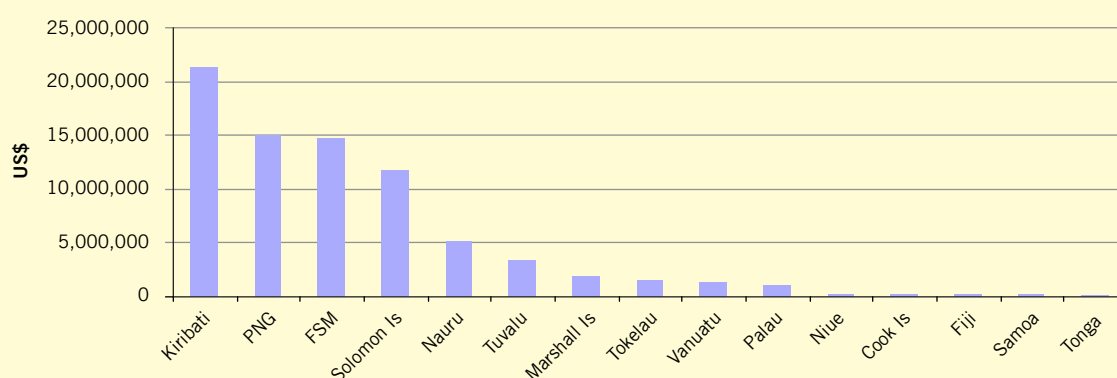
Overall, fishery exports are very important to countries and territories in the region. The value of fishery exports is given in figure 2.6 and the relative value of those exports to all exports is given in figure 2.7. In about half of the countries and territories, fishery exports represent over one half of all exports. Where they represent less than one half the value of national exports, they are mostly quite large in nominal terms: New Caledonia (\$157 million); Papua New Guinea (\$101 million); Fiji (\$63 million); and the Marshall Islands (\$37 million). The three entities that have the largest value of exports are American Samoa, New Caledonia and French Polynesia. Of the total of about \$996 million in fishery exports in the region in 2007, about three quarters are from these three territories. A few countries and territories located in areas of good tuna fishing (as judged by access fees) export little or no tuna, namely Kiribati, Nauru, Tokelau and Tuvalu.



2.3.3 Government revenue

All independent countries in the region obtain revenue by giving foreign fishing vessels access to fish in their offshore waters. Figure 2.8 gives the access fee receipts for 2007. Total access fees received in 2007 were \$78.5 million. FFA reports access fees of about \$135 million in 2011.

Figure 2.8. Access fees received for foreign fishing, 2007



2.3.4 Employment

The information available on fisheries-related employment for the countries in the region represents a heterogeneous assemblage of various types of data. Meaningful summaries of the fisheries employment situation at the national level and intercountry comparisons are difficult to make. Nevertheless, some comments can be made:

- The importance of participation in subsistence fisheries seems to have a strong relationship to the type of island. The level of importance is highest in atolls, followed by small islands, and lowest in large high islands.
- The importance of fisheries in formal employment seems to be related more to business conditions than to island type. These conditions include, among others, the tax situation, the proximity to processing facilities and airline connections to fresh fish markets.
- Typically, 10 to 20 times as many people fish for subsistence than for commercial purposes.
- Large-scale tuna processing in a country or territory (American Samoa, Fiji, Marshall Islands, Papua New Guinea, Solomon Islands) has a remarkable effect on fisheries-related employment (where it is captured by surveys).
- Most formal employment in fisheries appears to be tuna-related.

2.3.5 Nutrition

Table 2.1 compiles the results of many fish consumption studies in independent Pacific island countries.

Table 2.1. Range in estimated annual per capita fishery product consumption

Country	Range of estimates (kg/year/person)
Cook Islands	47.0-71.0
FSM	72.0-114.0
Fiji	44.0-62.0
Kiribati	72.0-207.0
Marshall Islands	38.9-59.0
Nauru	46.7
Niue	49.0-118.9
Palau	84.0-135.0
Papua New Guinea	18.2-24.9
Samoa	46.3-71.0
Solomon Islands	32.2-32.7
Tonga	25.2-30.0
Tuvalu	85.0-146.0
Vanuatu	15.9-25.7

Source: Gillett and Lightfoot (2001).

The table is instructive in that it shows some significant patterns. In general, countries and territories comprised of small islands have high fish consumption rates, while large island countries have low consumption rates. The exceptions are Tonga, where the studies suggest surprisingly low fish consumption rates, and Palau, where the fish consumption rate is remarkably high. In general, most of the Pacific island countries and territories exceed by a large margin the world average per capita fishery product consumption rate of 16.5 kg.

2.4 The long-term future of Pacific island fisheries

In 2010, SPC and FFA collaborated in an examination of the future of fisheries in the region over a 25-year period (2010-2035). By considering trends, drivers of change and likely scenarios, the work was intended to provide the basis for long-term strategic approaches to the development and management of fisheries at national and regional levels. The major findings of that study are found below.

The most influential trends in fishing include:

- a drop in the number of government fishing companies
- a lack of success in the government-led development of offshore fisheries
- a decrease in pole-and-line fishing and the rise and decline of locally based longlining
- for purse seining, a decrease in the American fleet, steadiness in the Japanese fleet and increase in of non-Japanese Asian fleets
- a decline in bottomfish fisheries
- the emergence of new fisheries, such as aquarium fish, live reef food fish
- the increasing relative cost of fuel in fishing operations
- the fish aggregating device (FAD) remaining one of the few successful mechanisms to enable small-scale fishers to have access to offshore resources.

Important trends in the Pacific islands outside the fisheries sector (and affecting the sector) involve changes in population, governance and business conditions. In general, the populations of most countries in the region are experiencing declining fertility, but the reduction is lower than in most developing countries, resulting in relatively large population increases. Another tendency related to population is increasing urbanization. Government instability is emerging as an important trend, especially in Melanesia. With respect to business conditions, there is an increasing, but not yet full, acceptance of the private sector as an engine of economic growth. In many countries, there has been an improvement in the investment climate and an openness to outside investment. There has emerged a renewed determination to secure greater tangible benefits from offshore resources (tuna) by exerting management and economic influence at the regional and subregional levels.

2.4.1 Drivers of change

A list of the major drivers of change in Pacific island fisheries are listed below, along with a summary of the probable impacts on Pacific island fisheries arising from each driver.

- Population growth and urbanization: There will be a growing gap between what coastal fisheries can produce and the demand for fish from coastal fisheries. The amount of fishery product originating from coastal fisheries that is accessible to urban residents will decline sharply due to overexploitation and habitat destruction.
- Patterns of economic development: Extrapolating the current situation into the future, it is likely that the economies of most Pacific island countries will not be in very good shape. This will have large negative impacts on coastal fisheries – greater numbers of people without jobs will be seeking income and food security from harvesting coastal resources, and willing to compromise tomorrow's sustainability for today's food/money.
- The status of fisheries resources and developments in other oceans: Most of the world's fisheries are fully exploited or overexploited and are increasingly subject to tight regulatory controls. This has created a "push/pull" situation – fishers being discouraged from operating in certain regions and/or being attracted by perceptions of opportunity in other areas. As populations and demand grow and marine resources continue to decline in China and South-East Asia, coastal marine resources in the Pacific islands will likely become increasingly attractive and highly valued. In addition, Asian tuna fleets will be attracted to the offshore fisheries in the region.
- Climate change: In offshore fisheries, initial modelling indicates that the concentrations of skipjack and bigeye tuna, and the associated benefits, may shift to the east. Cyclones are predicted to become

progressively more intense, which will increase the risk to shore-based facilities, fleets and processing operations in countries located within the cyclone belt. Coastal fisheries are eventually expected to be less productive due to the degradation of coral reefs caused by the projected synergistic effects of more frequent bleaching, lower levels of carbonate, increased cyclone intensity and greater turbidity of coastal waters.

- Limits to domestic fishery production: The total production in the coastal fisheries of many Pacific island countries does not appear to have expanded in recent years, despite increasing effort. Many species have reached or exceeded limits of sustainable production and this trend is set to continue across all fisheries. Coastal fisheries production is not expected to grow significantly in the future in most Pacific island countries. In the offshore fisheries, some tuna species are approaching (or surpassing) sustainable production levels, while others can support increased catches but that potential is certainly not infinite.
- Fuel costs, technology and innovation, and development assistance are other important drivers of change in the fisheries sector.

2.4.2 The most likely scenario for Pacific island fisheries for 2035

The present report discusses three scenarios, namely the best, the worst and the most likely. The most likely scenario is discussed in box 2.1.

Box 2.1. Pacific island fisheries in 2035

Coastal fisheries: The production of valuable species (in economic and food security terms) falls significantly below the 2010 level due to uncontrollable fishing effort, pollution, siltation, landfill and habitat destruction, especially near urban areas. Coastal production fails to meet the food gap. Community-based management is effective in some areas. Some transport of fish from rural to urban areas, and some depletion of fish in those rural areas, especially by the government-subsidized transport of catches. Coral bleaching and other effects of climate change have some negative effects on reef fishery production. The volume of exported items falls, but rising prices allow trade to continue. Some countries have banned exports of food fish, which provides some help in reducing fishing pressure, but many bans are “leaky” due to exemptions and illegal exports. Fishing employment near urban areas tapers off gradually, with decreasing catch rates and profitability, mitigated somewhat by higher prices and technology improvements. Fishers from urban areas range further, but are constrained by high fuel prices. Benefits from fishing in remote areas tapers off with a decline in the abundance of non-perishable items. Tourism jobs related to the marine environment grow in some countries. Interaction between inshore and offshore fisheries increases. Few countries are able to institutionalize and maintain FAD programmes. There is continued reliance on donor support.

Offshore fisheries: The effectiveness of regional fisheries agencies is mixed. There is some improvement in agreements with foreign fleets, including provisions for onshore investment/development. The volume of skipjack catches rises substantially but value fails to rise proportionately, at least in the short term. Yellowfin and bigeye stabilize or continue to decline slowly, and higher fuel costs result in unprofitable domestic longline fisheries. For tuna processing, preferential market access is removed, resulting in less export value due to competition with efficient producing countries, mitigated somewhat by growing demand and improved technology. Management measures reduce illegal fishing by foreign fleets, but there is poor compliance by domestic fleets and on the high seas. There is a greater volume of high-value purse seine caught yellowfin and bigeye. For locally based longlining, production moves to low cost fleets, reducing exports in Pacific island countries and territories. Domestic industry development continues to grow in two or three countries but is unsuccessful in countries with low infrastructure and/or high production costs. Some growth in jobs related to tuna (observers, crew, officers) continues. Offshore fisheries do not fully close the gap between the supply and demand for affordable fish. Cheap tinned fish becomes less affordable to Pacific islanders, but the fish supply is augmented by by-catch. Many countries continue obtaining access fees alone. There is some success of domestic industry development to compensate for foregone access fees. Domestic industry development fails to deliver the expected benefits.

Some of the conclusions of the future of fisheries report that are relevant to the present study are as follows:

- For the coastal fisheries: The best scenario requires more emphasis on preserving existing benefits (especially related to food security), rather than on generating additional benefits. It is also evident that fisheries agencies need to acquire greater desire/ability to work with the private sector, communities, women and NGOs.
- For the offshore fisheries: Quite simply, regional cooperation among Pacific island countries is necessary for most of the positive outcomes and effective control over, and use of, the resource.

3. Institutional and policy arrangements

3.1 The major regional institutional players

The major regional institutions involved with fisheries are FFA, located in Honiara, and SPC in Noumea, New Caledonia. Other players are PNA in Majuro, the Pacific Islands Forum Secretariat (PIFS) in Suva, the Secretariat of the Pacific Regional Environment Programme (SPREP) in Apia, and the University of the South Pacific (USP) in Suva. The various characteristics of those institutions are provided in appendix 3.

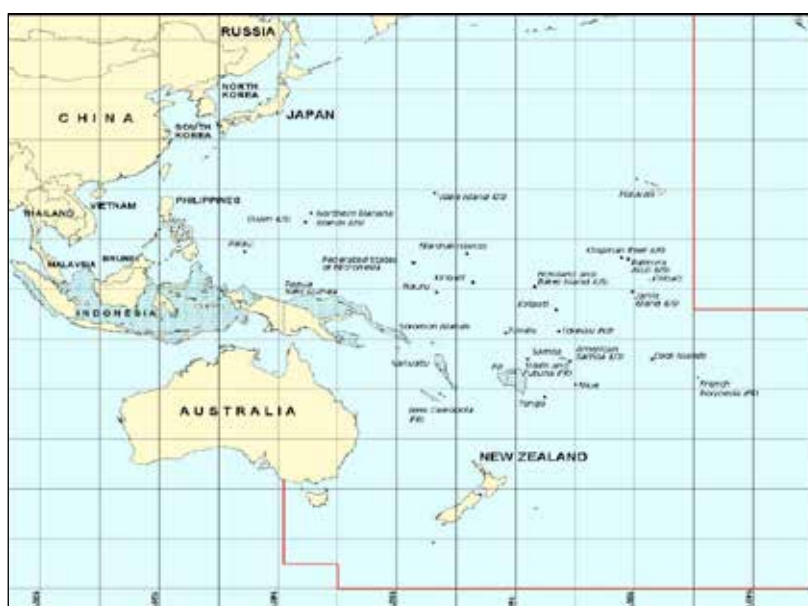
3.2 United Nations Convention on the Law of the Sea and regional fisheries management organizations

The United Nations Agreement for the Implementation of the Provisions of the United Nations Convention on the Law of the Sea of 10 December 1982 relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks sets out principles for conservation and management based on the precautionary approach and the “best available scientific evidence”. All United Nations member States from the Pacific have signed the agreement, and all except Vanuatu have ratified it. The agreement builds on the principle of intercountry cooperation for the conservation and sustainable use of fisheries resources within and beyond the exclusive economic zone (EEZ). It attempts to achieve this objective by:

- establishing detailed minimum international standards for the conservation and management of straddling fish stocks and highly migratory fish stocks
- ensuring that measures taken for the conservation and management of those stocks in areas under national jurisdiction and in the adjacent high seas are compatible and coherent
- ensuring that there are effective mechanisms for compliance and enforcement of those measures on the high seas
- recognizing the special requirements of developing States in relation to conservation and management, as well as the development and participation in fisheries for the two types of stocks mentioned above.

Under the Agreement, regional fisheries management organizations and arrangements are the primary mechanisms for cooperation between States. In the Pacific, WCPFC plays this role.⁴ It is not considered a Pacific island regional organization, but rather an international body that manages highly migratory fish in a large area of the Pacific (see figure 3.1).

Figure 3.1. Western and Central Pacific Fisheries Commission area (red boundary)



⁴ The convention that established the Commission was concluded in 2000. The current members are Australia, Canada, China, Taiwan Province of China, the Cook Islands, the European Union, the Federated States of Micronesia, Fiji, France, Indonesia, Japan, Kiribati, the Republic of Korea, the Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, the Philippines, Samoa, Solomon Islands, Tonga, Tuvalu, the United States of America and Vanuatu. There are also participating territories and cooperating non-members.

WCPFC adopts “resolutions”, which are non-binding statements, and “conservation and management measures”, which are binding. As of early 2014, about 50 management measures were in force. WCPFC is further discussed later in this report.

Another fisheries body, the South Pacific Regional Fisheries Management Organisation, is involved in the management of all fish species except highly migratory species. It covers areas beyond national jurisdiction in the South Pacific from Australia to South America.

3.3 Major donors

The leading bilateral donors to the Pacific fisheries sector are Australia, the European Union, Japan and New Zealand, as described below.

- Australia’s policy is that the best way to support the fisheries sector in the Pacific islands is to contribute funding to the work programmes of SPC and FFA. The total assistance to the sector is about \$12 million per annum, which includes funding for community-based coastal fisheries management initiatives and bilateral assistance to Kiribati and Nauru.
- The European Union has supported a long series of fisheries projects at SPC, and to a lesser extent at FFA. During the last decade, this has included the Pacific Regional Oceanic and Coastal Fisheries Development Project, the Development of Tuna Fisheries in the Pacific ACP Countries Project, ACP Fish II, Scientific Support for Oceanic Fisheries Management in WCPO, Scientific Support for the Management of Coastal and Oceanic Fisheries in the Pacific Islands Region, and Development of Tuna Fisheries in the Pacific ACP Countries Project II. The combined value of those projects approaches \$50 million.
- Japan’s fisheries-related assistance to the region is carried out through a few agencies, namely the Japan International Cooperation Agency, the Overseas Fishery Cooperation Foundation and the Fisheries Agency. Information on the consolidated amounts of fisheries assistance is not readily available. Most assistance is at the country level.
- New Zealand provides the region with about \$13 million per year in fisheries-related assistance. About half of this is for national projects (for example, an institutional strengthening project in Solomon Islands) and half for funding FFA/SPC.
- Taiwan Province of China and the United States also support the fisheries sector, but to a smaller degree.

Multilateral institutions also support fisheries work in the region. The agencies and organizations that have done the most work are the World Bank, ADB, the Food and Agriculture Organization of the United Nations (FAO) and the Global Environment Facility/United Nations Development Programme. The World Bank is planning an initiative, the Pacific regional oceanscape programme, which will support the improved management of both coastal and oceanic fisheries in up to 13 Pacific island country members over the next 7 years. The programme will comprise a cluster of country-level projects, initially in four countries but increasing in subsequent phases, supported by regional-level interventions for common interests. The overall goal of the programme is to increase the contribution of fisheries to Pacific economies through improved resource management. ADB was quite active in the region in fisheries (for example, by strengthening fisheries agencies in the Federated States of Micronesia, the Marshall Islands and Papua New Guinea), but policy changes have occurred and the involvement of ADB in fisheries is currently minimal. The Global Environment Facility/United Nations Development Programme have supported a series of oceanic fisheries management projects in the region. The major activity of FAO in the region in recent years has been through the FAO Technical Cooperation Programme at the country level. FAO is also currently involved in two large projects of considerable interest to the region: the Areas Beyond National Jurisdiction Programme (at the global level) and the Pacific Islands Oceanic Fisheries Management Project Phase II (at the regional level).

3.4 Summary of the regional policies and declarations related to fisheries

3.4.1 Specific documents

The most important policy documents relating to regional fisheries are the Pacific Islands Regional Ocean Policy, the Pacific Islands Regional Ocean Framework for Integrated Strategic Action, the Vava’u Declaration on Pacific Fisheries Resources, the Pacific Plan for Strengthening Regional Cooperation and Integration, and the Framework for a Pacific Oceanscape.

Pacific islands regional ocean policy

At their 1999 meeting, the Pacific Islands Forum Leaders endorsed a list of recommendations that emerged from the Pacific Regional Follow-up Workshop on the Implementation of the Law of the Sea Convention, convened in Tonga in 1999. Although most of the recommendations could be implemented only by Governments, one of the recommendations — that a regional ocean policy be produced — was adopted as a regional-level initiative. The Marine Sector Working Group of the Council of Regional Organisations in the Pacific was tasked with developing a regional ocean policy. The draft policy produced by the Working Group was presented at official meetings and governing councils of the various organizations of the Council of Regional Organisations in the Pacific, and was subsequently endorsed by the 33rd Pacific Islands Forum in 2002 (SPC, 2008c).

Pacific Islands Regional Ocean Framework for Integrated Strategic Action

This Framework is for the implementation of the Pacific Islands Regional Ocean Policy. The Policy was approved by Pacific island leaders in 2002. Each of the six themes identified in the Policy is further developed in this Framework through a series of priority initiatives and actions. The Framework is designed to serve as a guide for implementation rather than a prescriptive work plan, and is intended to be inclusive, allowing for participation by Governments, NGOs, non-State actors, the private sector and civil society. It provides:

- a regional consensus on priorities for actions to ensure improved ocean governance and sustainable use of the ocean and its resources
- a framework for regional coordination of action
- a framework for regional and international institutions to use in integrating their work
- guidance to development partners on regional priority areas requiring their support (SPC, 2008c).

Vava'u Declaration on Pacific Fisheries Resources

The 38th Pacific Islands Forum was held in Tonga in October 2007 and was attended by heads of the Governments of the Cook Islands, the Federated States of Micronesia, Fiji, Nauru, New Zealand, Niue, Papua New Guinea, Samoa, Tonga, Tuvalu and Vanuatu, as well as representatives from Australia, Kiribati, Palau, the Marshall Islands and Solomon Islands. Leaders adopted the Vava'u Declaration on Pacific Fisheries Resources, which committed the leaders to, inter alia, the following actions:

- Promoting domestic fisheries, in particular the development of national tuna industries, in the context of a phased introduction of rights-based management arrangements supported by an appropriate management and regulatory framework.
- Developing and managing coastal/inshore fisheries and aquaculture to support food security, sustainable livelihoods and economic growth for current and future generations of Pacific people.
- Maintaining regional solidarity among Forum member countries in managing the region's tuna stocks.
- fully implementing without delay the conservation and management measures developed and endorsed by WCPFC.
- Seeking the urgent adoption of additional measures by WCPFC to address the overfishing of bigeye and yellowfin, including a reduction in longline catches and addressing purse seine fishing, and specific steps to reduce the catch of juvenile bigeye and yellowfin.
- Developing and implementing, with the assistance of FFA, a comprehensive regional monitoring, control and surveillance strategy.
- Investigating and taking appropriate steps as a matter of priority to strengthen, simplify and give full transparency to national fisheries governance and licensing arrangements.
- Requesting FFA, SPC, the Forum Secretariat and WCPFC to jointly monitor progress in implementing these commitments, and reporting on this – especially progress in regional tuna management – under the Pacific Plan to FFA Ministers and at the next Leaders' Meeting for further consideration.

The Pacific Plan

The Pacific Plan for Strengthening Regional Cooperation and Integration, endorsed by Forum Leaders at the Pacific Islands Forum meeting in Port Moresby in 2005, is a document designed to strengthen Pacific regional integration and cooperation. Its four key pillars are designed for development progress, namely economic growth, sustainable development, good governance and security (PIFS, 2007). While it is not a blueprint for regional development, the Plan provides a platform linking the region's developmental initiatives/priorities. It also acts as a central framework within which development partners can provide assistance to the region (SPC, 2013c). The Plan's 2013 progress report gives the fisheries highlights of the implementation of the Plan in 2012-2013, as listed below.

- An 18-month interim agreement was signed between the United States and Pacific island parties, which is expected to result in an increase in the parties' annual revenues from \$24 million to \$63 million.
- Agreement on Strengthening Implementation of Niue Treaty on Cooperation in Fisheries Surveillance and Law Enforcement in the South Pacific Region was adopted.
- WCPFC approved a proposal giving members access to in-zone vessel monitoring system data.
- FFA and SPC trained hundreds of new observers and trainers.
- FFA South Pacific Albacore fishery members approved a harvesting management framework that provides limits in each EEZ.
- SPC improved the scientific basis of the management of the oceanic fishery through stock assessment.

Framework for a Pacific Oceanscape

The Framework for a Pacific Oceanscape was initiated at the 40th Pacific Islands Forum, held in 2009, with a statement from the representative from Kiribati sharing a vision for a secure future for Pacific island countries, based on ocean conservation and management. A document was subsequently developed, based on regional consultation, entitled "Our sea of islands, our livelihoods, our Oceania: Framework for a Pacific Oceanscape – a catalyst for implementation of ocean policy" (Pratt and Govan, 2011) and was endorsed by the Pacific Island Leaders that same year. The Framework envisions "a secure future for Pacific Island Countries and Territories based on sustainable development, management and conservation of our Ocean" and is considered to be a mechanism for the implementation of the much broader and overriding Pacific Island Regional Ocean Policy, approved in 2005 to realize a healthy ocean that sustains the livelihoods and aspirations of Pacific island communities. Both the Pacific Island Regional Ocean Policy and the Framework for a Pacific Oceanscape are closely aligned to key areas of the Pacific Plan, which is currently the principal regional policy instrument, including the pillar of sustainable development. Six strategic priorities were identified for immediate implementation under the framework, of which three can be considered core actions: (1) jurisdictional rights and responsibilities; (2) good ocean governance; and (3) sustainable development, management and conservation. Three priorities support or cross-cut strategic priorities: (4) listening, learning, liaising and leading; (5) sustaining action; and (6) adapting to a rapidly changing environment. Strategic priority 2 includes the establishment of a regional ocean commissioner, with dedicated professional support, to provide the high-level representation and commitment that is required to ensure dedicated advocacy and attention to ocean priorities, decisions and processes at the national, regional and international levels.

3.4.2 Some observations on these policies

From a detached reading of the available documentation, it would appear that the numerous regional policies and declarations related to fisheries would provide considerable guidance to senior fisheries officials at the national and regional levels. The ocean policies of the Pacific small island developing States are supposed to be guided by the Pacific Islands Regional Ocean Policy and the Pacific Ocean Framework for Integrated Strategic Action, which directly support the Pacific Oceanscape Framework. Similarly the Pacific Island Regional Ocean Plan and the Pacific Plan are intended to be the pre-eminent regional policy instruments for our ocean, good governance, sustainable development, and peace and security. In practice, the above-cited policies and declarations themselves do not appear to have much direct influence on the decisions of senior officials of the regional agencies dealing with fisheries. According to the senior officials, in a relative sense the most useful or cited documents are the Pacific Plan and the Vava'u Declaration. This appears to be because the Pacific Plan requires annual reporting by the agencies and the Vava'u Declaration is specific to fisheries (rather than oceans in general) and provides mandates for action in various fields.

4. Major fisheries issues and challenges in the region

In this section, an attempt is made to highlight the major fisheries issues and challenges in the region. Not all stakeholders involved in fisheries in the region will agree on what are priority issues. Although many of the issues covered require more extensive analysis, the purpose here is to highlight briefly the major points in a concise form. In some cases, an issue discussed below may not be the most critical, but rather an important emerging issue that has not received adequate attention.

4.1 Coastal fisheries

4.1.1 Population

Currently, many of the coastal fishery resources are overexploited, especially those close to urban areas, where the concentrated population creates the greatest demand for fish. It is likely that, in the Pacific island region, the situation will worsen in the future. Two important features of Pacific island populations are: (a) sustained high levels of natural increase throughout most of the Pacific; and (b) urbanization becoming more prominent. The population of the region will grow by about one third in the next 25 years (which is equal in numbers to the population of New Zealand), with growth especially high in Melanesia. In 25 years, about one third of the population of Melanesia, one half of Polynesia and three quarters of Micronesia will live in urban areas.⁵ Some of the implications of population increases and urbanization for fisheries are as follows:

- There will be an increase in overfishing conditions due to expanding urban populations and fishing intensively close to those populations.
- The production from coastal fisheries that are accessible to urban residents will probably decline due to overexploitation and habitat destruction.
- Given the large population growth, there is likely to be a growing gap between what coastal fisheries can produce and the demand for production from coastal fisheries, raising the cost of fish.
- A growing number of people in the cities will result in a higher proportion of the population not being able to catch sufficient fish to provide for household consumption.
- Much more of the coastal fish consumed by Pacific islanders will be purchased and shipped in from less populous areas – which may equate to exporting urban-type fisheries problems to rural areas.
- Many of the above points will contribute to more expensive fish.

This situation is especially tragic considering that most fish consumed by Pacific islanders comes from coastal fisheries. The extraordinarily high consumption of fish by many Pacific island countries underscores the vital contribution of fish to food security in the Pacific. Nowhere else do as many countries rely so heavily on subsistence fishing to supply the majority of the protein needed for good nutrition.

4.1.2 Coastal fisheries management: need and benefits

With the importance of food from coastal fisheries and the likely decline in productivity of those fisheries in the future, there is a great need to mitigate the factors that may be contributing to the decrease. A large-scale study by SPC across the region (Pacific Regional Oceanic and Coastal Fisheries Development Project) revealed that half of all of the sites studied appear to be exposed to unsustainable fishing of both finfish and invertebrate populations. Some factors may be difficult or impossible to control, but many can be addressed through fisheries management, with reducing excess fishing being the most important at many locations. As noted by SPC (2013a), strong fisheries management is needed to maximize the yields of demersal fish and invertebrates and to reduce the size of the “food gap” between the seafood available and that required to meet the needs of growing populations in Pacific islands. Coastal fisheries also disproportionately involve women. Using various management techniques, such as closed areas, closed seasons and restrictions on the numbers and types of fishers, fishing effort can be reduced to a level

⁵ See Haberkorn (2007), Bell (2009), and Gillett and Cartwright (2010).

where the productivity of a fishery is not greatly diminished. This basic concept is well known to most fisheries specialists in the region. Problems occur, however, in the following situations:

- Governments in the region perceive that there is considerable opportunity to increase fisheries production – which in some cases can equate to predicating development on “non-existent potential”.
- There is a lack of political will either to allocate adequate resources for effective coastal resource management or to give it priority over other activities of the government fisheries agencies.
- When Governments equate “helping fishers” with providing the means to harvest more fish (often before an election), it is frequently not sustainable and can come back as harming fishers.
- There is a lack of enthusiasm to encourage and empower coastal communities to address problems in their coastal fisheries. Creating an enabling climate for traditional authorities to manage effectively their own fishing areas has been spearheaded by NGOs in several countries, but there are often insufficient efforts to institutionalize the concept within the regular work programmes of government fisheries agencies.
- There is no clear policy for the government fisheries agencies that the priority in coastal fisheries should be resource protection, rather than the promotion of increases in production.
- “Gender blind” policies have large gendered impacts, such as reducing access to fish for domestic consumption and sale (High Level Panel of Experts on Food Security and Nutrition, 2014).

The attention to coastal fisheries management varies considerably between countries in the region and it is evolving over time. In general, there is a growing awareness of the need for, and the benefits of, coastal fisheries management, but this trend requires reinforcement by Governments and donors.

4.1.3 Poorly managed bêche-de-mer fisheries

Bêche-de-mer (sea cucumber) is likely to have been the first export fishery of the Pacific islands. Now the trade is extremely important to the region, second in value only to the significantly larger tuna trade. The non-perishable nature of the product and the simple low-technology method of processing it make bêche-de-mer an ideal commodity for production by rural areas of the Pacific islands. There is wide recognition that the persistent overexploitation of bêche-de-mer resources is substantially depressing the overall value of this trade, and in doing so it is also creating hardship in hundreds of coastal communities that have come to depend on bêche-de-mer as a source of cash income. This situation is being further exacerbated by a lack of transparency in the management and practice of this trade and, where moratoriums have been imposed, by significant illegal fishing and trading activity (Carleton *et al*, 2012).

Some notable points are:

- The bêche-de-mer stocks in the region are so depleted that each boom-and-bust cycle yields less than half of the volume of product that it did formerly.
- If it had been managed on a more precautionary basis that moved exploitation away from the boom-and-bust cycle that typifies this fishery, medium-run revenues derived from the bêche-de-mer trade could be double those that have been achieved.
- The general quality of bêche-de-mer processing in the region is not good; greater care and attention is given to processing the high-value species, but overall up to 30 per cent of the value is lost due to poor processing (Carleton and others, 2012).

Various techniques have been used by Pacific island countries to prevent the overfishing of bêche-de-mer, but their failure has resulted in the necessity of closing down the fisheries in the major producing countries in the region to prevent a collapse of the resource. Such moratoriums can have devastating impacts on coastal communities. If even a small portion of the amount of attention that has been focused on the tuna resources in the region had been channelled into bêche-de-mer management, it is doubtful that the resource would be in the poor condition it is in today.

Clearly, there is justification for countries to invest more in upgrading the management of bêche-de-mer. What is good for bêche-de-mer management is generally good for the residents of the outer islands. The documentation on the fisheries in the region makes many useful suggestions, but in order to improve the situation, Governments need to give bêche-de-mer much greater attention.

4.1.4 Small-scale fishers and large tuna resources of the region

In WCPO, more tuna is harvested than in any other ocean area. Small-scale fishers take only a minute fraction of the 2.5 million Mt of tuna catch in the region annually – about 2 per cent according to one study.⁶ Because of the limits of coastal fisheries (which currently appear to have reached their maximum of about 150,000 tons annually), it is generally recognized that, if Pacific islanders are to maintain their present rate of fish consumption, there must be greater use of the large offshore tuna resources.

Currently, the various small-scale fishing activities that catch tuna can be placed mostly in one of the three following categories:

- fisheries that target tuna; for example, longlining in Samoa or drop-stoning in many locations
- fisheries that target pelagic fish in general; for example, trolling in Niue or sport fishing in Tonga
- fisheries that are more general in nature, opportunistically trolling, and handlining; for example, fishing from banana boats in Papua New Guinea or from fibreglass outboard fleets in Fiji and Solomon Islands.

Small-scale tuna fishing in the region is relatively more important in small, resource-poor islands than in large, fertile islands. For example, Vanuatu has a population of about 245,000 people, but has little small-scale tuna fishing, while Kiribati, with small islands and less than half the population of Vanuatu, has a tuna catch from small-scale fishing over 1,000 times greater.

There have been numerous attempts in all Pacific island countries to encourage small-scale fishers to harvest larger amounts of tuna. These have included deploying FADs, Governments constructing appropriate small tuna fishing vessels, providing subsidies and grants for vessel and gear, providing hire vessels for offshore fishing, encouraging production of tuna jerky and salted tuna, experimenting with novel tuna products, installing freezers on outer islands for holding tuna, collecting tuna caught by outer islands fishers, establishing schemes for purchasing tuna from artisanal fishers at subsidized prices, longlining from small boats, promoting small-scale pole-and-line fishing with live bait, sponsoring overseas study tours, upgrading fishers to medium-scale longlining and many other schemes. It should also be pointed out that many government fisheries agencies in the region are planning to implement additional small-scale tuna fishery development projects.

In reviewing the history of the development of small-scale tuna fisheries, FAD is one of the few initiatives that have been successful and that continue to contribute to the success of small-scale fisheries. Despite decades of small-scale tuna development efforts throughout the Pacific islands, FADs remain one of the few innovations that allow small-scale fishers to economically take advantage of the region's large tuna resources. Other attempts may have had sporadic success or special applicability in one country, but overall, nothing comes close to producing as many ongoing benefits to small-scale tuna fishers as FADs. Noting the relative success of FADs, it is ironic that very few countries in the region have an effective ongoing FAD programme, which means a FAD programme that is financed by national sources (rather than dependent on volatile donor funding) and in which, as one individual stated, "a lost FAD gets replaced in 5 days, not 5 months or 5 years". Although a scarcity of funds is often cited as the reason for the lack of an effective FAD programme, the reality is that, given appropriate priority, such a FAD programme is not beyond the recurrent budgetary resources of most of the fisheries agencies in countries in the region. It also should be noted that some of the other schemes planned for helping small-scale tuna fishers (such as fish collection schemes or grants for vessel purchases) could be both more expensive than a FAD programme and less likely to be successful. Another positive aspect of FADs is that SPC has been actively promoting FAD fishing as a climate change adaptation mechanism (Gillett, 2003a). This suggests that any country that is serious about assisting small-scale fishers to take advantage of the large tuna resources should have an active and well-managed FAD programme. As SPC (which has assisted countries with FADs) currently does not have the resources to deploy and maintain all of the FADs that the region needs, FAD programmes should be institutionalized within government fisheries agencies in terms of technical expertise and funding.

4.1.5 Management distractions

In fisheries management, the greatest challenge is putting in place and regulating controls on fishers to prevent resource degradation. Generating the political will for management initiatives, carrying out research and drafting management plans are not easy, but they are often relatively simple compared with restricting fishing. Examples of such action are community leaders preventing fishing in MPAs large enough to be effective, or a fisheries department blocking the use of scuba gear in spearfishing. In close-knit island societies, confronting fishers and restricting activities can be even more difficult. To avoid this situation, easy alternatives are often sought – so there would be

⁶ The proportion of tuna taken by small-scale fishers in WCPO is far less than in the other oceans. In the Indian Ocean, about half of the landings of large pelagics (billfish, seerfish and all species of tuna) are captured by non-industrial fishing.

less need to limit fishers. A number of such alternatives to restrictive management have been used in the Pacific island region over the years. These have included re-establishing populations through the use of aquaculture (“reef ranching”) and promoting alternatives to coastal fishing to reduce fishing pressure, including aquaculture, fishing outside the reefs (deep-slope and offshore) and activities outside the fisheries sector. These activities appear to be more politically acceptable than placing restrictions on fishers.

The problem is that these alternatives to restrictive management are not very successful in mitigating declines in coastal fisheries resources. Although aquaculture, deep-slope fishing, and FADs may have significant benefits and play important roles in economic development, several studies in the region have examined past experience and concluded that these are not effective alternatives to restricting fishing.

The implications of reef ranching in the Pacific islands have been studied with respect to bêche-de-mer, coconut crabs, mangrove crabs, spiny lobster, green snail, trochus, pearl oysters and giant clams. The conclusion was that reef ranching needs to be considered as part of an overall management approach and not as an alternative to management. Overseas experience underlines the fact that simply releasing large numbers of juveniles into the fishery does not produce population increases unless the fishery is also subject to some form of management that allows the released juveniles to reproduce and thus make a contribution to population growth. Reef ranching should be viewed as one of a set of management tools, and not as an easy way out of management (Preston and Tanaka, 1990).

Four main types of alternative activities have been promoted in the region to reduce coastal fishing pressure, namely aquaculture, FADs, deep-slope fishing and alternatives outside the fishing sector. In reviewing the situation over the last 30 years, it is difficult to identify cases where the use of these activities could be considered clearly successful. Past experience in the use of alternative activities points to some important overall conclusions. Perhaps the most important lesson learned about alternatives to restrictive management in the Pacific islands is that its performance has not been at the level where it can be considered an effective resource management tool (Gillett *et al*, 2008).

4.1.6 Lack of adequate data on coastal fisheries

As noted above, government fisheries agencies typically give low priority to estimating the total amount of domestic catches. In general, the smaller the scale of the fishing, the less is known about the production levels, with quantitative information being especially scarce for subsistence fisheries in most countries. Estimating the production from coastal fisheries in about half of the Pacific island countries is largely guesswork. The lack of knowledge about the catches from Pacific island coastal fisheries is especially troublesome given that ‘what gets measured gets managed’. The lack of data is also a factor in the under appreciation of these fisheries in many countries. Poor data on coastal fisheries production create considerable difficulty in accurately portraying fishery benefits, especially in the areas of GDP contribution, employment and nutrition. The protection of village food fish supplies is arguably the most important objective in the management of coastal fisheries in the Pacific islands, but to know if such management efforts are effective overall, some idea of the gross coastal fisheries production and its trends is required. In terms of government priorities, it seems that a lack of production information tends to lead to a lack of attention. Within these data constraints, a lack of gender-disaggregated data contributes to “gender blindness” in coastal fisheries policy. Because coastal fisheries have a great direct effect on the lives of all Pacific islanders, coastal fisheries data collection deserves more attention.

This should not be taken as an argument for the establishment of systems of ongoing and extensive data collection from the coastal fisheries in the Pacific islands (that is, detailed information for stock assessment purposes). Such systems are expensive to the point of rarely surviving the withdrawal of donor support. Cost-effective mechanisms for the periodical learning of major trends in coastal fisheries are what is required in most countries.

4.1.7 Economic analysis: the need for economic reality in coastal fisheries

In coastal fisheries, there is a generally recognized need for the greater economic scrutiny of development proposals and the evaluation of the economic implications of management options, including their gender dimensions. It was 17 years ago when Tiller (1997) noted: “For more than 20 years flawed activities have undermined donor and recipient confidence in fisheries developments and consumed vast quantities of scarce development capital. Even the most tenacious donor is now nervous about fisheries development proposals.” That statement is quite applicable today and is especially relevant to coastal fisheries. In the 1980s, the assistance provided to the Pacific island countries by FFA included support for the analysis of the economics of small-scale and coastal fisheries. In the early 1990s, when FFA changed its focus to concentrate almost entirely on the tuna fisheries, the organization virtually ceased its involvement in the analysis of small-scale coastal fisheries. For nearly two decades, any expertise in fisheries economics has been largely consumed by the offshore fisheries, at both national and regional levels.

Few fisheries staff at the national level have formal economics training, so the concepts are always new and difficult to grasp in the brief workshops and courses that SPC is now able to provide. There is a great need to get basic economic analysis into the decision-making process for coastal fisheries; that is, countries need to develop the capacity to evaluate in economic terms the gender-disaggregated benefits offered by the various development and management scenarios. It is likely that sustainability, investment decisions and project viability could be significantly improved even with simple economic analysis. An example of this is the situation of the rural fisheries centres, which suffer in most countries from a lack of attention from economists.

4.1.8 Involvement of non-governmental organizations in coastal fisheries management: their appropriate role

From a fisheries perspective, NGOs appear to have played a major role in coastal fisheries management. In the Pacific islands region, NGOs have spearheaded the change in focus from fisheries development to fisheries management and have had a major role in emphasizing community participation. A large number of coastal communities have received assistance from NGOs, leading to positive improvements in their interaction with fisheries resources. Those organizations popularized the use of MPAs. Many Pacific island government fisheries agencies have either directly or indirectly changed for the better through exposure to the work of NGOs. The NGO work is not spread evenly across countries in the region, however, and not all NGOs are equally effective.

In some respects, NGO success is ironically creating a major difficulty. In several cases, energetic, flexible, hard-working, well-funded and well-intentioned NGOs have become involved in the coastal fisheries and often they have performed better than the public servants of the government fisheries agencies. This work has typically been done in a sensitive manner and has resulted in considerable “cooperation” with the fisheries officials. However, this cooperation has, on occasion, evolved to include taking on the regular tasks of a fisheries department – often to the delight of fisheries officials, both in the field and at senior levels, as they can use the staff or funding for other purposes or, worse, be shielded from criticism for the inactivity of those staff in coastal fisheries. Fisheries governance is a major problem in Pacific island countries. NGOs should contribute to improvements rather than usurp the legitimate role of a government fisheries agency and make the long-term situation worse. The funding that NGOs use does not go on in perpetuity and, even if it is long term in nature, the focus may change with respect to both geographic areas and subject matter. NGOs should put more effort into encouraging the fisheries agencies to carry out their mandated duties in coastal fisheries, rather than carrying out that work themselves.

4.1.9 Sea safety: the large number of accidents in small fishing boats at sea

According to FAO, Pacific island countries have some of the highest sea accident rates in the world. Data are insufficient to statistically demonstrate which activities are particularly risky in the region, but there is a general perception that offshore tuna trolling in small outboard-powered skiffs is responsible for many, if not most, of the sea safety incidents in the fisheries sector. As stated in an FAO report: “In one small island country in the region in a typical year there would be no less than 40 missing skiffs reported, of which 25 would be found within three days. Three or four are likely to be rescued later locally, and around ten are found by distant-water fishing vessels or commercial cargo vessels” (FAO, 2003).

Some of the changes likely to occur in the region that affect sea safety are:

- Increasing populations in Pacific island countries are causing a decrease in the availability of near-shore fishery resources, encouraging fishers in small fishing boats to venture further offshore in pursuit of pelagic fish.
- Fewer alternatives to fishing employment in the small countries.
- Greater use of FADs, which has both positive and negative implications for safety.
- Decreasing use of wood as a small boat construction material, increasing use of fiberglass.
- Increase in the size of outboard engines.
- Greater need to take risks in order to repay fishing equipment loans.
- Less traditional fishing craft and an erosion of traditional seamanship skills.

Efforts to improve the sea safety record in individual Pacific island countries are a national responsibility, but there has been assistance from various United Nations agencies, regional organizations, donor agencies and others. SPC and FAO have been especially prominent. The joint work of these two organizations has resulted in identifying four areas where progress should be made in order to improve sea safety in small fishing craft in the region: (a) having

appropriate sea safety regulations for small fishing vessels; (b) improving sea safety awareness programmes; (c) improving the safety of fibreglass skiffs through construction standards; and (d) enhancing systems of sea accident data recording. Although some progress has been made in several countries in these four areas, much remains to be done.

4.1.10 Offshore fisheries improvements at the expense of coastal fisheries

Over the previous two decades, there have been significant improvements in the management of offshore fisheries, but at least some of the improvement has occurred by drawing human and financial resources away from the management of coastal fisheries. The importance of tuna resources, their benefits to the region and the value of the regional organizations that deal with tuna are unquestionable. The reality is, however, that the highly experienced and competent staff of the national fisheries agencies in the region tend to gravitate to the tuna fisheries. Because of limited staff, this attention to tuna by senior staff is often at the expense of the coastal fisheries. According to a recent FFA annual report, 71 tuna-related regional and international meetings and workshops of relevance to the region were held in one year. Attendance at the growing number of meetings on tuna detracts from the attention that can be given by senior staff to the management of coastal fisheries. Routine tasks related to coastal fisheries can often continue in the absence of the “movers and shakers” in a fisheries department, but bold decisions, decisive action and high-level attention to emerging issues (which is sorely lacking in coastal fisheries management in many countries) is often delayed or downgraded during the absence of senior staff. According to Clark (2006): ‘The few people with fishery and corporate management skills are heavily involved in regional fishery meetings and other activities that diminish their capacity to govern national fishery activities.’

4.1.11 Coastal marine protected areas: overreliance

There has been a large increase in the number of coastal MPAs established over the last two decades in the Pacific islands. These have been established mostly by communities with the assistance of NGOs, but government fisheries agencies have also supported the creation of these no-take zones. Govan (2009) indicated that more than 500 MPAs of various types have been established in Pacific island countries and territories.

Benefits of MPAs include habitat and biodiversity conservation, food security, a recruitment source for important marine organisms and the creation of awareness about the need for conservation. MPAs have also had a role in revitalizing management by communities of their adjacent marine resources. Typically, an MPA is not prohibitively expensive for communities to establish and maintain.

MPAs also have their problems. Many fisheries specialists in the region feel there is currently an overreliance on MPAs as a management tool (especially by some NGOs); they believe that MPAs should be considered one of a number of mechanisms that can be used for safeguarding fish stocks and for other purposes. For example, trochus management using MPAs exclusively is unlikely to be very effective, whereas a combination of a no-take zone, minimum size and a quota could be very successful. Exclusive reliance on MPAs can be especially detrimental in situations where the protected area is occasionally open to fishing (that is, an absence of any controls on fishing) or when an MPA has been badly established, such as the area being too small or not encompassing suitable habitat.

4.1.12 Rural fisheries centres: white elephants or useful rural development tools

Fisheries centres have often been used over the years to promote the commercialization of fisheries in rural areas and in outer islands of Pacific island countries. These facilities go by a variety of names in the region, including community fishing centres (Tuvalu), coastal fisheries stations (Papua New Guinea), fish bases (Marshall Islands) and rural fisheries service centres (Fiji). Fisheries centres have assumed a very important role in Pacific island countries, and most countries in the region have many of them. In many countries, the centres are often the largest government expenditure in the fisheries sector and/or consume a substantial portion of overseas aid. In addition, much rural fisheries development in the region is predicated on the centres, and many are planned for the future.

Approximately 150 fisheries centres have been established in Pacific island countries during the past few decades. One of the most remarkable features of fisheries centres in the Pacific islands region is that few, if any, of the centres have been commercially viable. The lack of economic viability does not imply that the centres have been a waste. On the contrary, many centres have provided valuable services to the communities in which they were established (for example, increasing cash income or generally improving standards of living) and to the wider society (for example, helping to stem rural-urban migration or increasing domestic fish supplies). These social objectives are far less amenable to quantification than financial performance and are likely to be less appreciated by non-villagers. However, very little effort has been devoted to promoting women’s access to local and national markets.

Handing fisheries centres over to island councils or provincial governments is often the solution when Governments feel burdened by the ongoing expenses of the centres. In many cases, this really means that the centres are dumped on communities that cannot afford to provide the required subsidy. Reflecting on the overall situation, the outer islands typically have business conditions that are very difficult, the logistics are horrendous and the people/agencies that operate the fisheries centres rarely have much business experience. On the other hand, the various options for a Government to improve the welfare of residents in the outer islands through any sector are quite limited, and in many cases, promoting the fisheries trade through fisheries centres may be the best opportunity (Gillett, 2010).

4.2 Offshore fisheries

4.2.1 Regional solidarity breakdown

For several decades, a major feature of the Pacific islands region was the solidarity among countries on fisheries issues. In the late 1970s and early 1980s, many distant-water fishing nations wishing to fish in the Pacific islands area had a “divide and conquer” strategy, which often involved cutting a deal with a country viewed as being in a weak position – and then playing countries against each other. Through strong leadership (most notably by Philip Muller of FFA) the countries banded together to achieve an effective block, which was possible because the tuna resources in WCPO are, unlike those in other regions of the world, largely within the 200-mile zones of Pacific island countries.

One of the first effective manifestations of regional solidarity was the agreement by all countries in the region on the Harmonised Minimum Terms and Conditions for Foreign Fishing Vessel Access, which specifies consistent conditions across the region with respect to several features, including requirements for being in good standing on the regional register of fishing vessels, trans-shipment, catch logbooks, vessel reporting and observers. This non-negotiable “take it or leave it” policy by all Pacific island countries in their dealing with foreign fishing entities has resulted in significant benefits over the years.

Many examples of the positive impact of regional solidarity over the decades can be cited. To some degree, other regions of the world are aspiring to achieve the solidarity that Pacific island countries have attained. Currently, the mission of FFA is “strengthening national capacity and regional solidarity for sustainable tuna fisheries”. The SPC/FFA report on the long-term future of fisheries in the region states: “For the offshore fisheries, regional solidarity amongst Pacific island countries will be central to mitigating most of the challenges listed, as well as for taking advantage of most of the opportunities.” In the Vava’u Declaration on Pacific Fisheries Resources, Pacific island leaders commit themselves to “maintaining regional solidarity among Forum member countries in managing the region’s tuna stocks”.

In recent years, there has been some breakdown of regional fisheries solidarity. In some countries’ dealings with foreign fishing entities, some aspects of the regionally agreed minimum terms and conditions have not featured. Pressure has been successfully applied by foreign interests for some countries to ignore purse seine effort limits and high seas closures. Currently, countries are having trouble resolving their differences and taking collective control of the southern albacore longline fishery, as was done two decades earlier for the purse seine fishery.

Opinions differ on why there is some breakdown in regional fisheries solidarity. One view is that there is an absence of regional leaders that are able to bring the countries together. Another is that regional fisheries solidarity was at its height when there was not much value in the fisheries, but it is now complicated by the high value of fisheries resources. There is some degree of consensus, however, that improvements in solidarity must come from a level higher than that of fisheries officials.

4.2.2 Bigeye resource condition and a lack of effective action

Of the species of tuna that are important to the Pacific islands region, bigeye is in the worst condition. Appendix 1 summarizes the latest stock assessment information on bigeye, as given in reports associated with the WCPFC Scientific Committee. In short, recent analysis has indicated that there is overfishing of bigeye stock and that, in order to reduce fishing mortality to reach the maximum sustainable yield, a 32 per cent reduction in fishing mortality from 2006–2009 levels is required.

A feature of fishing for bigeye complicates its management. Large bigeye are extremely valuable and are caught by longline gear. Small bigeye are not very valuable but are caught by purse seine fishing (especially around FADs). Reducing the purse seine catch of bigeye (whose condition is poor) would constrain the purse seine catch of skipjack,

whose condition is good and which forms the basis of the world's largest tuna fishery. The balance between restricting catches of bigeye by purse seine and restricting catches by longline has polarized to some degree the views of various Pacific island countries. Reducing longline catches would fall very hard on the aspirations of those non-equatorial countries where there is no purse seining but substantial longlining (such as the Cook Islands, Fiji and Tonga). A reduction in purse seine catches would have very negative impacts on the fishing and processing aspirations of those countries where most purse seining occurs (such as the Federated States of Micronesia, Kiribati, the Marshall Islands, Nauru, Papua New Guinea and Solomon Islands).

WCPFC has been wrestling with ways to reduce fishing pressure on bigeye since the inception of the Commission a decade ago. Although few countries dispute the need to improve the condition of bigeye, because of the diversity of interests of WCPFC members, it is difficult to obtain a consensus on how to proceed (that is, who is to bear the pain). A significant set of measures was enacted by the Commission in 2008, the objective of which was to reduce bigeye fishing mortality by 30 per cent from the annual average during the period 2001-2004. A few years later, the WCPFC Scientific Committee evaluated the effectiveness of the measures and concluded that, even if fully implemented and complied with, the measures are extremely unlikely to achieve the objective of substantially reducing fishing mortality of bigeye.

At WCPFC's latest session, in December 2013, the issue was again addressed. The issues that were especially contentious included FAD restrictions, purse seine effort limits on the high seas and longline bigeye catch limits. In the end, the Commission adopted a measure that is applicable from 2014 to 2017, but many provisions are dependent on further Commission decisions. The measure:

- reduces longline bigeye catch by 10 to 30 per cent for foreign fishing nations
- freezes the number of large foreign purse seine vessels (larger than 24 m) and longline vessels targeting bigeye tuna for sashimi that can operate in the region
- has a high seas FAD closure in 2017
- requests WCPFC to return the following year to agree to limits on purse seine fishing for after 2014 (PNA, 2013).

These measures were a disappointment to many stakeholders. The views of several NGOs (as given in the record of the meeting) expressed the sentiments of many: "Self-interested views had resulted in a measure that failed to impose any additional FAD-based fishing mortality reductions, included no management of FADs or the purse seine fishery beyond 2014, and contained inadequate capacity management provisions. These observers concluded that the drafting process was ineffective and urged Commission members to begin work on a new measure immediately in order to achieve a better outcome" (WCPFC, 2013b).

4.2.3 Economic problems in the southern albacore longline fishery

The longline fishery in the southern part of the Pacific islands region targets albacore. In Fiji, for example, the tuna caught by Fiji-based longliners is about 60 to 75 per cent albacore. Both distant-water longline fishing fleets (China, Japan, the Republic of Korea and Taiwan Province of China) and domestic fleets (Fiji, Samoa, Tonga and Vanuatu) harvest adult albacore from the high seas and in the EEZs of countries. Longline catch rates in the area have declined since 2009, and this drop coincides with a sharp increase in fishing effort that began in 2008. Currently, the albacore resource does not appear to be threatened (that is, stocks are not in an overfished state; no overfishing is occurring), but there are major economic problems in the fishery. Relatively low catch rates combined with relatively low prices create a profit squeeze in the fishery. Another factor concerns fuel expenses: a longliner burns 1135 litres of fuel to harvest a ton of albacore, compared with 349 litres burned by a purse seiner to harvest a ton of skipjack – and the cost of fuel has escalated considerably in the last decade (FFA, 2014).

Domestic fleets participating in the southern albacore longline fishery are struggling, blaming fierce competition from the burgeoning subsidized Chinese longline fleet and depressed prices due to the oversupply of albacore. Many longline vessels are not operating, awaiting conditions to improve. The Government of Fiji is responding with a set of measures (including a reduction in the number of longline licences issued), which is welcomed by the local industry. The governor of American Samoa has pledged to improve the operating environment and viability of the Pago Pago-based fleet. These responses are, however, not likely to have a major impact on the overall situation (Campling and Havice, 2014).

Regional solidarity could be the key to improving the situation. Pacific island Governments need to resolve their differences and take control of longline fisheries in the same way that some have worked together under the Nauru Agreement to take control of the purse seine fishery. Limits need to be set for each Pacific island EEZ and

arrangements made that will result in the reduction in catch that is needed to restore profitability. Once EEZ limits are agreed upon, FFA members will be in a far stronger position to work together to stop the growth in effort on the high seas – because WCPFC requires compatible measures in EEZs and on the high seas (FFA, 2014).

4.2.4 Problems in the Western and Central Pacific Fisheries Commission

“Our message to the foreign fishing nations this week, is you better start pulling your weight – cut your longline fishing and help us with the burden of conservation. Otherwise, we will leave you behind and go paddle the conservation canoe ourselves.”

- Statement by PNA at the opening of WCPFC, December 2013

Pacific island countries form the largest block of members in WCPFC, and they most often have common positions on issues before a WCPFC meeting, but this does not equate to those countries getting what they want in Commission meetings. The convention that established the Commission states that, as a general rule, decision-making in the Commission shall be by consensus, meaning in the absence of any formal objection made at the time the decision is made. Given the diversity of interests of WCPFC member countries, this provision has created problems for WCPFC (and all of the other regional tuna commissions in the world), as it often means that a small number of countries can block measures that are perceived by other countries to be important. It should be noted that, when fisheries commissions “fail”, it is not because of a lack of action of the secretariats of those commissions (in this case, the WCPFC office in Pohnpei, Federated States of Micronesia), but rather the member countries who form the commissions are unable to agree among themselves in annual meetings. This is usually because of the very different interests and objectives of the members. For example, regarding tuna fisheries, the concerns and aspirations of China are quite dissimilar from those of Tuvalu.

There is general agreement that progress in WCPFC has been slow. Section 4.2.2 of this report details the long history of the attempts to address the overfishing of bigeye. The view has been expressed by Pacific island countries that one cause of the slow progress is that the fishing industry has an overly large influence in the delegations of several distant-water fishing country members. As stated by the director of PNA, Transform Aqorau, in December 2013: “This year’s Tuna Commission made some progress but not enough to stop overfishing of bigeye tuna. Many foreign fishing nations’ actions seem to be dictated by their fishing industries rather than an interest in conservation.”⁷

From the perspective of Pacific island countries, there are other important issues regarding the Commission. There is at least some sentiment that the failure of WCPFC to take the required action on important conservation issues justifies “going it alone” and establishing rules outside the framework of the Commission that must be abided by vessels wishing to fish in zones of Pacific island countries. Also, PNA countries have been pushing for WCPFC to reduce the so-called “conservation burden” on Pacific countries. This burden includes the cost (including financial and opportunity costs) of implementing conservation and management measures in Pacific island countries (which generally have limited revenue and government resources). They are seeking assistance to implement the management measures that are relatively burdensome.

WCPFC does provide small island developing States with some opportunities through exemptions to many of its management measures. Many measures place restrictions on fishing activities, and small island developing States are exempt from many of those. Several Pacific island countries have taken advantage of the exemptions to fleet size restrictions to build up local fleets using capital from countries that do not have the exemptions.

4.2.5 Illegal, unreported and unregulated fishing: the hype and the reality

IUU fishing is sometimes discussed in the context of difficulties of the fisheries in the region. It is occasionally implied that it is the worst problem facing the offshore fishing in the region. Greenpeace (2006) stated: “Pirate fishing – illegal, unreported and unregulated fishing – is rife in the Pacific. Pirates leave communities without much needed food and income and the marine environment smashed and empty.” Several of the high-level policy papers examined in section 3.4 of this report discuss the severity of the IUU fishing problem in the region. As part of the effort of the European Union to mitigate the large amount of IUU fishing in the region, it has introduced (and selectively enforced) a scheme whereby a country must fulfil a number of requirements in order to export fishery products to the European Union.⁸ FFA (2013) stated that more resources were being dedicated by donors in addressing IUU fishing-related issues.

⁷ See <http://www.pnatuna.com/node/36>.

⁸ According to a senior regional fisheries official, the most serious recent case of IUU fishing in the region (that is, fishing in a zone without being licensed in that zone) was by a seiner from the European Union (Albacora 1).

Interestingly, none of the 26 regional fisheries specialists consulted for the present study thought that IUU fishing⁹ was among the major fisheries issues in the region. There was a consensus, however, on the following:

- It is extremely difficult to accurately estimate the level of IUU fishing in the region.
- IUU fishing on the high seas is a problem.
- IUU fishing in the region has tended to decrease and change in character over the years, from fishing in a 200-mile zone without a licence in the past to misreporting of catches at present.

These issues were recognized in a report by FFA some 15 years ago, which used the trends in the violations and prosecutions database to conclude the following: “While the number of reported violations has fluctuated with the rise and fall of fishing activity in the WCPO region, it appears that the compliance environment that has been created has reduced the illegal activities of fishing vessels in the EEZs of FFA member countries” (Richards, 2001). This is not to imply that IUU fishing is insignificant in the region. The proper reporting of catches is essential for Pacific island countries to maximize benefits from their tuna resources, including those from foreign fishing access fees. The stock assessments that are critical for proper management are dependent on accurate data from vessels. Vessels that misreport and are not apprehended encourage other vessels to misreport.

Purse seiners operating in the region are now required to have 100 per cent observer coverage, a feature that minimizes misreporting. It is therefore likely that most misreporting problems involve longlining. With 3,000 to 4,000 longliners operating in the region, the misreporting difficulties are not small, and will not soon be resolved. It is important to keep the IUU fishing problem in perspective. Although serious, IUU fishing should not become the issue that can be blamed for all sorts of the region’s fisheries problems. Senior regional fisheries officials caution that the externally driven publicity on IUU fishing can distract policymakers from some of the more important issues.

4.2.6 Access fees versus domestic industry development

All Pacific island countries collect access fees for foreign fishing in their waters and all have aspirations to develop their own fishing and/or processing industries. The various considerations and trade-offs involved in balancing these two opportunities have been a major issue in the region for many years. Access fees have been collected by Pacific island countries since the late 1970s. In the 1980s, a general theme in the region was that greater benefits would accrue if countries could be directly involved in the tuna industry. Because of a scarcity of local private capital in most countries in the region and a suspicion of overseas investors, this involvement usually entailed Governments jumping into the tuna industry. That era and its associated problems have been well studied and documented. A study by ADB concluded:

Pacific island government investments have been planned and entered into with either government as sole owner and operator or in joint venture with foreign companies in pole-and-line tuna fishing vessels (Fiji, Kiribati, Solomon Islands) longline (Federated States of Micronesia, Tonga), and purse seiners (Federated States of Micronesia, Kiribati, Marshall Islands, Solomon Islands), transshipment bases (Federated States of Micronesia), canneries (Fiji, Papua New Guinea, Solomon Islands) and other tuna processing plants. Unfortunately, with very few exceptions, government tuna ventures that have operated for more than two years have been unprofitable and have required additional heavy injections of public funds to maintain operations (Pollard, 1995).

From the above experience, some countries focused on obtaining benefits from their tuna resources through access fees, others sought overseas investment to build industries, while some pursued both. Currently, access fees are at an all-time high, assisted by the introduction of the Vessel Day Scheme (VDS) of PNA. FFA reports that fees have increased from about \$50 million in 2000 to about \$135 million in 2011. Domestic tuna industry development is also advancing, judging by the employment creation related to the tuna industry: from approximately 8,000 jobs in 2002 to about 13,000 in 2011. Much of this industry development came about by using access to the tuna resources to leverage fishing and processing companies to be based locally.

In the balancing of benefits from access fees and from domestic industry development, each country in the region is different in terms of resource endowment, past experience, political will and development aspirations. The following list includes some of the common issues shared by countries:

- Comparing dissimilar benefits is difficult. For example, how does \$1 million from (relatively easy) access fees compare with the (relatively complex) creation of 100 tuna-related jobs in terms of what is best for a country? Calculating and comparing opportunity costs are also difficult.

⁹ To some degree, the term IUU creates an unclear idea of the situation. IUU (an abbreviation popularized by FAO to encompass a large array of conditions around the world) covers many different types of illegal activities, when it would be clearer simply to use “poaching” or “misreporting”, or in the case of offshore fishing in the Pacific islands, a transition from poaching to misreporting. The recent trend to apply the term IUU to coastal fisheries in the region is also awkward because most coastal fishing in the region (including that which is entirely legal) is unreported.

- In recent years, joint-venture fishing arrangements (that is, local basing or flagging) have become popular, but there is a growing concern about the lack of transparency and about whether real benefits flow to Pacific island countries from these frequently complex arrangements.
- In some countries, development aspirations are not well thought out or effectively translated into government policies.
- Some of the government fisheries agencies have historically been involved with the generation of revenue from access fees, and the institutional orientation of those agencies has been to that goal, whereas the promotion of domestic tuna industry development requires different skills, and success can be more intangible and difficult to measure.
- As the tuna industry has changed over the years, some Governments have not stayed abreast of new developments and technology, and have tried to pursue developmental plans that are outdated and/or impractical.

4.2.7 Purse seine Vessel Day Scheme: teething problems of a new scheme

In 2000, an FFA study suggested that the purse seine management scheme that was then based on vessel numbers be replaced by a scheme based on purse seine fishing days. The transition was made seven years later. Campling (2013) stated that, in 2007, PNA began implementing VDS, transitioning from permitting a total number of purse seine vessels in the region (205) to permitting a total allowable number of purse seine fishing days (44,703 for 2012). Given the volume, value and multi-jurisdictional nature of the fishery, it is arguably the most complex fishery management arrangement ever put in place.

Due to the complicated nature of the new VDS system and the various constraints of the government fisheries agencies in the region (such as being underfunded or understaffed), it can be expected there would be problems in the introduction of the scheme. This is not to say that VDS has not produced substantial benefits for PNA countries. The system is creating competition for a limited number of days, thereby increasing the value of each day. In practice, the value of a fishing day before VDS was roughly \$1,350, but the figure increased to about \$5,000 in July 2011, and was about \$6,000 in 2013 (Havice, 2013). The PNA office has indicated that VDS has already increased revenue more than threefold for the Pacific islands from the purse seine fishery (PNA, 2013).

On a different and less tangible level, another benefit is that VDS moves fisheries management in the region to a desirable rights-based system. That is, fishing rights (such as vessel days) can be defined, allocated and traded. By limiting the rights (for example, by placing a cap on vessel days), scarcity is created and value is increased. Consistent with this transition to a rights-based approach, a VDS-style arrangement for the management of the tropical longline fishery is being developed.

There have been some difficulties in introducing VDS, and it is certainly not perfect at present. The problems include the following:

- There are differing interpretations of “non-fishing days” by countries. According to PNA and national-level fisheries officials, this has reduced scarcity and the associated benefits, as well as created opportunities for non-transparent dealings.
- One PNA country (enticed by overseas interests) has reneged on its commitment to base all purse seine licensing on vessel days.
- There have been at least some cases of countries selling more vessel days than they were allocated.

These and other difficulties have been recognized by PNA countries. In March 2014, a review of the scheme commenced, and it is hoped this will lead to resolving many of the difficulties.

4.2.8 Market access issues

Currently, the main market access challenges are those of meeting the European Union’s requirements for (a) establishing and maintaining fish sanitary competent authorities, and (b) the IUU Catch Certificate Scheme. From the paragraphs below it can be seen that complying with the two requirements can be extremely difficult for most Pacific island countries. Although a country could simply decide not to export fisheries products to the European Union, the situation becomes more complex in an era of countries attempting to establish joint fishing ventures and the associated local flagging of vessels which will not be able to export to the European Union unless the country is compliant. Unfortunately, the sanitary authorization of a third country (managed by the European Union Directorate-General for Health and Consumers) and the IUU Catch Certificate Scheme (managed by the European

Union Directorate-General for Maritime Affairs and Fisheries) are two separate matters, and are dealt with separately within the European Union. This complicates the bureaucratic process of market access even further, as they need to be implemented in parallel due to market access being granted only when both requirements are complied with.

Health certification for fish and fishery products

Any country wishing to export fishery products to the European Union must have in place systems to control the hygiene and safety of those products in a manner that is compatible with consumer safety measures already in place in the European Union. In 1994, the European Council introduced its hygiene package of harmonized health controls system for fishery products for human consumption, which included strengthened controls of products from third countries. Industries in these third countries must meet the European Union hygiene and hazard analysis and critical control points conditions. In addition, each country must have a competent authority establish health controls over the whole value chain (vessels to exporters) that are at least equivalent to those defined in European Union legislation. This legislation specifies inspection protocols (including laboratory testing), safe hazard limits, sampling and inspection protocols, record keeping, and certification requirements regarding a wide range of food safety issues. Putting in place the necessary arrangements to be authorized to export fishery products to the European Union is bureaucratic, technically complex, costly and time-consuming. Those countries that do not currently have systems approved by the European Union will need to go through the following steps:

- Prepare and approve appropriate legislation that provides the necessary equivalence with European Union food safety laws.
- Establish or nominate a competent authority responsible for enforcing the legislation.
- Hire or train enough qualified food safety inspectors and other professional staff to ensure that the competent authority can carry out its functions.
- Determine appropriate inspection and monitoring arrangements, including laboratory testing and other necessary diagnoses, to allow fishing vessels and processing facilities to be inspected and approved.
- Put in place a comprehensive records management system to ensure the proper documentation of all inspections and findings, diagnostic results, incidents of non-compliance, and the follow-up and responses to such incidents.
- Once these arrangements are in place, seek approval of the seafood safety control system by EU officials.

In the Pacific islands region, only Fiji, Papua New Guinea and Solomon Islands currently have European Union-approved fishery product hygiene control systems. Most small island States in the region are some years away from achieving this status.

IUU Catch Certificate Scheme

Any country wishing to export fishery products to the European Union must be compliant with the European Union IUU Catch Certificate Scheme. The scheme is laid down in Council Regulation EC 1005/2008 and subsequent legislation. In order to be compliant with this European Union legislation, a country needs to fulfil a number of conditions and then request the European Union to “notify an authority”. If all conditions are fulfilled, the European Union would then publish the flag State notification of that country. Then the country could validate European Union catch certificates for fishery products that might be exported directly or indirectly to the European Union. With such a notification, a flag State certifies the following:

- It has in place national arrangements for the implementation, control and enforcement of laws, regulations and conservation and management measures that must be complied with by its fishing vessels.
- Its public authorities are empowered to attest the veracity of the information contained in catch certificates and to carry out verifications of such certificates on request from the European Union. The notification shall also include the necessary information to identify those authorities.

4.3 Cross-cutting issues

A number of important fisheries issues in the Pacific islands are general in nature, rather than specific to the coastal or offshore subsectors.

4.3.1 Poor governance of the fisheries sector

The phrase “poor governance of the fisheries sector” is used to cover several types of flaws, mostly related to (a) fisheries institutions failing to successfully undertake functions related to government involvement in fisheries development and management, and (b) corruption related to fisheries. During the past decade, much has been written about the problems of governance of the fisheries sectors in Pacific island countries in general. This includes Clark (2006), Barclay and Cartwright (2006), FFA (2007), the Australian Agency for International Development (2007), Gillett and van Santen (2008), Hanich and Tsamenyi (2009), and Gillett and Cartwright (2010). Common features that emerge from these analyses are:

- low capacity of national fisheries agencies brought about by a lack of qualified personnel at all levels, faced with increasingly complex issues
- poor decision-making that is inconsistent or lacking policy objectives
- poor leadership/organizational skills by department heads
- structures of government fisheries agencies that are not conducive to transparency and stakeholder input
- low levels of government funding of government fisheries agencies
- few staff incentives for performance in support of good governance.

Clarke (2006) offered some insight into fisheries governance issues in the Pacific islands region:

Improving national fisheries governance is a high priority for enhancing benefits from the fisheries sector. The issues and constraints associated with governance apply to both oceanic and coastal fisheries, as well as aquaculture. Increasing transparency is the number one area for action... Part of the problem is that many administrations do not have the right people with the right skills to support the shift in focus of fisheries policy from promoting fisheries development to fisheries management. The few people with fishery and corporate management skills are heavily involved in regional fishery meetings and other activities that diminish their capacity to govern national fishery activities. Important ways to improve national fisheries governance involves preparing and implementing fishery management and development plans, and increasing the participation of stakeholders in fishery management and development processes.

On a positive note, there has been a notable improvement in aspects of the quality of governance provided by government fisheries agencies in several Pacific island countries. Interventions at the fisheries level that have been associated with improvement are altering fisheries institutional structures to allow for increased stakeholder input, the depoliticizing of fisheries management through the creation of semi-autonomous fishing authorities, the advancement of young/educated staff to positions of authority, increased transparency of decision-making through the use of formal fisheries management plans, the strengthening of fishers' associations, a revision of fisheries legislation, long-term fisheries institution strengthening programmes, the increased involvement of NGOs in fisheries management, and empowering coastal communities (that is, moving away from the centralized regulation of coastal fisheries).

There have been only a few studies that address fisheries-related corruption in the Pacific islands. The reports that are readily available are:

- “Acknowledging the importance and potential of Governments in managing marine resources in Melanesia”, with a section entitled “What to do about government corruption?” (Foale, 2007)
- “Managing fisheries and corruption in the Pacific islands region” (Hanich and Tsamenyi, 2009)
- “Aspects of corruption in Fiji’s fisheries sector” (Naqali, Ledua and Gillett, 2008).
- “Fisheries viewpoint: corruption in Pacific tuna fisheries?” (Grynberg, 2011)
- “More boats, stronger management, more corruption?” (Atuna, 2014).

Hanich and Tsamenyi (2009) provided an overview of the situation:

Corrupt practices occur at both official and ministerial levels of government and involve both domestic and foreign operations (though the vast majority of corruption allegations involve Asian foreign fishing fleets). Fisheries corruption occurs in different forms. Some corrupt practices are “low level”, involving gifts of fish and products and episodes of small scale nepotism. Other corrupt practices occur at a “grand level” that involve regular large-scale financial transactions, organised criminal behaviour and political interference in official processes.

Foale (2007) and Grynberg (2011) offered similar suggestions for improving the situation:

- ‘Simply requiring that all negotiations, and the signing of fishing licences has to take place in-country, which prevent Asian businessmen from taking fisheries bureaucrats and the minister back to Hong Kong, China; Singapore; or Taiwan Province of China and showing them a good time, after which they usually end up signing whatever is put in front of them.’
- ‘The process of secret negotiations where often ill-prepared and poorly paid Pacific islands officials go to secret “negotiations” where they are pampered by their Asian and European hosts must come to an end. All negotiations over public goods like tuna that rightly belong to all the peoples of the South Pacific must be public, and so must be the results of those negotiations.’

The recently introduced VDS is a more transparent and non-negotiated alternative to access negotiations – and it appears that VDS will have a positive impact on the corruption situation. Several of the people interviewed during the present study offered the opinion that, in VDS, the feature that is the most vulnerable to corruption involves “non-fishing days”. It should be noted that, currently, VDS is applicable to only purse seining in the region, with longlining agreements still being negotiated.

4.3.2 Gender and fisheries

While some attempts have been made to analyse the respective roles and contributions of men and women in fisheries, it is clear that much more needs to be learned about the role of gender in strengthening the contribution of fisheries to sustainable development. Women play critical roles in fish supply chains and these roles have been drastically undervalued and underappreciated. As gender issues are not on the policy agenda and in action plans, a vicious cycle continues where limited resources are dedicated to understanding the gender dimensions of fisheries and how to address them. While small-scale fisheries, women’s livelihoods and nutritional security are strongly linked, much more attention needs to be given to recognizing, strengthening and protecting the role of women in fisheries (High Level Panel of Experts on Food Security and Nutrition, 2014). Williams and Terawasi (2013) noted: “Women and gender topics are ‘not on the agenda’ in aquaculture and fisheries. Research and action on gender receives very little support from governments, universities and external funders such as development donors, and non-governmental organisations.”

Women’s roles in fisheries include gleaning, diving, post-harvest processing and vending, but they are poorly recorded. Most training and assistance in the fisheries sector has sought to increase local involvement in commercial fishing and has targeted mainly men (SPC, 2001). In a study on the gender issues in tuna fisheries, Sullivan and Ram-Bidesi (2008) found that the number of women involved in the processing sector was growing (in Fiji and Papua New Guinea) and that their importance to the industry needed to be acknowledged by greater support for gender parity in wages and by establishing a living wage for unskilled labour. As noted earlier, processing companies often pay little attention to important health, safety and wage equity concerns.

It is evident that there has been a paucity of research on, and policy responses to, both the negative impacts of fisheries on women and the considerable potential for the strengthened contribution of women to sustainable development through better-managed fisheries. It is beyond the scope of the current report to analyse this issue to the extent that it deserves, but the obvious recommendation is that gender be placed high on the agenda of fisheries policy as well as that of regional organizations and donors providing support.

4.3.3 Asia and Pacific island fisheries

During the last few decades, Asia has played an increasing role in Pacific island fisheries. Asian countries have been paying increasing amounts of money for access to the tuna resources of many Pacific island countries. It is also likely that China contributes a larger share of fisheries-related assistance to the region, but documentation on that assistance is not readily available.

An important issue related to the management of coastal fishery resources was pointed out by Birkeland (1997), who noted that the rapid economic growth of Asian nations was putting a new type of pressure on marine resources. In normal circumstances, economics compel fishermen to switch gear or locations before the resource population nears local extinction. However, the high dollar value placed on many coral reef resources by Asian economies can encourage effort even after the targeted species is too rare to sustain a viable reproductive population. The rapid increase in the dollar value of reef resources can override management policies, traditional practice and law. Examples of this are found in the bêche-de-mer and live reef food fish fisheries in the Pacific islands region.

It is generally acknowledged that the bêche-de-mer fishery in the Pacific islands is both very valuable and the management of the fishery in the region is quite poor (see section 4.1.3 above). The management effectiveness is threatened by the huge and growing demand in Asian markets, which purchase the vast majority of the product.

The live reef food fish fisheries typically harvest groupers, snappers and wrasses in the tropical Indo-Pacific region and ship them by air or sea to East Asia. Although the consumption of live fish has been popular for decades, the trade in these fish has received much attention in recent years. This increased interest is due to several factors, including concerns over the sustainability of the target species, the destruction caused by certain fishing techniques, the expansion of the fisheries to new areas, negative interactions with marine tourism, and the prospects of developing new fisheries with large earnings for rural fishers. An extensive ADB study of the live reef fish fisheries by nine experts (Sadovy and others, 2003) concluded the following: “These fisheries, as currently practiced, are highly undesirable to most source countries from all points of view – ecological, economic, health, and social – unless strictly controlled, as in the case of Australia..... A risk-averse country or community would be wise to protect its communities and reef resources by preventing a live reef food fish fishery from starting and keeping reef resources for local use.”

Chinese fleets are expanding in the offshore fisheries of the region. In 1990, there were 23 longliners and no purse seiners operating in WCPO. The fleets grew to 286 longliners and 13 purse seiners in 2012 (SPC, 2013a). McCoy and Gillett (2005) described some of the background of the growth of the fleets:

A significant reduction of fishing opportunities for domestic vessel operators in China due to resource depletion problems has led to reductions in the number of vessels allowed to operate, restrictions on the building of new vessels, and specific closed areas during certain times of the year. Recent conclusion or renewals of fishery delimitation agreements with China’s neighbours in both the north and south has resulted in shrinking opportunities for its domestic fleet. On the other hand, there is the perception in China of western and central Pacific resources as being greatly underutilized.

At least some of the current problems of the southern albacore longline fishery (see section 4.2.3 above) are being attributed to Asian fleets. An analysis of the crisis by FFA (2014) stated:

Domestic operators have also highlighted the disadvantage they face in competing against foreign vessels which benefit from government subsidies. Vessels that are heavily subsidised are able to continue fishing when it is unprofitable for other operators because subsidies lower the cost of fishing.... China in particular has expanded operations in the Pacific in recent years and has been the only nation to deploy several hundred new vessels through subsidised boat building programs.

4.3.4 University of the South Pacific

The School of Marine Studies at the University of the South Pacific (USP) is housed in a modern, state-of-the-art facility in Suva. There is, however, a generally recognized need to make the School of Marine Studies/USP more relevant to the needs of the region. The SPC/FFA study on the future of fisheries observed that “USP needs to focus on modifying fisheries-related curriculum to meet evolving needs of the region”. In a study by the World Bank (Gillett and van Santen, 2008), it was stated that “presently, the regional university does not recognize the large and growing need for fisheries managers”. It is ironic that Pacific island Governments send their fisheries students to Australia or New Zealand for courses of study more relevant to their needs than those offered by their regional institution. The number of students in the School of Marine Studies continues to fall.

5. Interaction between fisheries and other fields

5.1 Fisheries and poverty

5.1.1 Background

The comments in this section are based on the following understandings:

- Poverty is multifaceted and, accordingly, it should not be defined only in terms of income, and other aspects must be considered, including access to education, proper nutrition and health care.
- There is considerable poverty in the region. One in four Pacific islanders lives below the basic needs poverty line (UNICEF, 2013).
- Currently, about half of the countries in the Pacific island region have more people living in cities than in rural areas.
- Similarly, the issues related to poverty and fisheries are quite different between coastal and offshore fisheries.

5.1.2 Current situation

Coastal fisheries

Coastal fisheries currently provide most of the fisheries-related employment and nutrition in the region. Per capita fish consumption in the Pacific islands is very high, exceeding by a large margin the average world fish consumption rate, and for some countries it is among the highest in the world. SPC (2008b) stated that fish provides 50 to 90 per cent of animal protein intake in rural areas, and 40 to 80 per cent in many urban centres; there are few affordable alternative sources of protein. The vast majority of the fish that are caught and consumed in the region come from coastal fisheries.

Employment related to coastal fisheries is very difficult to estimate, particularly disaggregated by gender. Few countries in the region collect this type of information, and what is collected (that is, a heterogeneous collection of facts related to participation in fisheries) is difficult to compile and compare across the region. Based on information from an ADB study in 2001, it was crudely estimated that about 44,000 Pacific islanders derive income from coastal commercial fisheries. The number of jobs indirectly associated with coastal fishing (for example, fish selling or engine repairs) is likely to be greater than the number involved in direct employment in the sector. Because the coastal subsistence fisheries in the region produce over twice as much fish as coastal commercial fisheries (see figure 2.1), it can be assumed that many more people participate in coastal subsistence fisheries than in coastal commercial fisheries.

Offshore fisheries

Employment related to offshore fisheries and the associated processing of offshore fish was estimated by FFA to be 13,397 jobs in 2011, of which about 70 per cent were on shore and 30 per cent were on vessels. This number is approximately double that of 2002, with work in tuna canneries (mainly done by women) being responsible for most of the change.

Of all the tuna from offshore fishing in the region (about 2.5 million tons) only a small portion enters the domestic food supply in Pacific island countries; most of the catch is for consumption in the European Union, Japan and North America. A small amount of the tuna canned in the region (usually the lower grades) is sold in countries with tuna canneries (Fiji, Papua New Guinea and Solomon Islands). Some tuna (especially the damaged and undersized fish) is sold, bartered or given away when the catch is offloaded. In the countries with locally based longline vessels (such as Fiji and Samoa) most of the by-catch and some of the lower grades of tuna are sold for local consumption. Small boat fishing for tuna is significant in about half of the Pacific island countries, and all is for domestic consumption. Despite these cases of where the offshore fish is used domestically, only a very small amount of the offshore fish harvested in the Pacific islands area is consumed by Pacific islanders.

Offshore fisheries currently provide all Pacific island countries with at least some access fees, and for some countries, those fees represent a substantial portion of all government revenue. In a recent year, access fees were more than 10 per cent of all government revenue in Kiribati (42 per cent), the Federated States of Micronesia, Nauru and Tuvalu.

Some comments

Several observations can be made on the current relationship between fisheries and poverty in the region. The coastal fisheries have the most tangible impact on the welfare of Pacific islanders in terms of nutrition (supplying most of the fish) and employment (supplying most of the jobs). There remains considerable scope to undertake a gender analysis of fisheries to strengthen the contribution of coastal fisheries to sustainable development. In terms of geography, coastal fisheries appear to contribute more to welfare in rural areas, whereas most of the contribution from offshore fisheries is in urban areas, the location of bases for the offshore fishing vessels and where most tuna processing occurs.

There is another dimension to the relationship between fisheries and poverty. The coastal fisheries impact is to some degree limited to the welfare of the fishers and their families. Offshore fisheries also impact the welfare of the participants, but there is a larger aspect. The access fees (\$135 million in 2011) should be used by sensible Governments to support areas that would enhance the welfare of all citizens (for example, through education and health services) or to promote general economic development, with the idea that what is good for the economy is often good for the reduction of poverty. Basically, the impact of access fees on poverty is a question of governance – the way that a Government chooses to spend that money.

5.1.3 Future situation

Because the production of coastal fisheries is unlikely to expand in the future, the relationship between coastal fisheries and poverty will probably revolve around the concept of preserving the existing welfare benefits through effective fisheries management, rather than coastal fisheries having an expanding role in poverty mitigation. One possible exception to this would be improvements in the facilitation of rural to urban transport of fish, mindful of the problems and opportunities of rural fisheries centres (see section 4.1.12). In that case, the centres would need continuing external funding and to have a fisheries management function.¹⁰

The future situation is quite different for the offshore fisheries. In short, the role of offshore fisheries development as a tool for poverty reduction is likely to grow in the future. Access fees have grown remarkably, almost tripling since 2000, due in part to a more effective management scheme for purse seining. With the expansion of that scheme to longlining, fees can be expected to grow. There are now minimum Pacific island crew requirements on types of foreign fishing vessels operating in the region, and those arrangements are expected to gain additional traction in the future. Domestic tuna industry development is being undertaken or contemplated by all Pacific island countries, which should result in job growth, especially in the labour-intensive processing. It has been estimated that 7,000 jobs can be created for every 100,000 tons of tuna processed in the region (SPC, 2012c). A recently introduced scheme requires that all purse seiners in the region retain all catch on board, with the idea of discouraging the catching of undersized fish that are subsequently dumped overboard. Most of the retained catch is likely to be sold or given away at Pacific island ports. Several Pacific island Governments are contemplating other ways to channel more of the 1.2 million tons of tuna caught each year in the region to domestic consumers. The contribution of offshore fisheries to poverty mitigation through increases in employment, nutrition and government revenue obviously cannot continue forever, but there is significant room to expand from the current situation.

5.2 Fisheries and climate change

The build-up of carbon dioxide and other greenhouse gases in the atmosphere due to human activities is acting in two major ways that will ultimately affect fisheries in the Pacific, namely global warming and ocean acidification. There is broad concern globally about the impacts of these changes on fisheries. Preliminary assessments indicate that the coastal and offshore fisheries of the Pacific islands will be as equally subjected to the direct and indirect effects of climate change as comparable areas elsewhere in the world. An extensive study of the impacts in the region, entitled *Vulnerability of Tropical Pacific Fisheries and Aquaculture to Climate Change*, was carried out by SPC (Bell, Johnson and Hobday, 2011), which added considerably to the understanding of the situation.

More recently, SPC issued policy briefs (SPC, 2012a and 2012b), which summarized the causes and impacts of climate change on coastal and on offshore fisheries in the region, as follows:

- Coastal fisheries: Warmer air and sea surface temperatures, ocean acidification, rising sea levels and higher rainfall are expected to cause significant losses of the coral reef, mangrove, seagrass and intertidal habitats that provide shelter and food for coastal fish and shellfish. This is expected to cause progressive reductions in the productivity of coastal fisheries. (SPC, 2012a)
- Offshore fisheries: The features of the tropical Pacific Ocean that influence the distribution and abundance of tuna – currents, water temperature, dissolved oxygen and nutrient supply – are expected to change in

¹⁰ Using the concept of whoever buys the fish has considerable control over fishing practices.

the future. These changes are likely to affect where tuna spawn, the survival and growth of juveniles, and where the adults feed. Preliminary modelling indicates that tuna are likely to move progressively to the east. However, much uncertainty remains. In particular, the possible impacts of ocean acidification on juvenile and adult tuna are not well understood. An eastward shift in the distribution of tuna would have mixed implications. Contributions from tuna to government revenue and GDP should eventually increase for countries in the central and eastern Pacific, and decline for those in the west, as tuna move progressively east (SPC, 2012b).

There is also an impact that encompasses both coastal and offshore fisheries. Projections that cyclones will become progressively more intense may increase the risk of damage to shore-based facilities, fishing vessels and processing/marketing operations in countries located within the cyclone belt. Rising sea level is likely to make many of the existing wharfs and shore-based facilities unusable.

The SPC policy briefs on fisheries and climate change make a range of suggestions for reducing the threats from climate change, as follows:

- Coastal fisheries: Manage and restore vegetation in catchments, foster the care of coastal fish habitats, provide for the landward migration of coastal fish habitats, sustain the production of bottom-dwelling fish and shellfish, diversify catches of bottom-dwelling fish and shellfish (that is, catching fish and shellfish in proportion to their altered abundance under climate change), increase access to tuna for coastal communities, develop coastal fisheries for small pelagic species and improve post-harvest methods.
- Offshore fisheries: Fully implement VDS, develop and maintain trade preferences, diversify sources of fish for canneries, immediately implement management measures for tuna, implement energy efficiency programmes for industrial fleets, promote environmentally friendly fishing operations, increase access to tuna and by-catch for food security, promote additional safety-at-sea measures and climate-proof infrastructure.

In examining the above threat reduction suggestions, it can be seen that most of them are actions that should be taken to maintain healthy fisheries even if there were to be no climate change. This is consistent with a statement on climate change by M. Batty, head of the SPC fisheries programmes at that time: “The best strategy is to get fisheries in the region in the best possible shape to cope with the stresses coming our way...” (PNC, 2012).

SPC, being an organization whose mandate is much larger than fisheries (it encompasses such fields as public health and demography), has a number of multisector climate change adaption initiatives that are relevant to fisheries, including those dealing with food security, coastal zone management, disaster risk management and infrastructure.

According to the most recent FFA annual report (FFA, 2013):

FFA's mandate in climate change has been relatively narrowly circumscribed: to assist member states to access international funding for climate change adaptation and mitigation to support private sector based commercial development, and to provide policy advice to members to incorporate climate change issues into national tuna fisheries policy frameworks. In this way, members could increase their economic resilience to changes in fisheries and other limited natural resources that will accrue through climate change.

5.3 Fisheries management and sustainable development

In a report on the Pacific islands perspective on sustainable development (Koshy and others, 2008), sustainable development was defined as being ‘a process for improving the range of opportunities that will enable individual human beings and communities to achieve their aspirations and full potential over a sustained period of time, while maintaining the resilience of economic, social and environmental systems’. In 1991, the FAO Committee on Fisheries developed the following fisheries-oriented definition: “Sustainable development is the management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner to ensure the attainment and continued satisfaction of human needs for present and future generations. Such development conserves land, water, plant and genetic resources, is environmentally non-degrading, technologically appropriate, economically viable and socially acceptable.”

To some degree, fisheries specialists in the world (and subsequently in the Pacific islands) modified the process of conventional fisheries management from being oriented to single-species maximization (for example, maximum sustainable yield) to one that is much broader in scope, encompassing biological, environmental, economic and social objectives. This more holistic approach is often referred to as the ecosystem approach to fisheries management.

Both SPC and FFA have embraced the ecosystem-based approach. The overall ecosystem approach was formally presented and adopted at the governing council of FFA in May 2006. This approach is a key element of the Apia Policy of SPC, which deals with coastal fisheries management. Recently, the SPC Marine Resources Division changed its name to the Division of Fisheries, Aquaculture and Marine Ecosystems. In an SPC publication (SPC, 2010), the following was stated:

It is pointless to address the problem of depleted fish stocks merely by placing controls on fishing activities if the key threats to their recovery are related to other human activities and natural factors that are causing the degradation of ecosystems. For these reasons, fisheries authorities are replacing narrow, target species-based fisheries management with a broader approach that attempts to manage fish stocks as components of marine ecosystems. Under an eco-system approach, the usual concern of fisheries managers – the sustainability of targeted species – is extended to address the sustainability of ecosystems upon which the fisheries depend, which include people and fish stocks.

The full adoption of an ecosystem approach by FFA, SPC and Pacific island countries is a work in progress. The benefits of an ecosystem approach are being reconciled with the fact that the approach is more complex conceptually and more difficult to implement. FFA is working to simplify an ecosystem approach for its member countries' tuna management plans. SPC has put considerable work into adapting the approach for communities.

5.4 Fisheries and the other uses of the ocean

In the Pacific islands region, oceans are used for many activities other than fishing. The ones that currently have substantial interaction with fisheries are marine-oriented tourism and recreation, aquaculture, waste assimilation and transport. Deep-sea mining is likely to become important in the future.

Pacific island tourism is highly dependent on coastal resources and the quality of the coastal environment. In addition to casual swimming/wading, a considerable number of tourists come to the region specifically for diving, surfing, sailing, sport fishing and whale watching. Seidel and Lal (2010) indicated that the total value of all tourism in the region is more than twice as great as that of fishing, and it employs four times the number of Pacific islanders as fishing. Pacific islanders themselves use the ocean for recreation. Many subsistence fishing activities are undertaken not just to procure food, but also because they are pleasurable. Pacific islanders enjoy water sports such as ocean swimming, surfing, spearfishing competitions and canoe racing. Cooling off in the ocean on a hot day is popular. The ways in which tourism/recreation and fisheries interact include furnishing local seafood to tourists, tourist participation in various types of fishing and conflicts over resource use (that is, harvesting fish versus viewing fish).

Almost all Pacific island countries have a long heritage of attempting aquaculture development – and much of this development has occurred in marine areas. Fisheries and aquaculture interaction takes place on several levels. Frequently, aquaculture areas are closed to fishing. Some types of aquaculture (for example, prawn farming) involve altering mangrove areas that are important fish nursery grounds. There have been attempts to use aquaculture as a tool to relieve pressure on coastal fisheries (see section 4.1.5). Some types of aquaculture involve harvesting fish larvae or juveniles in the wild and raising them in captivity.

Oceans also are used as assimilators of waste. This ranges from over-the-water latrines to pipelines that carry waste from urban areas to sites outside the reef. Ocean dumping occurs in the region, with an example being the sludge from canneries being dumped outside territorial seas. Interactions between the assimilation of waste and fisheries are usually negative, such as the reef disturbances caused by waste pipelines and the eutrophication of areas by raw sewage discharge resulting in harmful algal blooms.

Most of the transport of goods in the region is by ocean shipping, along with most of the inter-island transport of people. All communities in the region and most economic activities (including fishing) depend to some degree on shipping. The major negative interactions between shipping and fisheries are incidents of ship grounding (for example, the destruction of reefs or oil pollution) and the physical destruction of gear (for example, an FAD being run over by a ship).

Deep-sea mining currently has little interaction with fisheries in the region. Interestingly, the current status of regional activity on sea mining seems to mirror what happened in offshore fisheries in the region in the 1980s: concern over maritime boundary delimitation; considerable work to establish the legal basis for managing the activity; efforts to generate regional solidarity; education of Governments on the realities of the industry; and efforts to get the Pacific Islands Leaders Forum to focus on the activity.

6. Key issues for improving the sustainable returns from fisheries resources

6.1 Introduction

It should be recognized that improving the sustainable returns from fisheries resources has been the core work of FFA and the fisheries section of SPC since their inceptions many decades ago. They are quite effective, and are staffed with capable and motivated individuals. Experience in many areas of the world indicates that FFA and SPC serve as positive models for what could be done in fisheries in other developing regions. With this in mind, the purpose of this section is not to highlight the ways in which FFA and SPC are somehow lacking, but rather to point out some opportunities of which the regional fisheries organizations are generally well aware.

6.2 General

For the offshore fisheries in the region, considerable potential exists for increasing benefits. There is, however, the overriding provision that attempts to obtain additional returns should not involve increasing the catch of yellowfin and should involve decreasing the catch of bigeye. Although access fees for purse seining have increased substantially in the past few years, recent economic studies have shown the potential for further increases. The VDS that is now being contemplated for longlining is likely to result in more access fees from that fleet. Domestic tuna industry development (which will probably come at the expense of at least some of the access fees) can produce additional benefits to countries in the region – but of a different nature than those from licensing foreign fishing vessels (that is, jobs versus government revenue). This development will largely be in shore-based processing and (where wisely constructed) joint ventures for fishing vessels, often predicated on taking advantage of exemptions for small island developing States in WCPFC management measures (see section 4.2.4). It is important to note the following:

- There are numerous access versus development considerations, and these vary between countries.
- Other areas of opportunity for increasing benefits could come about through favourable trade concessions, additional sustainability certification, and more WCPFC measures that are favourable to Pacific island countries.
- Regional solidarity among Pacific island countries underpins much of the potential for increases in benefits.

For coastal fisheries, the situation is remarkably different, with the focus being on preserving the existing benefits (especially related to food security) through better management, rather than on generating additional benefits. Possible exceptions are developments in some niche areas, adding value to some products, and in the facilitation of the flow of fish from rural areas to urban markets. With the additional demands on coastal fisheries resources, some priority for their use needs to be established. Box 6.1 provides one perspective on the situation.

Box 6.1. Palau priorities: fish for nutrition, tourism and exports

“The following strategy has been recommended as a basis for in-shore fisheries management: ‘first we eat the fish; second we play with them; third we let visitors eat and play with them, and fourth, we export them.’ In other words, give first priority to fish consumption by Palauans resident in Palau; second priority to sports fisheries and recreation by Palauans; third priority to meeting the food and recreational needs of tourists; and finally fourth (only if the resource reserves permit) do we export them.”

Source: P. Callaghan, cited in Chapman (2004).

To take advantage of the opportunities for gaining additional benefits from fisheries resources (or preventing the erosion of existing benefits) a priority is to have more effective government fisheries agencies, and the staff of those agencies needs to be better trained.

6.3 Recommended areas that require the attention of policymakers

The above points are generally well known to regional organizations working on fisheries in the Pacific. With all of the competence in the regional fisheries organizations (and NGOs increasingly looking over their shoulders), most gaps in the fisheries-related services of FFA, SPC and PNA do not remain gaps for long. The work programmes of those agencies are largely geared to the action required to take advantage of those opportunities, with the proviso that not all opportunities can be portrayed in a few paragraphs in this report and that different individuals can have somewhat

different perceptions of what is important. The fisheries situation in the Pacific islands is very dynamic, and the ways to take advantage of opportunities are constantly changing. This is not to imply that there are major gaps that have escaped attention, but rather that there are some items that may require higher priority than they are presently given. Dozens of areas could be cited, but to give extra emphasis to those that are especially important, only a few are given here. In many respects, the key for improving the sustainable returns from fisheries resources is giving the regional fisheries organizations adequate support.

A. Improving the weak management of coastal fisheries

The number of well-managed coastal fisheries in the Pacific islands is surprisingly small. This situation has come about for many reasons, including that these fisheries are inherently difficult to manage, that there are problems in applying controls to small-scale fishers, that there is increased fishing pressure due to growing populations, that there exists a breakdown of traditional management mechanisms, and that there is an increased buying power and appetite of Asian nations for many coastal fishery products. There is also the problem that, in many countries, government fisheries agencies and good staff tend to focus on the offshore fisheries. Ineffective coastal fisheries management is a real tragedy as it is these fisheries that currently provide Pacific islanders with most of the nutrition and employment from the fisheries sector. The need for governments to establish policies that protect fisheries resources to allow the continued flow of marine foods to coastal communities is of paramount importance. In addition, there should be recognition by the agencies involved in the management of coastal fisheries that the alternatives to the difficult task of restricting fishing effort are often ineffective distractions from the real task of protecting resources and the associated flow of benefits to coastal communities. Other types of action to improve the management of coastal fisheries are as follows:

- Support should be given to the community-based management of coastal fisheries resources, with the qualifications that (a) this should not consist of a government fisheries agency divesting all its responsibilities onto an NGO or the communities themselves, and (b) there are limitations to community-based management.
- Incentives should be provided so that the highly qualified staff of government fisheries agencies are not enticed disproportionately to the tuna fisheries.
- Some priority should be given to prevent the massive dissipation of benefits presently occurring in the *bêche-de-mer* fisheries. The documentation on the *bêche-de-mer* in the region makes many useful suggestions at the technical level, but considering the decades of fisheries officers unsuccessfully wrestling with ways to improve the situation, efforts should be made to capture attention at the political level, as was done for the tuna fisheries in the 1980s.
- The international export of fisheries resources from the relatively fragile inshore areas is often not sustainable, and the pressure to export will grow in the future to the detriment of local food fish supplies. Exports of inshore food fish benefit few, while the negative effects are felt by many, including those in the tourism industry. The bold measure (which can be enforced at the point of export) of banning the international export of food fish from inshore areas should be considered.
- Cost-effective mechanisms for the periodically learning of major trends in coastal fisheries should be developed.

B. Enhancing regional solidarity in fisheries

For several decades, a major feature of the Pacific islands region was the solidarity among countries on fisheries issues. The region has nurtured effective processes for cooperation between countries, especially in dealing with distant-water fishing nations. For the future, the most favourable outcomes on the use of the region's tuna resources are reliant to some degree on regional solidarity. For various reasons, this fisheries solidarity appears to have decreased – some countries have departed from their obligations under regional agreements, and the potential for using solidarity in future negotiations has decreased. FFA and PNA are in a difficult position. They require that the solidarity be effective, but are not in a position to scold their members. For improving the solidarity situation, direction must come from a level higher than that of fisheries officials. Pacific island leaders need to reaffirm their commitment to regional solidarity in fisheries, and require reporting on progress (as they do for the Pacific Plan). At the regional organization level, there should be an objective study of the economic and political costs of eroding regional solidarity in fisheries, giving examples of where it has occurred. In addition, those agencies should encourage the concept of accountability in regional agreements, including pre-agreed mechanisms for dealing with non-compliance.

C. Strengthening the focus on gender in fisheries

Women play critical but still poorly understood, undervalued and underappreciated roles in fish supply chains. Gender issues are not on the policy agenda, which sustains a vicious cycle where only limited resources are dedicated to understanding the gender dimensions of fisheries and how to address them. While small-scale fisheries, women's livelihoods and nutritional security are strongly linked, much more attention needs to be given to recognizing, strengthening and protecting the role of women in both coastal and offshore fisheries.

D. Improving the governance of the fisheries sector

Poor governance of the fisheries sector in the Pacific island region is characterized by inefficient national fisheries institutions and, in some countries, corruption. A fundamental problem is the low capacity of national fisheries agencies brought about by a lack of qualified personnel at all levels, who are faced with increasingly complex issues – compounded by structures of government fisheries agencies that are not conducive to transparency or stakeholder input. Many millions of dollars have been spent by Australia, ADB, FAO, New Zealand and others on long-term projects for institutional strengthening in the fisheries sector in many countries and territories in the region, namely the Cook Islands, the Federated States of Micronesia, Nauru, Papua New Guinea, Samoa, Solomon Islands and Tonga. More such assistance is planned for the future, but there is some question as to its effectiveness and sustainability. There is no simple solution to the fisheries governance problem, but as a contribution to improving the situation, the following should be considered:

- There should be a consolidation of the lessons learned from the multitude of fisheries institution strengthening projects inside/outside the region.
- The structure of government fisheries agencies should be enhanced so that fishery stakeholders (including NGOs) have greater ability to influence fisheries department policies/activities and to promote accountability.
- To improve the capability and skills of future government fisheries officers, regional organizations and national fisheries agencies should support mechanisms for improving the education and training provided by the School of Marine Studies at USP.
- The various fisheries management schemes promoted by FFA and PNA should have built-in transparency as a major feature.

E. Greater use of the offshore tuna resources for domestic purposes

From several perspectives, there is justification for the countries in the region to use more of the offshore fish for domestic consumption, including compensation for declining food resources from coastal fisheries, adaptation to climate change and benefits to small-scale fishers. This would require countries in the region to push management measures in WCPFC that encourage industrial fishing vessels to offload at least some catch in Pacific island ports and to support small-scale tuna fisheries. This offloading would come at some cost (that is, a reduction in some access fees), and small-scale tuna fishing would require well-managed national FAD programmes. Work needs to be done to take advantage of the provisions in WCPFC that give opportunities related to small-scale tuna fishing. On the regional level, the required work cuts across the work programmes of FFA, SPC, PNA and WCPFC.

F. Strengthening the Vessel Day Scheme

A management scheme for the purse seine fishery based on limiting the numbers of purse seine fishing days (rather than the former system based on the number of seiners) has been adopted and implemented by PNA. There have been some rough edges in the implementation of VDS but that is to be expected when developing countries introduce a sophisticated management scheme across a vast ocean area. The scheme has been successful in increasing access fees received from purse seine vessels. VDS should be supported and strengthened, but not just to increase purse seine access fees further. A strengthened purse seine VDS sets a powerful precedent for introducing a similar scheme for longliners. In addition, the benefits from a more effective scheme would help to reinvigorate regional solidarity. A better and more transparent VDS would deprive one particular distant-water fishing nation of a tool for diminishing regional solidarity. Learning from the difficulties of FFA over a decade ago in the introduction of its vessel monitoring system, the countries' acceptance of a modified VDS would require much work by FFA and PNA on the political level, in addition to that with national fisheries officers. The findings of a technical review of VDS (currently taking place) should be considered from a variety of perspectives, including the advantages of continuity (that is, some modifications to the present system versus a radical change) and the understandability to political leaders.

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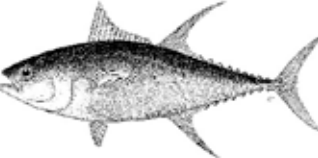


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Appendix 1: Important species of tuna in the region and recent assessments

Tuna species		Typical size captured	Annual catch (mt)	Important aspects
Skipjack		40 to 70 cm	1 million to 1.6 million in recent years (about 65 to 70% of the tuna catch in WCPO)	Skipjack are caught mainly on the surface by purse seine or pole-and-line gear and used for producing canned tuna. Most fish caught are between 1 and 3 years old. In WCPO, there are more skipjack (biomass) than the other three main tuna species combined.
Yellowfin		40 to 70 cm and 90 to 160 cm	320,000 to 650,000 (about 18 to 25% of the tuna catch in the region)	Small yellowfin are caught on the surface by purse seine or pole-and-line gear, while larger/older fish are caught in deeper water using longline gear. Small fish are used mainly for canning while high quality larger fish are often shipped fresh to overseas markets. Most fish caught are between 1 and 6 years old.
Bigeye		40 to 70 cm and 90 to 160 cm	80,000 to 180,000 (about 6% of the tuna catch in the region)	Small bigeye are caught on the surface by purse seine or pole-and-line gear, while larger/older fish are caught in deeper water using longline gear. Small fish are used mainly for canning while high quality larger fish are especially valuable as fresh fish in the Japanese market. Most fish caught are between 1 and 10 years old. Bigeye tuna account for a relatively small proportion of the total tuna catch in the region, but these tuna are extremely valuable; their economic value likely exceeds \$1 billion annually.
Albacore		60 to 110 cm	60,000 to 135,000 (about 5% of the tuna catch in the region)	Small albacore are caught by trolling at the surface in cool water outside the tropics, while larger fish are caught in deeper water and mainly at lower latitudes using longline gear. Most of the catch is used for producing “white meat” canned tuna. Fish caught are typically between 1.5 and 10 years old. This was the fish at the centre of the driftnet issue.

Source: Adapted from Gillett (2009).

The conditions of the tuna resources in the WCPO region (as given in reports associated with the WCPFC Scientific Committee) are as follows:

Skipjack: Assessments have shown that the stock is currently only moderately exploited and fishing mortality levels are sustainable (WCPFC, 2011).

- Bigeye: Recent analysis has indicated that overfishing is occurring for the bigeye tuna stock and that, in order to reduce fishing mortality to that of the maximum sustainable yield, a 32 per cent reduction in fishing mortality is required from 2006–2009 levels, or a 28 per cent reduction from 2001–2004 levels (WCPFC, 2011).
- Yellowfin: The current total biomass and spawning biomass are higher than at the levels associated with maximum sustainable yields. Therefore, yellowfin tuna is not considered to be in an overfished state. However, while the exploitation rates differ between regions, they continue to be the highest in the western equatorial region (WCPFC, 2011).
- Southern albacore: There is no indication that current levels of catch are causing recruitment overfishing, particularly given the age selectivity of the fisheries. It should be noted that longline catch rates are declining, and that catches over the last 10 years have been at historically high levels and are increasing. These trends may be significant for management (Hoyle, Hampton and Davies, 2012).

From the above stock assessment information it can be seen why most concern over tuna stock condition is focused on bigeye, and to a lesser degree on yellowfin. Several important issues arise from this concern, as follows:

- Numerous attempts in recent years within WCPFC to prevent an increase in bigeye and yellowfin catches have not been successful. The total catch of bigeye in 2012 was 161,679 mt, a 2 per cent increase over 2011 and a 7 per cent increase over the annual average of 2007–2011. The total yellowfin catch in 2012 was 655,668 mt, which was a significant increase – 26 per cent – over the 2011 catch and a 22 per cent increase over the annual average of 2007–2011 (WCPFC, 2013b).
- Bigeye and yellowfin catch rates could be reduced by either restricting the capture of adults by longline gear or by restricting the capture of smaller fish by purse seine gear.
- The balance between restricting catches of bigeye/yellowfin by purse seine and by longline has polarized to some degree the views of various Pacific island countries. Reducing longline catches would fall very hard on the aspirations of those non-equatorial countries (where there is no purse seining but substantial longlining). A reduction in purse seine catches would have very negative impacts on the fishing and processing aspirations of those countries where most purse seining occurs (for example, the Federated States of Micronesia, the Marshall Islands, Nauru, Papua New Guinea and Solomon Islands).

Appendix 2: Constraints in the development of tuna industries

There have been several reviews of constraints in the development of domestic tuna industries in the region. In the table, a summary of the major features of those studies is found.

Constraint	Asian Development Bank (1997)	Gillett (2003b)	Barclay and Cartwright (2006)
Government ownership	Direct involvement of Government in tuna businesses, deterring the private sector, protected economies, government-oriented business interests.	Widespread belief among fisheries officials that the role of Government is to enable private sector development, although officials without knowledge of the history of failure of State-owned enterprises may still favour them.	Most interviewees with a fisheries background believed State ownership of vessels or other means of direct involvement in tuna fisheries was a bad idea, but some influential officials still call for State ownership of tuna enterprises.
Deterrents to private sector involvement	High risk, capital intensive nature of tuna fishing industry, difficult access to markets, Pacific island countries' high cost production environments.		Tuna fishing declining profitability since 1970s, lack of trading/marketing skills a problem, Pacific island countries' high cost production environments.
Transport to markets	Inadequate and inadequately managed sea and air freight infrastructure.	Air freight availability problems, inefficient harbour management.	Diseconomies of scale for air and sea freight in most locations.
Credit	Lack of commercial credit.	Credit availability problems.	Credit available for those with a good track record.
Investment environment	Economies unstable, industry and investment policies unsound, unfriendly environment for foreign investors.	Policies unstable, taxation difficult, administration expensive and prone to blockage, poor Government-industry dialogue, low attractiveness to investors.	General economic environment and policy framework not conducive to industrial development. Lack of consultation with industry, between government departments, with other stakeholders. Development policies leading to overpromotion of fishing as an investment opportunity, in turn creating boom/bust cycle in tuna fishing.
Skill levels	Human resources not competitive on cost/productivity, inadequate pools of skills in some areas (technical, business).	Low levels of entrepreneurial development and industrial fisheries skills.	Lack of business experience a problem for indigenous fisheries development, lack of human resource capacities in private and public sectors.
Government policies in fisheries sector	Policies unclear and inconsistent.	Stability of policies affecting tuna industries.	Overarching need for strong, sound domestic policies to promote sustainable development and underpin regional and multilateral negotiating positions.

Source: Modified from Barclay and Cartwright (2006).

Appendix 3: Characteristics of Pacific island regional organizations involved in fisheries

	FFA	SPC	Other regional organizations involved with fisheries
Main area of emphasis	<p>Providing management advice on tuna fisheries and increasing benefits to Pacific island countries from tuna fishing activities. FFA was originally involved with all fisheries, but in the early 1990s, refocused almost entirely on tuna.</p>	<p>Most aspects of coastal fisheries and scientific research on tuna. Fisheries are only one aspect of the work programme of SPC, which also covers such issues as health, demography and agriculture.</p>	<p>PNA: A subregional grouping of countries where most of the purse seining occurs, and most activities relate to development and management of the purse seine fishery.</p> <p>PIFS: Major political initiatives, some natural resource economics; leading the trade negotiations with the European Union, which has a major fisheries component.</p> <p>SPREP: Environmental aspects of fisheries.</p> <p>USP: The School of Marine Studies is involved in a wide range of training.</p>
Regional relationships	<p>The FFA/SPC relationship has had ups and downs over the years. There was much disputing and waste in early 1990s, tremendous improvement in mid-to-late 1990s.</p> <p>An annual colloquium has helped the relationship. The staff who have moved between the two organizations have made a noticeable improvement in understanding.</p> <p>Much of the success and benefits achieved by FFA/SPC cooperation depends on the personalities of Director/Deputy of FFA and Director of the Division of Fisheries, Aquaculture and Marine Ecosystems of SPC.</p>	<p>At least in theory, all regional organizations come under the umbrella of PIFS. Activities of the regional organizations are coordinated to some degree by the Council of Regional Organisations in the Pacific, which has a Marine Sector Working Group that meets at least once per year, but is limited by lack of resources for follow-up.</p> <p>FFA originally provided PNA with secretariat services, but PNA broke away from FFA in 2010. Currently, there are some sensitivities in the relationship, but it appears to be improving.</p> <p>In the past, USP/School of Marine Studies did not have a strong or productive relationship with FFA/SPC, but with the current new School of Marine Studies leadership the situation should improve.</p> <p>The SPREP/SPC/FFA relationship seems to be largely related to the background/interests of the individual holding the SPREP position of Coastal and Marine Adviser.</p>	

	FFA	SPC	Other regional organizations involved with fisheries
Main strengths	<p>Direct contact with its governing body many times per year results in a high degree of accountability.</p> <p>Mandate of tight focus on tuna eliminates considerable dissipation of effort.</p>	<p>Due to Noumea being a pleasant place, there is considerable staff continuity. The Oceanic Fisheries Programme often sets the standard for tuna research in the world. Documentation of work is very good.</p>	<p>Because PIFS is under the national leaders, it is considered the premier regional organization.</p> <p>PNA has achieved considerable success and credibility in such areas as raising access fees, 100% observer coverage, eco-certification, high seas closures and controls on FADs.</p> <p>USP is centrally located in the region and the School of Marine Studies has substantial infrastructure.</p> <p>SPREP has close ties to the NGOs active in the marine sector.</p>
Membership	<p>Australia, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu</p>	<p>Includes the major sovereign countries, all Pacific island territories, and the American, British and French territories. The most inclusive of any regional organization.</p>	<p>PNA: Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu.</p> <p>USP: Cook Islands, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu.</p> <p>SPREP: 21 Pacific island countries and territories, plus Australia, France, New Zealand and the United States.</p> <p>PIFS: same as FFA.</p>

Appendix 4: Useful references

Barclay, K., and I. Cartwright. (2006). *Capturing Wealth from Tuna: Key Issues for Pacific Island Countries*. Australian National University.

This report specifies 10 strategies for working towards the goal of capturing more wealth domestically from tuna resources in a sustainable and socially equitable manner.

Bell J., J. Johnson and A. Hobday (2011). *Vulnerability of Tropical Pacific Fisheries and Aquaculture to Climate Change*. Noumea, New Caledonia: Secretariat of the Pacific Community.

A comprehensive study of the likely impacts of climate change on the various categories of fisheries, namely offshore, coastal, freshwater and aquaculture.

Forum Fisheries Agency (2013). *Annual Report 2012*. Honiara.

Serves to inform FFA member countries of actual performance results and the impact of services achieved by the secretariat during the period 1 July 2012 to 30 June 2013 and key developments that will guide FFA and define its work in 2013-2014.

_____ (2014). *Hard Times in the Albacore Longline Fishery*. Honiara.

Describes the current crisis in the albacore fishery and makes suggestions for mitigating the problems.

Gillett, R. (2007). *A Short History of Industrial Fishing in the Pacific Islands*. Bangkok: Asia-Pacific Fishery Commission, Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific.

Describes the development of the tuna fisheries in the Pacific islands region.

_____ (2009). *Fisheries in the Economies of Pacific Island Countries and Territories*. Asian Development Bank.

This report contains a fisheries-oriented discussion of macroeconomics, country information on specific topics (such as fisheries production and contribution to GDP), a discussion important topics across all countries, and some important features of the benefits from fisheries that have emerged from this study.

_____ (2011). *Fisheries of the Pacific Islands: Regional and National Information*. Bangkok: Food and Agriculture Organization of the United Nations Regional Office for Asia and the Pacific.

Describes coastal and offshore fishery resources in the region and the associated fisheries. There are sections describing the fisheries in each Pacific island country.

Gillett, R., and D. Bromhead (2008). *Tuna for Tomorrow? Some of the Science Behind an Important Fishery in the Pacific Islands*. Manila: Asian Development Bank and Secretariat of the Pacific Community.

A simple non-technical guide to the complex issues of stock assessment and management of tuna in the region.

Gillett, R., and I. Cartwright (2010). *The Future of Pacific Island Fisheries*. Noumea, New Caledonia: Secretariat of the Pacific Community, and Honiara: Forum Fisheries Agency.

This report considers the future of fisheries over a 25-year time frame (2010-2035). It is intended to provide the basis for long-term strategic approaches to the development and management of fisheries at national and regional levels.

Secretariat of the Pacific Community (2008). *Status Report: Nearshore and Reef Fisheries and Aquaculture*. Noumea, New Caledonia.

This report addresses the status of reef fisheries for finfish and invertebrates, near-shore fisheries for pelagic fish including tuna, fisheries for demersal fish including deep-water snappers and aquaculture.

Western and Central Pacific Fisheries Commission (2013). Draft summary report: tenth regular session. Pohnpei, Federated States of Micronesia.

A summary of what occurred at the latest full session of WCPFC.

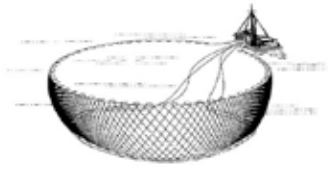
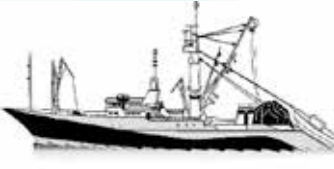
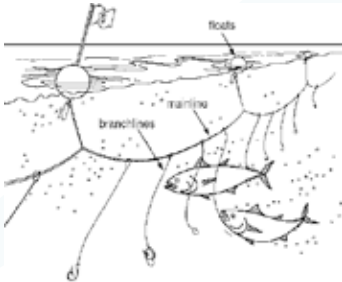

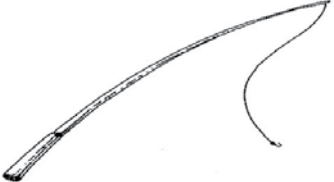
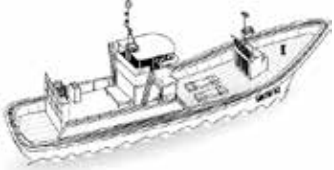
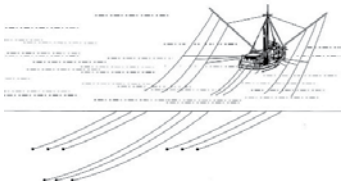

_____ (2013). *Summary Report: Scientific Committee, Ninth Regular Session*. Pohnpei, Federated States of Micronesia.

Gives technical information on the status of the tunas and other offshore resources of the region, along with management recommendations.

Williams, P., and P. Terawasi (2013). *Overview of Tuna Fisheries in the Western and Central Pacific Ocean, Including Economic Conditions: 2012*. Pohnpei, Federated States of Micronesia.

A report that is issued each year. Contains information on the tuna fisheries of the region in the previous year with respect to species and gear.

Appendix 5: Main tuna fishing gear in the Pacific islands

Gear type	Catch	Typical vessel	Notes
	<p>Mainly skipjack and small yellowfin are caught by purse seine gear. Most catch is for canning.</p>		<p>About 65% of the tuna catch in the WCPO region is by purse seine gear, about 1.8 million tons in 2012. Most of the purse seine catch is taken within 5 degrees of the equator.</p>
	<p>Most tuna caught are large size yellowfin, bigeye and albacore. The prime yellowfin and bigeye often are exported fresh to overseas markets. Most of the albacore is for canning.</p>		<p>About 11% of the tuna catch in the WCPO region is by longline gear, about 262,000 tons in 2012. There are two major types of longliners: (a) relatively large vessels with mechanical freezing equipment (often based outside the Pacific islands); and (b) smaller vessels that mostly use ice to preserve fish and are typically based at a port in the Pacific islands.</p>
	<p>Mainly skipjack and small yellowfin are caught by pole-and-line gear. Most catch is for canning or producing a dried product.</p>		<p>About 10% of the tuna catch in the WCPO region is by pole-and-line gear, about 224,000 tons in 2012. In the 1980s, several Pacific island countries had fleets of these vessels, but most no longer operate due to competition with the more productive purse seine gear. Most of the catch by this gear is made in Asian waters.</p>
	<p>Large-scale trolling targets albacore for canning.</p>		<p>Gear types other than the three listed above are responsible for about 14% of the tuna catch in WCPO. Large-scale trolling is an important part of this. It is carried out to the south and north of the Pacific islands region. Trolling in the south produces about 3,000 tons of albacore annually.</p>

Source: Modified from Gillett and Bromhead (2008).



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