

Capturing Wealth from Tuna

Key Issues for Pacific Island Countries

Kate Barclay
Ian Cartwright



July 2006

Acknowledgements

This report was undertaken while the first author was an AusAID Postdoctoral Fellow at the Asia Pacific School of Economics and Government, Australian National University. Additional funds for the research were provided by the Pacific Branch of the Australian Government Agency for International Development (AusAID) and the International Fisheries section of the Australian Government Department of Agriculture, Fisheries and Forestry (DAFF).

Many thanks to Research Assistant Justin Liang for his excellent input.

A great number of people assisted in the production of this report, by giving interviews as well as providing documents, contacts and feedback on early drafts. The authors gratefully acknowledge these contributions from people in industry, government departments, international organizations, non-government organizations, and consulting companies. Interviewees and other contributors are listed by name and organization in the Appendices. Any mistakes in the report are the authors' own. The opinions expressed in the report are those of the authors, except where attributed to interviewees. The opinions expressed in this report do not represent the views of the Australian National University or the Australian government.

Corresponding Author

Kate Barclay PhD
Lecturer
Institute for International Studies
University of Technology Sydney
PO Box 123
Broadway NSW 2007
AUSTRALIA
tel: +61 (0)2 9514 1579
fax: +61 (0)2 9514 1578
email: kate.barclay@uts.edu.au

© Copyright 2006, Kate Barclay and Ian Cartwright.

Photo on Cover

Skipjack laid out for sale on the cover of a fibreglass 'esky' ice box. Photo taken by Kate Barclay in Honiara Central Market July 2005.

Table of Contents

Executive Summary	iv
Introduction to the Report	1
WCPO Tuna Fisheries	3
1. The Resource	3
2. The Oceanic Environment	3
3. The Fisheries	4
4. Downstream Processing	9
5. Management of Tuna Fisheries in the WCPO	10
7. Past Recommendations for Development from Tuna	14
8. History of Regional Cooperation by PICs on Tuna Issues	16
Objective: To Capture More Wealth From Tuna	18
Goals For Capturing More Wealth From Tuna	18
PICs' Policies: The Key to Achieving PICs' Aspirations	20
Strategies For Capturing More Wealth From Tuna	22
1. Effective Fisheries Management	22
2. Increase Access Fees	31
3. Creating a Business Environment for Capturing Wealth	34
4. Creating Public Policy Systems for Capturing Wealth	40
5. Industrial Development Policies	44
6. Developing Human Capital	51
7. Cooperating Regionally to Capture Wealth	56
8. Roles of FFA and SPC in Facilitating Development	58
9. Small-scale and Indigenous Fisheries Development Policies	59
10. Recreational Fishing	60
Objective: Achieving Beneficial Outcomes for PICs in the WCPFC	61
Principles for Achieving Beneficial Outcomes	61
Strategies for Working Together	64
1. Capitalize on Existing Strengths	64
2. Enhance Sovereign Rights & Responsibilities Through Regional Cooperation	65
3. Develop Mechanisms to Manage the PNA/non-PNA Divide	69
4. PICs to Lead Decision-making Processes in the WCPFC	71
5. Ensure the Legitimacy of Regional Policy Initiatives	72
6. Strategically Manage FFA Group Relations with DWFNs	73
7. Strengthen the Political Profile of Fisheries Issues in the Region	75
8. Use the FFA to Consolidate Cooperation	75
9. Delegate Responsibilities Among the FFA Group	76
Appendices	i
1. Abbreviations and Jargon	i
2. Similarities and Differences Between PICs	iv
3. Background to the Project	vi
4. Individual Acknowledgements	vii
Personal Communications Details	ix
References	xi
Country Profiles	

Executive Summary

This report is intended for Pacific Islands' governments and other stakeholders interested in the development and management of the region's tuna resources. Tuna is arguably the most important renewable resource available for economic development in the Pacific Islands region. This report provides an overview of issues, success and failures relating to tuna management and development by drawing on the views of Pacific Islanders. By so doing, and by making a number of observations and recommendations along the way, the report facilitates Pacific Islands Countries' (PICs) efforts to make best use of this resource.

The report is based on fieldwork conducted in six countries—Cook Islands, Fiji, Kiribati, Marshall Islands, Papua New Guinea (PNG) and Solomon Islands. Input was also drawn from relevant reports written by fisheries management and development experts, and discussions with a range of specialists, including those at the Pacific Islands Forum Fisheries Agency (FFA). Analysis focuses on two main questions:

- What do Pacific Islanders want to do with their tuna resources? Does the current situation look like meeting those aspirations?
- What factors affect PIC governments' cooperation with each other within the new body set up to manage fisheries for the region, the Western and Central Pacific Fisheries Commission (WCPFC)¹?

What do Pacific Islanders want from their tuna resources?

The most prominent desire expressed by Pacific Islanders was to capture more of the wealth generated by regional tuna industries in their domestic economies, sustainably and according to principles of social equity. The main ways to capture more wealth propounded by PIC governments are through encouraging domestic tuna industry development and maximizing returns from distant water fleets. The two approaches are not necessarily mutually exclusive.

Based on case studies of tuna industries and distant water fleet activities, we specify ten strategies for working towards the goal of capturing more wealth domestically in a sustainable and socially equitable manner. Specific policies necessarily vary from PIC to PIC because each has very different economic, cultural and geographic environments, including different endowments of tuna resources. Some general strategies, however, may be more or less usefully applied across the region.

The most fundamental strategy is effective fisheries management. We suggest that in light of Pacific Islanders' aspirations in this context, fisheries management should be understood and applied more broadly than just in terms of conserving the resource. At the same time as conserving the resource fisheries management measures should also optimise productivity and hence profitability of fisheries. At a regional (WCPFC-wide) level, management measures must be designed to take account of economic factors and the complex interactions between gears and species across exclusive economic zones (EEZs) and the high seas. Furthermore, fisheries management is most effective when it takes into consideration the social, cultural and political contexts in which it operates.

¹ Also referred to as 'the Commission' in this report.

Recommendation 1

Place greater emphasis on predicting economic outcomes—particularly across fisheries, gear types and WCPFC members—when designing and determining management measures, including levels of fishing effort by domestic and foreign fleets.

Recommendation 2

Follow up the 2002 FFA Rights-Based Workshop, possibly through a series of in-country seminars, to increase awareness among domestic policy makers and fisheries managers of such approaches.

Recommendation 3

Base tuna management and development on the principles of Ecologically Sustainable Development (ESD)—balancing economic, environmental and social goals and outcomes.

Another very basic strategy for capturing more wealth from tuna is for PICs to make the most of distant water fishing nation (DWFN)² companies, especially since access fees from these fleets are the easiest way to capture wealth (for those countries that attract distant water fleets). The case studies demonstrate that in addition to access fees and fisheries aid, some PICs have drawn benefits from DWFNs through spin-off supply and service businesses based on fleets transshipping in port. Many reports have already been written about how PICs may increase their level of access fees, so our recommendation for access fees is to follow up on ideas raised in those reports and make a more concerted effort to reform the basis for granting access and the associated fee negotiations. Consideration should also be given to alternative means of generating income through appropriate rights-based/licensing/chartering arrangements as an alternative to access fees.

Recommendation 4

Hold an access fee summit (hosted by FFA) including PIC fisheries officials, other stakeholders and experts to discuss various ways of licensing DWFN vessels, including improving the existing access fees-based arrangements and alternatives, such as appropriate rights-based/licensing/chartering arrangements. The summit should revisit the many reports on increasing access fees that have been produced over the years and consider seriously which ideas may work in practice.

Several of the strategies for capturing more wealth are about government; public policy philosophy, government structures, and policies. This is because PIC governments hold the key to capturing more wealth. While other stakeholders, including the community and industry, can use the democratic process to influence public policy, PIC governments hold the key to creating an environment to enable private sector development. PIC governments will determine the nature and success of fisheries management measures to protect the resource and investors' rights in the

² The term distant water fishing *nation* is not a good one because a nation is a subjective construct usually based on feelings of ethnic belonging and historical ties to particular territories. States are the administrative political and economic units associated with nations. So, strictly speaking the term should be distant water fishing *states*. This report, however, uses the term DWFN because it will be more familiar to readers than DWFS.

resource, and it is PIC governments that negotiate and agree distant water access agreements and other means of licensing fishing activities.

Based on the case study material, we suggest a range of areas where governments can improve the economic environment with positive effects for economic development including: more consultative and informed decision-making; policy stability; non-discriminatory taxation regimes; effective, efficient government services; developing investment hubs; departmental structures and planning; transparency and accountability; and industrial policy, including human resources development.

Recommendation 5

PIC government officials, with industry representatives, review the delivery of government services with industry representatives, to highlight bottlenecks and ways of streamlining bureaucratic processes to increase industry efficiency and thus profitability.

Recommendation 6

Review successes and failures in tuna management and development planning processes to date and base future efforts on lessons learned. Develop tuna management plans such that they are ‘owned’ by nationals and have agreed, achievable goals and timelines. Plans should have legislative force, rather than being ‘flexible’ enough to be ignored. Progress needs to be assessed on a regular basis, and goals and strategies revised to ensure alignment with national and regional policies, as well as tuna fisheries and market dynamics.

Recommendation 7

Appoint a professional regional representative (possibly part-time) to represent the interests of PIC tuna industries, working closely with the FFA. The representative should be adequately funded to travel and liaise to improve consultation and inclusion. In particular, the representative should attend regional meetings and set up information networks with industry players.

Recommendation 8

Bring industry, environmental and social/community NGOs into consultative decision-making processes as envisaged in Tuna Management Plans.

Recommendation 9

Sponsoring agencies to make consultants’ reports publicly available as a general rule. FFA or SPC to develop and manage a publicly accessible bibliography database of publications and reports with relevance to tuna in the region.

Recommendation 10

Build capacity in PIC fisheries departments in the following fields: fisheries management (including working knowledge of stock assessments); economics; business management; and public policy. Where capacity gaps exist, consider recruiting suitably qualified and motivated staff from other government departments and externally.

The remainder of the strategies are about the possibilities for private sector regional cooperation in generating wealth, the roles of bodies such as the FFA and the Secretariat of the Pacific Community (SPC) in facilitating industrial fisheries

development, and exploring possibilities for generating wealth from small-scale coastal tuna fisheries and recreational fishing.

One of the disturbing findings of the study is that there is a lack of clearly thought out and articulated vision for the future in fisheries management and development in most of the countries researched. Interviewees expressed hopes for the future when asked about their aspirations, but these hopes were rarely coordinated with each other or the general economic direction of the country, and there was little strategic planning for how to achieve those hopes, or a sense of how what was being done now would contribute. Lack of a clear vision for the future and strategies for how to achieve that vision can lead to short-term, unrealistic, reactive policies and are likely to be a major constraint on management of and development from tuna resources.

Nevertheless, four of the countries visited have made considerable progress towards increasing the benefits from their tuna resources. PNG, Cook Islands and Fiji have moved away from simple access agreements and have various forms of licensing that favour domestic involvement and onshore investment. Marshall Islands, while still having extensive access agreements, has also attracted substantial transshipment activity, with flow on economic benefits. Kiribati, with challenging geographical and socio-economic environments has yet to move beyond standard access agreement arrangements. Solomon Islands' fishing industry was one of a number of economic casualties of the Tension, and is struggling with governance, business confidence and capacity issues to regain previous levels of benefits from tuna.

Nearly all interviews and documents examined for the study showed that Pacific Islanders' major aspiration is to capture more wealth from regional tuna fisheries in a sustainable manner. It is in reconciling this simple statement that is perhaps the region's greatest challenge to maintaining and growing wealth from tuna in the future. The 2005 meeting of the WCPFC Scientific Committee highlighted overfishing on two of the four main target species of tuna (yellowfin and bigeye), particularly in the most productive areas of the region, and recommended reducing fishing mortality. However, decisions taken by the WCPFC in 2005 seem to allow for an increase over 2001-2003 levels, against the Scientific Committee recommendations.

It is clear that the Commission must take further effective action to address overfishing. The issue for PICs is the form of that action. Recent research has suggested that the sorts of management measures that may appear on the Commission table to address the yellowfin and bigeye problem have the potential to result in very different impacts across PICs and DWFNs, both in EEZs and on the high seas. Means to address these differential impacts must be considered and incorporated in management measures if agreement is to be reached in a timely manner. While the effects of expanding fishing pressure or reducing it are complex, one clear lesson from other fisheries is that failure to manage the fishery will be disastrous for the prospects of capturing wealth from tuna in the long term.

What factors affect PIC cooperation within the WCPFC?

Discussion of factors affecting PICs cooperation with each other in the WCPFC was based on the assumption that PICs need to collaborate to achieve beneficial outcomes because of the size and influence of many of the other members of the WCPFC (including the EU, China, the USA, Japan, Taiwan and Korea). In light of overfishing in bigeye and yellowfin stocks, it is vital that PICs achieve sound management

measures that enhance their sovereign rights to the resources in their exclusive economic zones (EEZs).

Based on discussions with interviewees and previous reports on the topic, we devised a list of nine strategies for PICs working together in the WCPFC. One of these is to increase the political profile of fisheries issues in a range of ways, including greater involvement of the Pacific Islands Forum. If serious fisheries management issues were brought to the attention of the region's Prime Ministers by being taken to the Pacific Islands Forum leaders meeting each year, it is that possible that stronger commitments to sound fisheries management would be made by PIC fisheries officials. This is likely to become more important as the need to take tough decisions on conservation and management measures becomes more urgent. Several of the strategies include recommendations for PIC delegations, and in particular the PNA group,³ to take the lead in the WCPFC and set the management agenda.

Recommendation 11

That the PNA group, with the support of other FFA members, ensure effective implementation of the 'vessel days scheme' (VDS) fisheries management measure and support its integration into future allocation discussions at the WCPFC.

That PICs prepare national, sub-regional and regional allocation positions, using the criteria outlined in the Convention and recent bio-economic modelling outputs, in preparation for presentation and discussion at the WCPFC.

Notwithstanding a long record of regional fisheries cooperation under the auspices of the FFA and SPC, PICs have often been unable to achieve regional cooperation due to competing national interests. Clearly, it would be unrealistic to expect national interests to not be at the forefront of decision making at the FFC and WCPFC, and in-depth analyses of the national costs and benefits of regional cooperation to support such decisions are essential. However, if nationalist perspectives are allowed to unduly impede regional cooperation, ineffective management will result, and PICs' aspirations to capture more wealth will disappear in the classic 'boom and bust' cycle of an inadequately managed fishery.

Recommendation 12

While national positions will drive FFC and Commission-based decisions, effective cooperation is a necessary prerequisite to tuna management. The true biological and economic implications of non-cooperation, nationally and regionally, must be determined and 'knee-jerk' nationalist or short-term politically expedient decisions to dissent from FFA group cooperation in the WCPFC should be avoided.

Because so much fishing is conducted in their EEZs, the PNA group effectively have a great deal of power should they choose to wield it, and are therefore the key to regional cooperation for fisheries management. The division between the PNA and

³ The Parties to the Nauru Agreement (PNA) are a subgroup of the FFA countries whose EEZs encompass most of the equatorial belt of rich skipjack fishing grounds in the region.

non-PNA countries within the FFA needs to be carefully managed, and the PNA group needs to play a role commensurate with its central position in the region's fisheries.

Recommendation 13

The PNA group to take more of a leadership role within FFA meetings by building strong positions on key issues, increasing the political level of delegates and through more active participation by delegates.

In addition to cooperation within the FFA group, PICs' achieving mutually beneficial outcomes in the WCPFC will also depend on how effectively they manage their relations with fishing states and entities. Creating a combative atmosphere between fishing and coastal states may stymie agreement on management measures, but it is also important to recognize the different interests between fishing and coastal states and to maintain PIC group solidarity as a higher priority than alliances with fishing states. It will be necessary to balance the need for sound fisheries management and PICs' aspirations for fisheries within their EEZs in relations with fishing states, some of whom are generous aid donors, and some of whom have strong bilateral relationships with particular PICs.

Recommendation 14

Increase inter-sessional, informal dialogue with fishing states and increase the detailed analysis of relations with fishing states to understand their aspirations and likely 'bottom lines' at the Commission. Minimise unnecessarily adversarial approaches at the Commission.

Following the main body of the report is a set of six Country Profiles containing histories of tuna development in each of the countries covered by the report. The Country Profiles also contain detailed responses from interviewees on the main questions of the report (aspirations for tuna and factors affecting cooperation within the WCPFC).

Introduction to the Report

This report is intended for Pacific Islands' governments and other stakeholders interested in the development⁴ and management⁵ of the region's tuna resources.

The Western and Central Pacific Ocean (WCPO) is home to the largest tuna fishery in the world, representing a vitally important economic resource for PICs⁶. The report adds to debates on how best to achieve aspirations for tuna industry development without compromising ecological sustainability.

Research for the report consisted of interviews with stakeholders conducted during fieldwork across a representative selection of six PICs—Papua New Guinea, Solomon Islands, Marshall Islands, Kiribati, Cook Islands, and Fiji (see Figure 1). Tables 5 and 6 in Appendix 2 show some of the statistical similarities and differences between these countries, in terms of their general economy as well as their tuna fisheries. The report also draws on the plethora of previous reports written by fisheries management and development experts on similar topics and discussions with a range of specialists, including those at the Forum Fisheries Agency (FFA).

To better understand PICs' aspirations for economic and human development based on their tuna resources, we sought the views of Pacific Islander interviewees on a range of issues including: the current use of tuna resources in the region; the benefits currently being realized; and whether or not existing tuna industries look like achieving Pacific Islanders' development aspirations. In addition we obtained interviewees' preferred strategies for the future tuna management and development.

The ability of PICs to safeguard their tuna resources relies on their capacity to successfully assert their position within the Western and Central Pacific Fisheries Commission (WCPFC), whose membership includes many of the world's largest and wealthiest states. We also therefore asked interviewees about factors that might influence PICs maintaining a united front in the WCPFC and assist or hinder achieving their goals during Commission negotiations.⁷

The main body of this report is a synthesis of the research conducted in each country, addressing these two key issues for the region's tuna fisheries; i) how PICs may better realize their aspirations for this unique, global resource and ii) the factors affecting effective PIC engagement within the WCPFC, necessary for PICs to be able to achieve their aspirations. Following the main body of the report are a series of Country Profiles on each of the six PICs covered in the report, containing histories of, and commentary on, tuna developments in those countries.

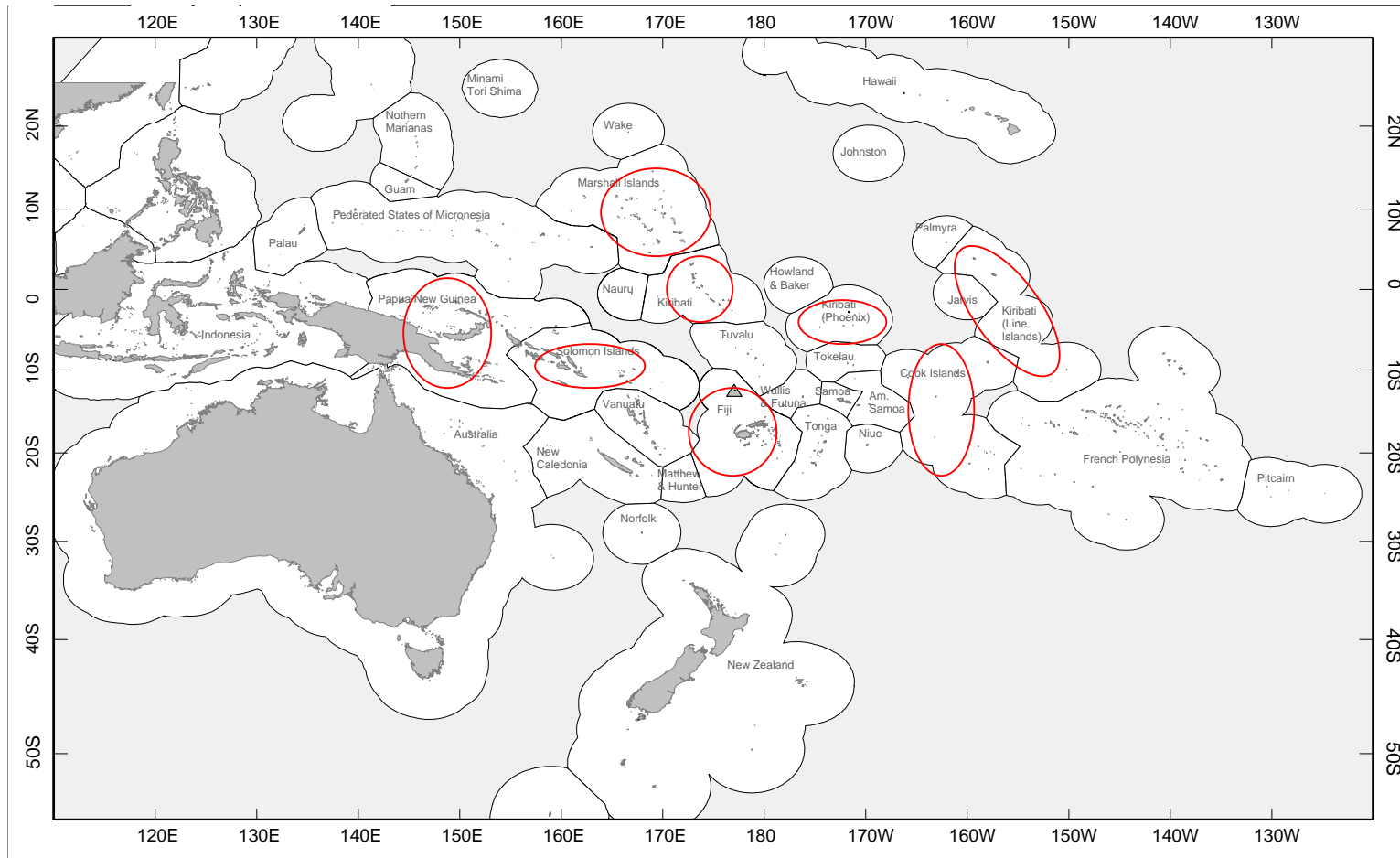
⁴ 'Development' in this report refers to both specific fisheries industry development, and general economic development.

⁵ 'Management' in this report is used both for fisheries resource management and business management, both within fisheries bureaucracies, and in the private sector.

⁶ For the purpose of this report PICs are synonymous with the members of the Pacific Islands Forum Fisheries Agency (FFA).

⁷ Fisheries targeting highly migratory species such as tunas cannot be effectively managed by individual countries, so the world's tuna fisheries are managed multilaterally through Regional Fisheries Management Organizations (RFMOs). The WCPFC is to administer the Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean and met for the first time in December 2004. The Convention establishing the Commission and laying down the basis for its work entered into force in June 2004. Before the Convention was adopted the negotiations were in the form of a Multilateral High Level Conference (MHLC).

Figure 1. Map of Western and Central Pacific Ocean Identifying PICs Covered by this Report



Source: Colin Millar, Secretariat of the Pacific Community (SPC), Noumea, New Caledonia.

WCPO Tuna Fisheries⁸

1. The Resource

The WCPO oceanic tuna fishery is based on four key species—skipjack, yellowfin bigeye and albacore tuna. The resource is of global significance, which in 2004 produced 51% of the world's tuna catch (SPC 2004). The WCPO tropical tuna species are more productive than the more temperate tunas, including the heavily overfished Pacific bluefin and southern bluefin tunas. The most productive area for tuna lies in the equatorial zone (10°N-10°S) where around 80% of all tuna from the WCPO are caught. Skipjack and small yellowfin and bigeye tuna school (frequently together) on the ocean surface and are commonly found in the tropical and subtropical waters of the WCPO. Larger yellowfin and bigeye are generally found in deeper water, where they are more widespread, although some larger yellowfin (two-three years) are also caught in free-swimming schools. In contrast to skipjack and yellowfin tuna, albacore concentrate in temperate areas where food is abundant.

2. The Oceanic Environment

Climate fluctuations have direct impacts on the productivity of the WCPO and the associated tuna fisheries. The most dominant effect is the development of El Niño (and La Niña) or ENSO events,⁹ which have direct effects on the distribution of tuna, associated fisheries and industry activity, and levels of revenue that PICs can expect to derive on an annual basis from their fisheries. For example, purse seine effort and catches are generally displaced eastwards during El Niño conditions and westwards during La Niña, indicating a spatial shift in the distribution of surface-swimming (predominantly skipjack) tuna (Figures 2 and 3), which respond to changes in the availability of food in the surface layers of the ocean. The implications for management are also clear in terms of the overarching need for arrangements that manage the impacts of fishing throughout the range of the stock, including in EEZs¹⁰ and on the high seas.

The highly mobile distant water fleets, subject to negotiating access agreements in EEZs, are able to 'follow the fish' and take advantage of areas of high catch rate as ENSO conditions dominate. However, domestically based fleets using smaller vessels, such as the PIC longline fleets, are less able to do this, so are frequently faced with environmentally driven 'boom and bust' cycles. Processing plants and service and supply industries are also inevitably impacted by these changes.

The SPC Oceanic Fisheries Programme has developed a model for predicting the distribution of skipjack across the region, which could be useful in developing

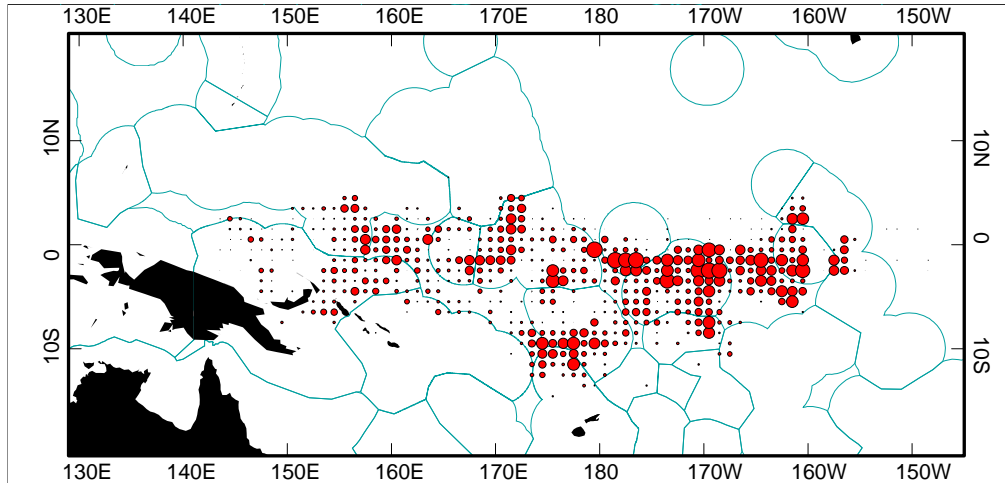
⁸ The author's note that the scientific information used in this report may not be as up to date as a specialist fisheries management for this region might be able to find. The report, however, aims to go across disciplines, and in that vein the information used is the best the authors were able to find at the time of writing.

⁹ The ENSO (El Niño/Southern Oscillation) is an oscillation between a warm (El Niño) and cold (La Niña) state that evolves under the influence of the dynamic interaction between atmosphere and ocean, with an irregular frequency of two to seven years.

¹⁰ Exclusive Economic Zones (EEZs) are the areas of ocean 200 nautical miles out from coast lines, over which states have sovereign rights.

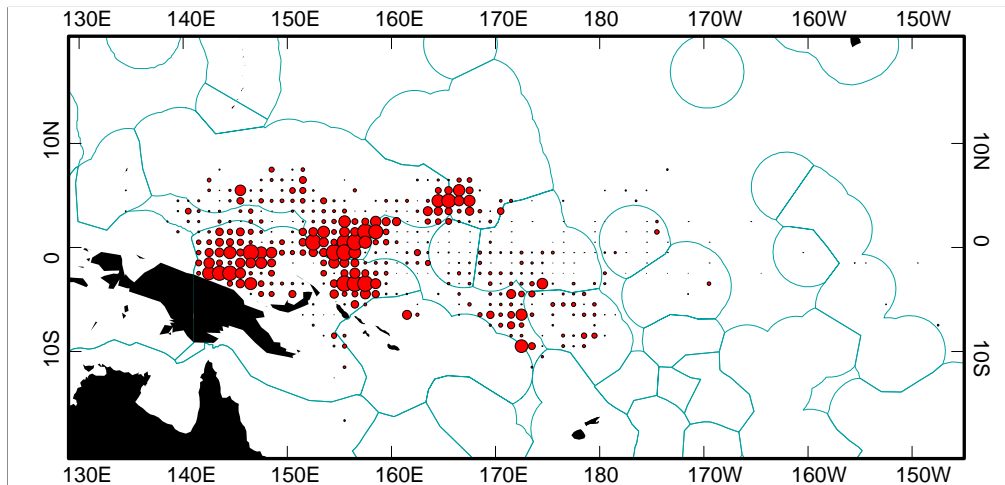
policies in countries like Marshall Islands, where the availability of the skipjack resource fluctuates (Langley 2004). If, as some scientists fear, global climate change means a more or less permanent El Niño effect, this could have a dramatic effect on the economic potential of the tuna resources for countries like Marshall Islands, which lose skipjack stocks under these conditions.¹¹

Figure 2. Distribution of USA Purse Seine Catches in Typical El Niño Year (1994)



Source: Secretariat of the Pacific Community (SPC) as presented in ‘On or Beyond the Horizon’ (ADB 2003)

Figure 3. Distribution of USA Purse Seine Catches in typical La Niña Year (1995)



Source: Secretariat of the Pacific Community (SPC) as presented in ‘On or Beyond the Horizon’ (ADB 2003)

3. The Fisheries

There are three major components to the WCPO tuna fishery, each associated with a particular fish behaviour. In order of importance these are purse seine, longline and pole-and-line. Table 1 provides a summary of these components.

¹¹ SPC reports on this include (Lehodey, Chai, and Hampton 2003; SPC c.2005a).

Purse seine

The provisional 2004 purse seine catch of around 1,200,000mt was the highest on record and the catch has been around this high level for the past three years (Williams and Reid 2005). Purse seine vessels primarily target skipjack, with associated catches of small yellowfin and bigeye. The operation is highly mechanised and technology and capital intensive with modern vessels costing in excess of USD\$25 million. Despite these barriers to entry, some PICs still seek to have national involvement in the ownership and operation of these vessels, because of the significance of purse seining to the overall WCPO tuna fishery. While the DWFNs of Korea, Taiwan, Japan, and the USA still account for around 75% of the purse seine catch, vessels based in PICs fishing under the FSM Agreement and Philippines vessels catch the balance (Williams and Reid 2005). This reflects an increasing involvement of these vessels in PIC economies, particularly in the case of PNG where the bulk of the FSM Agreement fleet is based, and where there is a correlation between shore-based investment and access.

The fishery is high volume with relatively low value (per tonne). In recent times most fleets have suffered from a profitability squeeze with increasing fuel and other costs, and oversupply depressing prices. While prices have trended upwards in recent times, and the catches per unit of fishing effort (CPUE—a measure of efficiency) have increased substantially for some fleets, the fact that fuel price has increased by around 300% since 2002 (Krampe 2006) has tended to offset these gains. The substantial increase in the Taiwanese fleet during this period may be considered an indication of i) relatively profitable operations and ii) confidence in the future. It would be useful to understand more about the cost-price structure of this fleet, including any possible hidden subsidies that may apply. The high cost USA fleet has been particularly hard hit and has reduced in numbers from around 50 vessels when the USA multilateral access treaty was first signed in the 1980s to less than 20 vessels in 2005. Overall in real terms the value of tuna fisheries has shrunk by a half since the early 1980s (ADB 2003).

Longline

The longline fishery continues to account for around 10–12% of the total WCPO catch (around 220,000mt in 2004) but is about the same in value as the larger purse seine catch, reflecting its uses for premium sashimi and other higher (than canning) value products (Williams and Reid 2005). The method targets fewer, larger deeper swimming tuna using hooks set over a minimum of tens of kilometers of ocean. Longline vessels in the WCPO are of two main types—large distant water freezer vessels and smaller (<100GRT) offshore vessels specializing in chilled fish. This latter class is locally based and has formed the backbone of PIC efforts to expand domestic fishing operations, particularly in more southern PICs.

Domestic longline opportunities were opened up by the introduction of medium scale longliners of less than 60 GRT using monofilament gear in the mid to late 1980s. Until then the major fleets from Taiwan, Japan and China had been using 200-500 GRT vessels. The first domestic medium scale longline fleet emerged entirely from the private sector in Fiji in the late 1980s. A fleet emerged in PNG from 1995. Successes in these countries meant other PICs became interested, and regional fisheries development advisors pushed the idea. All six of the countries covered by this report have had some form of domestic longline development. After a promising start most PIC-based longline fisheries were stagnating by 2005. Table 2 provides a summary of the progress of the expansion of tuna longline fishing in PICs' waters,

highlighting in most cases a rush to enter the fishery, a period of relatively stable catches and profitability, followed by severe declines due to falling catch rates, rising costs of inputs including fuel and air freight, and other logistical difficulties.

Pole-and-line

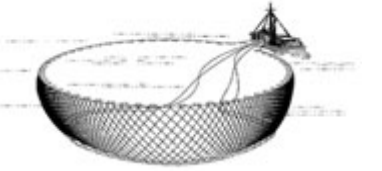
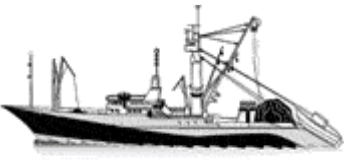
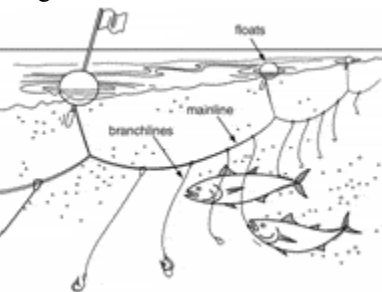


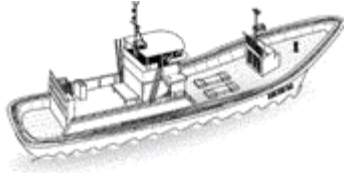
Catches by pole-and-line vessels in the WCPO has been around 270-300,000mt in recent years. Most (more than 90%) is taken by the Indonesian and Japanese fleets, with very little being caught in PICs' EEZs, with the exception of Solomon Islands. Since pole-and-line fisheries target the same species (skipjack) as purse seiners, the overall efficiency of purse seining has resulted in a marked decline in the number of pole-and-line vessels in the WCPO. The medium scale shore-based pole-and-line fisheries that have been based in PICs (as opposed to the larger Japanese distant water vessels) are much higher cost per tonnage of fish than the purse seine method. Fisheries formerly operating in Palau, Papua New Guinea and Kiribati are no longer active, only one vessel is now operating (seasonally) in Fiji, and fishing activities are only now starting to improve after problems in the Solomon Islands' fishery in recent years (Williams and Reid 2005).

For the pole-and-line method to be economically viable, therefore, it needs markets that will pay a premium price for pole-and-line product over purse seine product. Solomon Islands' pole-and-line fishery had such a market in the UK until 2000, which was one of the reasons the company 'kept its head above water' for so long (as well as the Cotonou Agreement 24% tariff advantage over competitor countries in South East Asia). The loss of this market was one of the reasons the Solomon Islands' fishery has had financial trouble since 2000.¹²

¹² For further information about the importance of the environmentally aware UK market to Solomon Islands tuna fishery see (Barclay 2005).

Capturing Wealth From Tuna

Table 1. Main Industrial Gear Types Used in Western and Central Pacific Ocean Tuna Fisheries

Gear Type	Catch	Typical Vessel that Uses Gear	Notes
<p>Purse Seine</p> 	<p>Mainly skipjack and small yellowfin, with an incidental catch of small bigeye. Most catch is for canning.</p>		<p>About 60% of the tuna catch in the WCPO region is by purse seine gear, about 1.2 million tonnes in 2003. Most of the purse seine catch is taken within 5 degrees of the equator. These vessels are high technology and expensive so few are domestically based in the Pacific. Most are run by DWFNs.</p>
<p>Longline</p> 	<p>Mainly large-size yellowfin, bigeye, and albacore. The prime yellowfin and bigeye are often exported chilled 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 213,000 tonnes in 2003. There are two major types of longliners: (1) relatively large vessels with mechanical freezing equipment (often based outside the Pacific Islands), and (2) smaller vessels that mostly use ice to preserve fish and are typically based at a port in the Pacific Islands. Small and medium scale longline vessels have been favoured in domestic industry development schemes since the 1990s.</p>
<p>Pole-and-line</p> 	<p>Mainly skipjack and small yellowfin. Most catch is for canning, <i>katsuobushi</i>, or the Japanese fresh skipjack market.</p>		<p>About 15% of the tuna catch in the WCPO region is by pole-and-line gear, about 295,000 tonnes in 2003. 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. The Japanese distant water larger scale pole-and-line fleet, however, remains active in the region.</p>

Source: Tuna for Tomorrow? Some of the Science Behind an Important Fishery in the Pacific Islands (Gillett 2005)

Capturing Wealth From Tuna

Table 2: Domestic Longline Development 1995 – 2005 by Country

Country	Fishery Type	Fishery Status 1995	Fishery Status 2002	Fishery Status 2005
Cook Islands	Small to medium scale targeting sashimi tuna in the south, larger scale catching albacore for canneries in the north	A couple of distant water fleet vessels operating in the south, no domestic players	Domesticated southern and northern fisheries experienced a boom (to 19 vessels from 3 in 2001)	CPUE decline and lack of profitability led to stagnation in southern fishery, many who entered fishery 2002 left 2004/5 Northern fishery continuing strong
Fiji	Small to medium scale targeting tuna for sashimi markets	Private sector companies Fiji Fish and Solander started in the 1980s, picked up momentum, joined by Chinese companies (total 90 vessels)	Boom of late 1990s continued (peaked at over 100 vessels)	CPUE decline and lack of profitability led to stagnation Domestic private sector veterans hanging on, new entrants dropping out (60 vessels active)
Kiribati	Small-scale targeting sashimi tuna	One government owned pole-and-line vessel converted to longline	Specially designed locally constructed small-scale vessels being developed under an aid project	Two locally built vessels still being trialled by government, not yet exporting
Marshall Islands	Medium scale targeting sashimi tuna	Government and aid sponsored medium scale vessels (5) Ting Hong distant water vessels based locally (peaked at over 100)	Government and aid sponsored vessels had failed Ting Hong replaced by MIFV Chinese vessels (49) based locally	No domestically owned vessels, MIFV vessels (38) based locally
PNG	Medium scale targeting tuna for sashimi markets, and shark	Beginning of private sector driven domestic medium scale fleet	Booming, with 40 vessels at several centres around the country	Freight costs and logistical difficulties, and CPUE decline, led to stagnation, all centres but Port Moresby closed down, all companies but one wound back operations
Solomon Islands	Medium scale targeting tuna for sashimi markets	One foreign owned locally based operation in Honiara (Solgreen)	Solgreen continuing (around 10 vessels)	Solgreen closed. New company Global in Tulagi (31 vessels)

4. Downstream Processing

Fiji and Solomon Islands have had the longest running canneries among the countries covered by this report, both starting in the early 1970s with Japanese investment.¹³ The next large-scale cannery was opened by the Philippines based company RD in Papua New Guinea in 1997. The RD initiative was part of a PNG domestication policy to entice distant water fishing companies to establish shore bases by tying fisheries access to the building of processing facilities and offloading a proportion of their catch each year. Following the success of RD several other large-scale plants have been initiated. Marshall Islands also had a loining plant for around five years in the early 2000s.

Other kinds of commercial tuna processing conducted in the Pacific include: packing and preparing chilled and/or frozen tuna into loins or steaks for fresh fish markets; smoke drying skipjack for *katsuobushi* (a commonly used stock flavouring and condiment in Japanese cuisine);¹⁴ and in recent years small-scale factories have started up in several countries producing various kinds of ‘gourmet’ processed fish—cold smoked, tuna ham and tuna jerky.

While large-scale fish processing in the form of canneries/loining plants has generated employment and spin-off benefits in Fiji, Solomon Islands and more recently in Papua New Guinea, uncompetitively high cost production environments mean these almost all of these developments have relied on government revenue in one way or another. They are also vulnerable to erosion of trade preferences under the Cotonou Agreement. Processing of fresh chilled and frozen fish connected to longline fisheries in Papua New Guinea and Fiji, as purely private sector ventures, have been more economically sound, but are currently suffering from falling CPUEs in the fishery and the high costs of freight. Small-scale ‘gourmet’ processing plants are a new initiative that may prove to be well suited to PIC conditions.

Effects of Trade Barriers on Domestic Processing Industries

The EU and USA have tariffs on imports of canned tuna, to protect their domestic canning industries. For this reason Fiji’s Pafco exports loins rather than cans to the USA. As former European colonies in Asia, the Caribbean and the Pacific (ACP) Papua New Guinea, Solomon Islands and Fiji are exempt from the 24% tariff under the Cotonou Agreement. The EU tariff thus gives processed tuna from these PICs a trade advantage in lucrative EU markets over more competitive industries in South East Asia, although with quotas this has begun to change and is likely to change further within the next few years. Under the EU Economic Partnership with PICs it is possible the complex Rules of Origin for fisheries products will be simplified and relaxed to also allow fish processed in PICs but caught by vessels owned in other countries to be included in the definition of ‘ACP’ (Rodwell 2005).¹⁵ For the first few years of operations the RD cannery in Papua New Guinea relied mostly on USA markets, but in 2005 the Managing Director said that without the trade advantage in the EU the RD cannery would ‘close tomorrow’ because the high costs of processing in PNG mean PNG could not compete against South East Asian producers on a level

¹³ For more information on Solomon Islands’ cannery see (Barclay 2000, 2001, 2004, 2005).

¹⁴ During the production phase loins are often called *arabushi* (literally ‘rough loin’), with the final cured product being called *katsuobushi* (‘skipjack loin’).

¹⁵ For further information on the Cotonou Agreement, its predecessor the Lomé Convention, and the Rules of Origin see (Grynberg 1998; Grynberg 2003).

playing field (Celso, pers. comm.). PIC developments in tuna processing are therefore vulnerable to erosion of EU trade preferences. Fiji's preferential trade access to the EU for sugar exports has already been eroded somewhat and looks like being wound back further in 2006 and 2007 (Lal and Rita 2005).

Food Safety Requirements

Food safety regulations for the EU and USA are very strict. Nevertheless, Solomon Taiyo managed to meet interim EU standards in the past, while RD and Pafco currently export to both the EU and USA. The EU Partnership Agreement includes assistance to PICs for achieving the technical capacity to test and monitor food safety, and the Food and Agriculture Organization gives assistance with implementing hazard analysis critical control point (HACCP) systems (a service Marshall Islands has used). These food safety requirements may be seen as an incentive to develop human resources and facilities capacities, with positive spin-offs for other industries where food safety is important, such as tourism and hospitality, as well as for the health systems of PICs.

5. Management of Tuna Fisheries in the WCPO

In common with many other fisheries world-wide, fisheries management in the WCPO has on the whole been reactive. According to one industry representative, national fisheries managers have either not had i) the vision to step in and make the hard decisions early enough to avoid 'a big bust after the boom', causing the fishery to settle at a level far below optimal sustainable rates, or ii) have had the vision but not the power to enforce their decisions on unwilling fishing companies (Southwick, pers. comm.). Messages of gradually increasing concern have been delivered by SPC over the last decade regarding bigeye, and latterly yellowfin. Stocks were however generally considered to be healthy enough not to signal the need for strong management action until more recent times.

Ecological sustainability is the basic prerequisite for being able to capture wealth from tuna industries. For governments to be able to deliver on sustainability outcomes they need to have appropriate and consistent policies at three political scales:

- Sustainable management at the domestic level,
- Effective cooperation and coordination, and some management at the regional level (Pacific Islands Forum Fisheries Agency [FFA] and sub-regional groups such as the Parties to the Nauru Agreement^{16]} [PNA), and
- Sustainable management at the international/multilateral level (WCPFC).

The latest stock assessment from the WCPFC First Regular Scientific Committee Meeting held in August 2005 shows that resource sustainability is now a serious issue. The WCPO used to have a 'buffer' of relatively healthy stocks giving it time in which to work out the best regional management measures, but as the fishdown of stocks has occurred these management measures have to be decided upon and implemented as a matter of urgency for some species (WCPFC 2005). The increasingly worrying

¹⁶ The Parties to the Nauru Agreement (PNA) are a subgroup of the FFA countries whose EEZs encompass most of the equatorial belt of rich skipjack fishing grounds in the region.

scientific advice coming from SPC contrasts with the lack of concrete action to manage the burgeoning increases in tuna fishing activity (Greenpeace c.2005).

An interesting point about the WCPO tuna fishery is that the biological and economic components of sustainability are in different relationships to each other in different sectors. Most notably, economic unsustainability for the longline fisheries further south kicks in long before significant impacts on the stocks as a whole occur. Yet the equatorial purse seine skipjack fishery may remain economically viable even after the overall yellowfin and bigeye stocks are driven down well below sustainable target levels. Regional (FFA-wide) views and aspirations on tuna management and development vary as a result of this.

It is clear that allocation and effective management measures must be achieved sufficiently quickly to halt and reverse the current impacts of fishing on bigeye and yellowfin stocks. If not, the WCPO tuna fishery seems likely to trend towards becoming a high volume skipjack-oriented purse seine fishery, dominated by the low-cost Chinese and Taiwanese fleets, with minimal input from Pacific Islanders.

FFA's Economics and Marketing Manager Len Rodwell considers that one major key to addressing the bigeye (and to a lesser extent the yellowfin) issues is through regulating the catches of purse seiners. In addition, improving observer and port sampling programmes would more accurately differentiate between bigeye and yellowfin catches and assist with the regulation and accuracy of stock assessments. While there are some limits on purse seine fishing effort imposed through the PNA-based Palau Arrangement and its replacement, the much anticipated Vessel Days Scheme (VDS), these are of themselves insufficient to halt the current trend towards overfishing and stock decline.

Given that the majority of the purse seine fishery in the WCPO (around 65%) is carried out in the waters of FFA countries, and access to their waters by DWFNs is essential for economic operation, FFA can (and indeed must) effectively exert control over the purse seine fishery. The longline fishery is more difficult to control, given that the reverse situation prevails, with most fish taken on the high seas.

Good governance and clear and well-informed national policy on tuna management, augmented and strengthened through regional cooperation at the PNA/FFA level, given effect throughout the range of stocks by agreeing suitable measures in the WCPFC, offers the best way forward for the region.

Capturing Wealth From Tuna

Table 3. A History of Constraints Identified and Recommendations Made for Development from Tuna Resources

	ADB Report (ADB 1997)	FFA Report (Gillett 2003)	This report 2006
Constraints	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
	High risk, capital intensive nature of tuna fishing industry, difficult access to markets, PICs high cost production environments		Tuna fishing declining profitability since 1970s, lack of trading/marketing skills a problem, PICs high cost production environments
	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
	Lack of commercial credit	Credit availability problems	Credit available for those with a good track record
	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 over-promotion of fishing as an investment opportunity, in turn creating boom/bust cycle in tuna fishing.
	Human resources not competitive on cost/productivity, inadequate pools of skills in some areas (technical, business)	Low levels 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
	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
	Environmental laws not enforced		Environmental and social/political aspects of fisheries management inadequately addressed, detracting from development benefits, and damaging the business environment
	Inadequate supplies of fresh water for processing in all but a few PIC locations, difficult to access land for commercial purposes		Lack of fresh water and land for commercial purposes a problem for onshore development
	Heavy reliance on preferential trade access likely to be eroded in future		Heavy reliance on preferential trade access likely to be eroded in future

Sources: *The Pacific's Tuna: The Challenge of Investing in Growth* (ADB 1997), *Domestic Tuna Industry Development in the Pacific Islands* (Gillett 2003).

Capturing Wealth From Tuna

Table 4. A History of Constraints Identified and Recommendations Made for Development from Tuna Resources

	ADB Report (ADB 1997)	FFA Report (Gillett 2003)	This report 2006
<i>Recommendations</i>	Maximize distant water access fees (rentals)		Distant water access fees is an important source of revenue for some PICs, can be increased by Consider alternative approaches, improving governance of negotiations, regional cooperation and by managing fisheries such that profitability is maintained/restored.
	Concentrate domestic development on service and supply		Service and supply is another way to gain returns from DWFNs, as is supplying crew. Some success (Marshall Islands) and prospects for further progress..
	Reorient government role to enable private sector investment (from state ownership), stimulate domestic private sector to invest, encourage foreign investors to base locally	Create investment friendly economic climate, tuna management plans help with policy and administration environment, fisheries associations help with industry-government dialogue, revise taxation especially for fuel, disseminate reports	Improve fisheries management, policy making and administration for the business environment, and exchange of information in order to capture more wealth from tuna fisheries
		Seek leaders for local medium-large-scale tuna businesses from business backgrounds, not small-scale fisheries	Develop business training and experience to achieve greater Indigenous leadership in tuna industries
		FADs are one of the few initiatives in small-scale tuna fisheries that has been successful, but very few countries in the region have effective on-going FAD programs	Small-scale fisheries development can be assisted with: FAD programs (but likely to require ongoing subsidy), greater understanding and protection of coastal marine environments; trust funds from industrial tuna fisheries; and improved consultation
		Increase FFA's role in domestic industry development	In addition to the planned provision of development advice for individual PICs, FFA could coordinate/promote regional development initiatives
		Scrutinize development schemes (cost benefit analysis) before committing government money	Ensure projects chosen are most likely to be economically sustainable, match individual country circumstances and least likely to be a drain on revenue, noting that despite evidence that tuna fishing enterprises often do not generate wealth PICs still wish to develop them.

Sources: *The Pacific's Tuna: The Challenge of Investing in Growth* (ADB 1997), *Domestic Tuna Industry Development in the Pacific Islands* (Gillett 2003).

7. Past Recommendations for Development from Tuna

Tables 3 and 4 compare constraints and recommendations for developing Pacific tuna resources made close to a decade ago with more recent studies, including this one. The tables show that PICs have made good ground in some areas. In particular, most governments have come to see the private sector as a more appropriate driver of tuna development than state-owned enterprise. Service and supply industries have been successfully promoted in some PICs as an alternative to domestic fishing industries, and generally there has been a shift from simply desiring tuna development towards realising tangible results.

It is not easy to determine the precise degree to which tuna industry developments have occurred as a result of previous recommendations and reports, although in some cases (e.g. Marshall Islands, Cook Islands), advice and technical assistance from regional organisations and aid donors have had clear and tangible results in terms of domestic industry expansion.

Cook Islands

Cook Islands has learnt much from its brief foray into tuna fisheries development, going through a boom-bust cycle in around 10 years. However, even at current levels, the benefits to the domestic economy far outweigh the meagre access fees (US\$5000 per longline vessel, per annum) that were formerly the only income from offshore tuna resources. Much of this development arose from policy and development advice from FFA and SPC, and an administration willing to accept that advice. Government was also highly committed to domesticating its fishery. If Cook Islands tuna industry recovers from the slump it was experiencing in 2005 and, through effective management and sound business decisions, develops into an economically sustainable industry, it could be a valuable part of Cook Islands' overall economy, relieving some of the heavy dependence on tourism.

Fiji

The development of Fiji's domestic long lining industry may be considered a success story that emerged independently of government, purely from the private sector. For a period, Fiji's long line fishery and related fresh fish processing businesses were clearly financially viable, but have been hit hard in recent years with falling CPUE and rising fuel prices. While domestication has been a success in one sense, in common with other fisheries considered during the study, some of these gains were lost due to the lack of effective management and inadequate licensing. Fiji's large processing company Pafco has required large inputs of government revenue over the decades, but it has provided jobs and human resource training opportunities for people outside Suva.

The use of fisheries as a tool to address self-determination issues and implement affirmative action policies has been problematic, and has contributed to the downturn of the domestic longline industry. Bringing more Indigenous Fijians into ownership and leadership roles in tuna industries is a long term policy vision of Government that will require a great deal of training and building experience in business management.

Kiribati

Numerous plans and reports have been provided and a management plan completed, which currently has not been implemented. Most recommendations have pointed to a

poor macroeconomic environment, fragile land environment and small economy as ongoing and almost insurmountable barriers to competitive shore based tuna development. The Government however, remains strongly of the opinion that there are good prospects for large scale processing (a loining plant), apparently backed up by a positive pre-feasibility study. There is also a strongly expressed but ill-defined desire to 'become more involved' in tuna fisheries. A number of failed government-driven small-scale tuna operations have not deterred clear preference by government for ongoing involvement in tuna operations. The small-scale domestic fishery selling direct to the public has, however, flourished.

Marshall Islands

Marshall Islands has experienced a number of setbacks and generally overcome them, moving from operational involvement by government in fishing operations to successfully encouraging and supporting private sector investment. This success was also donor-led, through a major Asian Development Bank institutional strengthening project. Marshall Islands' resource potential, freight and transport connections, and the pragmatic, relatively business-friendly approach of the government means Marshall Islands is in a good position to maintain and grow the wealth it generates from tuna industries. The shortage of local managers, a suitable labour pool and relatively high wages are constraints to tuna industry development; these factors are at least partly caused by the ability of Marshallese to go and work in the USA. With the development of management skills, both for the private sector and the public sector, and the implementation of its tuna management plan, the outlook could be further improved. The social impacts of hosting a busy international port in the lagoon detract from the economic benefits gained from tuna industries, so this is another area in need of policy attention. Finally, the fluctuations in the fortunes of the tuna sector are somewhat tied to El Niño cycle-driven resource availability and strategies to smooth (or adapt to) this variation need to be factored into development strategies.

Papua New Guinea

In terms of the full range of raw materials and infrastructure required for successful domestic industry development, PNG is in the best position of any of the PICs included in this study. In addition, PNG's tuna resources are so rich it can make a great deal from distant water fleets as well. After a major donor-led restructure of national fisheries into the National Fisheries Authority (NFA), substantial gains were made and investment attracted. While some impressive progress has been made, one main factor constraining PNG from achieving its development aspirations is the capacity of the PNG government to improve the business environment. Of particular concern to legitimate industry and investors has been the uncertainty surrounding governance, especially the politicisation of decision-making at NFA. The other main factor affecting Papua New Guinea's ability to capture wealth from tuna is implementing sound management of the fishery for its long-term sustainability. The large processing venture RD has been more commercially viable than previous attempts by PICs to trade access fees for onshore development, proving the domestication model is possible despite a challenging competitive environment.

Solomon Islands

Solomon Islands has a long history of domestic fisheries development. There has been some success with a pole-and-line fleet and cannery as major contributors to the economy, especially through employment. Lack of capacity in the public fisheries

sector and poor governance have been long standing issues, however, immediately prior to the social and political breakdown of 2000-2003, the Solomon Islands' tuna industry was relatively healthy—an industry/government/NGO consultative forum was active, a management plan had been developed, and three locally based tuna companies were operating relatively profitably. While the 2000 breakdown in law and order and governance, rampant corruption, escalating costs and loss of confidence destroyed much of the industry, there is proof-of-concept for a viable Solomon Islands domestic tuna industry. The tuna plan, which was reviewed after peace was restored, has yet to be implemented, and the largest domestic company Soltai faces an uncertain future.

Despite the progress outlined above, a number of the constraints identified nearly a decade ago in the major ADB study are still constraints in 2005. As one observer commented, perhaps somewhat harshly:

There have been mountains of reports written on how to improve Pacific Islanders' benefits from tuna fisheries over the years but very little of it has been implemented. It is appalling that things have not improved in the last ten years and you have to ask yourself why... The region has fantastic resources that are in high demand by markets that will pay good money for it. Why have these opportunities not been put to better use by PICs? (Gloerfelt-Tarp, pers. comm)

Clearly, there is no lack of ideas about how PICs may achieve more from their tuna resources. Many seem feasible but have yet to be tried by PIC governments. In some cases, there has tended to be a cycle of identifying a problem—commissioning a report—failing to act on the report—re-identifying the same problem—commissioning a report, and so on. Indeed, there is a no guarantee that this report will not suffer the same fate and become part of that cycle.

However, given the political, economic and social and cultural background prevailing in PICs it is perhaps not surprising that progress is slow. Many of the issues that remain to be addressed are deep-seated structural issues that will take some time to overcome. While on occasion it is a lack of commitment to try recommendations on the part of officials that is the problem, in other cases the commitment may be there but insurmountable obstacles prevent forward movement. It is one thing for consultants and others to make pronouncements, frequently assuming an open and transparent market economy, on what should or should not be done, and quite another to making them happen. It is however, heartening to look at progress to date against a backdrop of, (in some cases) poor governance, capacity constraints, stifling bureaucracy and political pressures. That said, much remains to be done.

8. History of Regional Cooperation by PICs on Tuna Issues

There are increasing calls for greater regional cooperation among PICs from the highest level, as embodied in documents such as the Pacific Plan (Eminent Persons' Group 2004; Pacific Islands Forum 2005). Calls for greater regional cooperation in the Pacific have been going on for some decades. New factors in recent calls for regional cooperation include the mounting evidence of the failure of many PICs to assert 'effective sovereignty' due to lack of government capacity. One study estimates

that poor governance has cost USD\$75 billion in foregone income in Papua New Guinea, Fiji, Solomon Islands and Nauru since independence (Grynberg, Hyndman, and Silva 2005). More interventionist Australian government policy towards its Pacific Islands neighbours post September 11th is another new factor (Fry 2005).

Regional cooperation in oceanic fisheries has been seen as a ‘shining example’ of governments working together in the Pacific (Tarte 2004). Due to the migratory nature of the resource, for tuna fisheries management in the WCPO to be effective, it must be managed regionally (FFA/PNA) and multilaterally (WCPFC) as well as nationally. Regional bodies such as the FFA (established 1979) and the Oceanic Fisheries Programme at SPC (established 1980) have coordinated and assisted PICs in various regional initiatives relating to research, management and development of their tuna resources, including: i) joint stocks research results compiled in a database and disseminated annually; ii) a regional vessel register; iii) a regional satellite-based vessel monitoring system (VMS); iv) a set of harmonized minimum terms and conditions for foreign fishing vessel access; v) a regional purse seine management scheme; f) regional stock assessments and vi) a tuna market information newsletter.

One the other hand, there are several significant areas in which PICs have not achieved cooperation in fisheries. Most notably, they have not shared economic information about tuna industries or aid, or negotiated access/licensing arrangements collaboratively, despite the USA multilateral treaty providing evidence that regional negotiation could yield substantial benefits.¹⁷

With the establishment of the WCPFC, PICs also have to work with distant water fishing countries, some of whom oppose PICs on key issues. Japan was a difficult opponent for PICs in the negotiations leading up to the establishment of the WCPFC.¹⁸ Japan promises to continue to be a strong opponent of PICs being allocated the tuna resources in their EEZs; arguing that fishing states have at least equal rights to the resources and that highly migratory resources do not ‘belong’ to the zone in which they are caught. The fact that Japan has fishing relations with some PICs (mostly PNA states) has tended to create divisions in regional cooperation to achieve recognition for issues such as allocation by fishing zones. In particular, Japan’s past practice of engaging only with PICs with which Japan has fishing agreements, or paying travel expenses only for PICs with which Japan has fishing agreements, has been very divisive. Other distant water fishing states/entities in the WCPFC include the USA, Korea, China, Taiwan and EU. These states and entities are highly industrialised, with considerable wealth and other resources at their disposal to underpin negotiating strategies. PICs will need every tool at their disposal to further their interests, the most powerful of which is an ability to win votes through regional cooperation, combined with strategic alliances with like-minded states.

¹⁷ Opinions of the ‘success’ of the US (tuna) Treaty vary widely. Some member countries (for example, Kiribati) feel it is inequitable because some countries benefit without having the US fleet fish in their waters, while others feel that such an agreement and fee level would not have been possible without FFA wide cooperation, and that the ‘regional spirit’ of the Treaty is, of itself a valuable benefit. These views aside, the Treaty was struck under a unique set of circumstances (Anderson 2002; Ram-Bidesi 2004; Tarte 2002, 2003, 2003), which cannot be simply applied to other multilateral agreements.

¹⁸ For a history of these negotiations, including the prominent role played by Japan see (Anderson 2002; Ram-Bidesi 2004; Tarte 2002, 2003, 2003).

Objective: To Capture More Wealth From Tuna

Almost without exception, all Pacific Islanders interviewed and documents analysed for this project indicated a strong motivation towards capturing more of the wealth generated by regional tuna resources in PIC domestic economies. This was overwhelmingly the major aspiration expressed by Pacific Islanders regarding their tuna resources.

Goals For Capturing More Wealth From Tuna

Interviews and documents used in this project contained two main goals PICs have had in relation to their overarching objective to capture more wealth from tuna; i) domestic industry development and ii) maximizing returns from distant water fleets.

i) Domestic Industry Development

In this report we use examples of domestic tuna industries in PICs to highlight strategies that are more likely to lead to the kinds of domestic industry development that achieve the objective of capturing more wealth within PICs' own economies. There are two important principles to bear in mind when considering these strategies.

One important principle is that domestication should be economically sustainable and contribute to government revenue rather than detract from it, which means it should be wholly private sector driven and independent of financial inputs from government. This means that tuna development is, in effect, the same as business development. For domestic tuna development to work the economic and policy environment has to enable private sector development.

In the early 2000s FFA member countries decided that reducing their reliance on distant water access fees and growing domestic tuna industries was the way to improve economic benefits from their tuna resources (Gillett 2003). Most Pacific Islander interviewees and recent reports from PIC governments indicated that this view remains current. That is, the best way to capture more wealth from tuna resources is through 'domesticating' tuna industries. The region's Prime Ministers have said they see 'domestic [tuna] industry development... as an important means of increasing returns to Pacific Island Countries' (Pacific Islands Forum Secretariat 2004). Domesticating the benefits from tuna resources is most often understood as PIC nationals as resource owners displacing DWFNs, establishing locally based tuna fishing operations and doing the actual fishing. Less often it is imagined as developing locally based tuna processing industries.

In the past, many PIC domestic tuna industries—both vessels and processing plants—were wholly or partly government owned. These all failed within a few years or limped along with heavy government and aid donor subsidies, meaning their contribution to the host country's economic development was questionable, although when they employed large numbers of people they at least spread income and human resource development opportunities among PIC populations. Due to the overwhelming evidence that government ownership of tuna industries is not the best strategy for domestic development, PICs tend now to seek more private sector driven development. Because of high cost, difficult business environments in PICs, however, to encourage private sector investment PIC governments have induced shore-based

investment through policies such as tying fishing access to onshore developments, and offering generous taxation incentives. Furthermore, many of these companies rely on preferential trade access to the EU under the Cotonou Agreement. The lack of independent private sector investment (all investment is induced, based on incentives and/or reliant on trade preferences) would seem to indicate that PICs do not have competitive advantage in tuna industries. Improving the business environment so that inducements and incentives are not necessary is crucial for domestic development.

The second principle for success is that national domestication plans must take account of geographic, economic and biological realities. For instance:

- The geographic and economic environment for loining or canning tuna at a financially viable price,
- The availability of suitable resources for particular fishing methods, e.g. bait and schooling fish for pole-and-line fisheries,
- An ability to adapt to/weather downturns due to variations in fish abundance driven by ENSO effects,
- The ratio of albacore to sashimi-quality species to support an economically viable longline fishery,
- The real cost of policies to ‘share’ domestic development opportunities between provinces/regions in a given country for political purposes rather than business logic, and
- Economic circumstances—a lack of infrastructure, land, water, labour, and other endowments mean that for some PICs domestic tuna industries are unlikely to capture as much wealth as licensing DWFN vessels.¹⁹

Principles for Successful Domestic Industry Development

Tuna development is inseparable from business development. The first step in facilitating the establishment of domestic tuna industries is improving the business environment.

Domestic industries should be tailored to the geographic and economic circumstances of particular PICs.

ii) Maximizing Returns from Distant Water Fishers

Based on interviews and government documents explored for this project, PICs’ strategies for maximizing returns from DWFNs seem to revolve mostly around negotiating with DWFNs to pay as much as they can for access, and negotiating with DWFN governments to top up industry payments with aid packages. Another strategy that has been employed in recent years is to attract DWFN vessels to tranship, taken on supplies, and undertake repairs in PIC ports. Some PICs have also gained value from DWFNs by having them employ nationals as crew.

Given the particular geographic and economic potentials of some PICs, returns from DWFNs are, for the foreseeable future at least, likely to remain the most important

¹⁹ Where large-scale domestic development (loining or canning plants, major port/infrastructure facilities, etc) may not be feasible, there are other domestic development options that can and should be pursued. However, for some PICs these options are highly unlikely to generate greater benefits to the economy than revenues from various forms of licensing DWFN fishing operations.

source of wealth captured from regional tuna fisheries for them. Other PICs' tuna resources are not rich enough to attract large fleets of DWFNs so the returns to them will be small. Approaches to maximizing returns from DWFNs thus cannot be uniform for all PICs, but should be tailored to the circumstances of individual PICs, or to sub-regional blocs, such as the equatorial belt of countries with the richest skipjack fishing grounds. Two other important principles affecting how much wealth PICs can capture from DWFNs are i) to populate the fishery with the most efficient vessels (and thus those with the potential to be most profitable) and ii) to maintain the value of catching opportunities.

Unless effective (in biological and economic terms) management measures are implemented, overfishing in the WCPO will inevitably lead to falling CPUE and potential revenue streams, both from domestic and DWFN vessels. Good fisheries management to optimise the economic and ecological sustainability of tuna fisheries is therefore an important determining factor. If effective fisheries management improves the profitability in tuna fisheries, it will in turn increase the capacity and willingness of DWFNs to pay more for fishing opportunities.

Principles for Maximising Returns from Distant Water Fleets:

Strategies regarding DWFNs should be tailored to the geographic and economic circumstances of particular PICs, and/or sub-regional groups (such as the PNA).

Good fisheries management must fully account for both ecological and economic outcomes both at regional and national levels. Strategies for protecting stocks should simultaneously consider ways of improving the profitability of fisheries and dealing with flow-on effects of management measures.

PICs' Policies: The Key to Achieving PICs' Aspirations

It appears to the authors that a single principle underlies all strategies capture more of the wealth from tuna resources; *PIC governments are the only bodies with the power to make the changes necessary to capture more wealth from tuna through domestication and returns from DWFNs.*

Only PIC governments can make regional tuna fisheries economically and ecologically sustainable, by implementing sound fisheries policies in their own jurisdictions and strengthening these through regional cooperative initiatives. This is not to say PICs are the only stakeholders or the most powerful ones in general terms, but that the political and economic nature of the situation means coastal states collectively (which for this fishery includes Indonesia and Philippines as well as PICs) have the most crucial role to play in improving returns from tuna resources.

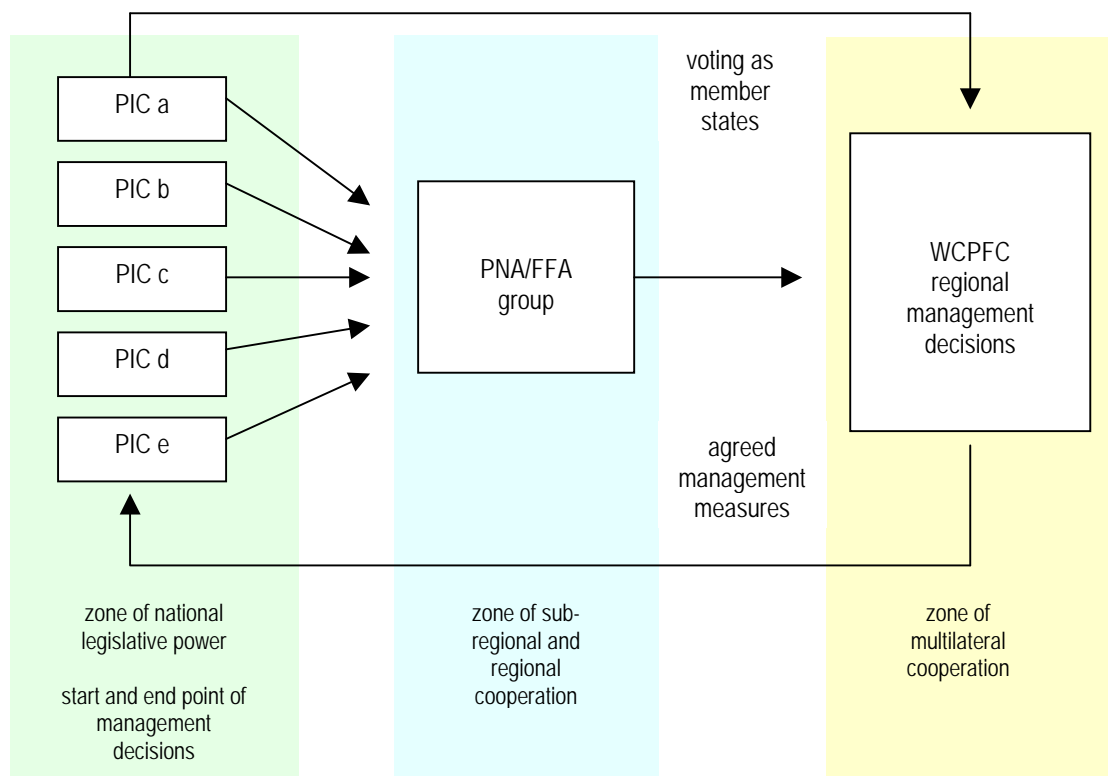
While domestic development must be driven by the private sector, the private sector cannot improve PICs' business environments by themselves—they can only be part of governance improvements implemented through PIC governments. For example, industry representatives have arguably been the prime movers behind improvements to the business environment in PNG and Fiji, but it is the government itself that must implement those improvements. Aid donors cannot fix PIC economies, or create an enabling environment for the private sector, PIC governments must do that, with or without donor assistance.

Regional bodies like FFA and SPC can provide advice but it is up to PICs whether or not they use the advice. WCPFC is the forum in which regional management initiatives will be decided, but PIC governments must drive this process. Regional bodies can exert influence on individual PICs and through cooperation can initiate regional measures (such as through PNA-based agreements) but PIC governments are the only legislative and executive authorities within their own EEZs (see Figure 3).

There are externalities beyond PICs' control that will affect management and development policies, such as and international fuel prices, fisheries in Indonesian and Philippines EEZs, DWFN interests and binding decisions from the WCPFC. Nevertheless, PIC governments have more power than any other bodies over the factors that affect PICs' capacity to capture more wealth from regional tuna resources.

PIC Governments are the Key to realizing PICs Tuna Aspirations.
Only PIC governments can improve the economic environment for domestic development.
Only PIC governments can implement management measures in their national jurisdictions.
PIC governments collectively have great power to affect decision-making at regional and WCPFC levels to achieve biological and economic sustainability in WCPO tuna fisheries, which is necessary for capturing more wealth both from domestic and distant water fleets.

Figure 3. WCPFC Fisheries Management Diagram



Strategies For Capturing More Wealth From Tuna

1. *Effective Fisheries Management*

Sustainability is very often included within PICs' aspirations to capture more wealth from regional tuna resources, as exemplified in the new FFA vision: 'We will enjoy the highest levels of social and economic benefits for our people through the sustainable development of our fisheries resources' (FFA 2005). The word 'sustainable' is also prominent in Tuna Management Plans and other statements of government intent regarding tuna industries. Despite frequent use of the word, however, PIC governments thus far seem to have displayed limited commitment to the ideal. Some have introduced exclusion zones to try to reduce the impact on coastal fisheries, but overall they have taken limited steps to protect the marine environment, including target and bycatch species, from negative effects of tuna industries. Moves to protect the environment associated with shore-based facilities have often been driven by stakeholders other than the government. For example, the main motivation for environmentally responsible measures introduced by Solomon Taiyo Ltd in Solomon Islands were market stipulations for imports to the European Union, and the requirements of the main buyer, retail chain Sainsbury's. In Fiji a powerful local chief pushed for improvements around the Pafco cannery, and the tourist industry was instrumental in having restrictions placed on commercial fisheries (Gillett, pers. comm.).

As with fisheries world-wide, PICs are faced with conflicts between a duty to protect stocks and the environment, and their aspirations to capture more wealth from tuna; to gain access to, be allocated and use, a fair share of the shared tuna resource. On the one hand it is obvious that without enough fish to catch there can be no wealth generated from fisheries, but on the other hand individuals at both state and enterprise level naturally hope that any necessary cuts to catch or effort will fall on someone other than themselves. In such situations governments feel political pressure to argue to this effect at regional fora and at the WCPFC, or argue that the proposed cuts may not be necessary at all.

Managing for Economic as Well as Biological Sustainability

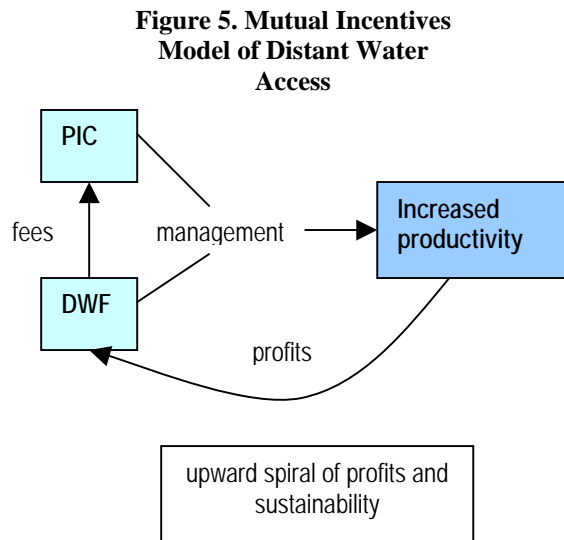
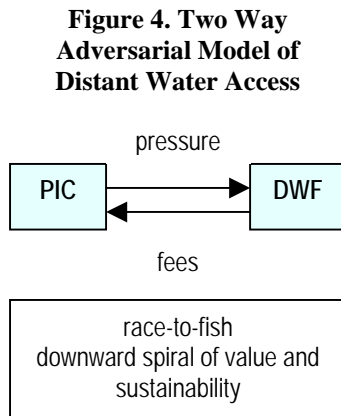
The need to manage for biological sustainability (maintain stocks at levels capable of producing the maximum sustainable yield, 'Bmsy' in the WCPF Convention) is well established. There is also a need to strive for optimal economic outcomes,²⁰ including for PICs, which is an area where individual states can play a significant role.

The rush to license vessels, as if the relationship between fishing effort, and catch (revenue) was a straight line, and the resulting 'busts' was remarked upon in a number of countries visited, particularly in reference to longline fisheries.²¹ Some interviewees in PNA countries noted the need to ensure that management regimes

²⁰ According to Article 5(b) of the WCPF Convention, Bmsy as a target can be modified 'by relevant environmental and economic factors, including the special requirements of developing States in the Convention Area, particularly small island developing States, and taking into account fishing patterns, the interdependence of stocks and any generally recommended international minimum standards, whether subregional, regional or global'.

²¹ The degree to which these 'busts' are a result of localised depletions depressing CPUE, or result from environment-driven changes (oceanographic factors, for instance) is a matter of some conjecture.

should involve economic as well as ecological considerations. One suggestion was that the PNA group could gain substantial increases in access fees if they were to i) extend the FSM arrangement and fully ‘pool’ their WCPFC allocation, ii) put in place credible measures to maintain CPUE, and iii) use rights-based management approaches to sell long-term rights (for example, ten years) and give DWFNs maximum confidence in their investment. Certainty of the future economic viability of tuna stocks and about access to them is also important for domestic investment in fisheries industries.



Early bio-economic modelling work by FFA and SPC suggested that reductions in purse seine effort could yield substantial overall increases in economic benefit, principally by reducing catches, increasing CPUE and price (by restricting supply) and reducing the costs of fishing. Some of these findings led to assertions that the key to PICs increasing economic benefit from the purse seine fishery was to restrict effort (see for example, ADB 2003), and thereby increasing the prospects of increasing access fees. More recent bio-economic modelling work (Reid, Bertignac, and Hampton 2006) has questioned this perspective, noting that as skipjack catches have increased, CPUE has been maintained, or in some cases increased. Revenue streams from access fees have increased, by 10% in the period 1999-2003 (Lewis 2004). Using an updated bio-economic model the economic benefits (rent) of reducing effort in the purse seine fishery, while present, are forecast to be substantially less, although the effect on reduced supply in terms of increased prices could increase that benefit. In any event, the more recent work has thrown into doubt some of the original assertions about the value of the PNA group striving to reduce effort in the purse seine fishery, and indeed, who would benefit from such constraint. It has also highlighted the need to continue to work on refining the bio-economic model and equally importantly, extending the results to PICs to support consideration of management options.

Notwithstanding this debate, the major constraint for both the purses seine and longline fisheries lies with yellowfin and bigeye. The challenge will be to balance the requirements of the WCPF Convention with respect to these species with the largely economic-driven aspirations of PICs.

Recommendation 1

Place greater emphasis on predicting economic outcomes—particularly across fisheries, gear types and WCPFC members—when designing and determining management measures, including levels of fishing effort by domestic and foreign fleets.

Fisheries Management Planning

It is important that PIC governments have a clear idea of where they wish to see their tuna fisheries heading in the future. All too often tuna fisheries management objectives are vague. Another common problem is a conflict between the objective to maximise economic returns and policies aimed at distributing benefits from tuna developments for social reasons.

In the late 1990s and early 2000s, FFA and SPC with Canadian government funding through the CSPOD (Canada-South Pacific Ocean Development Program) II scheme assisted PICs to develop management plans for their tuna industries. Most PICs now have tuna management plans, which provide at least some guidance, even if few have formal statutory status. The FFA 2005-2007 Business Plan notes that the FFA will assist with the review of existing plans and work towards ‘ecosystem based management’.²² After spending a large amount of resources on this process, it may be timely to review what has been learned from management and tuna industry planning processes, and most importantly share the knowledge resulting from that review between PICs.

Undertake a comprehensive review of tuna management and planning successes and failures, develop key strategies and indicators for success and ensure these are circulated to, and are discussed with, PICs

1.1 Monitoring, Control and Surveillance (MCS)

Australia, which has a large budget to spend on monitoring its maritime borders, has in recent years been unable to prevent multiple incursions a relatively small area of its northern EEZ from illegal fishers whose home fishing grounds have been depleted so are attracted by the relatively abundant reef fish and shark stocks in Australia’s EEZ.²³ PICs have several orders of magnitude larger EEZ areas to cover relative to the amount of government funds available for surveillance and enforcement, so are simply economically unable conduct MCS effectively alone. Regional pooling of surveillance and enforcement is a necessary part of effective fisheries management for PICs.

Regionally, FFA has been very successful in generating regional MCS initiatives, including the FFA Regional vessel monitoring system (VMS) and Vessel Registers, the US Treaty regional observer programme and cooperative MCS agreements under

²² See also section 4.2 (Tuna Management and Development Plans).

²³ Not all of the ‘illegal’ fishers fit into this category. Some from the island of Roti in Indonesia have been regularly fishing in areas now considered to be part of Australia’s EEZ for centuries. What is new in their case is that since the 1970s the Australian government started to try to prevent them entering their customary fishing grounds (Balint 2005).

the Niue Treaty. That said, there is considerable scope to build on these efforts including:

- Expansion of the existing US Treaty regional observer programme to allow observers to observe on vessels as they transit different EEZs and, by negotiation at the WCPFC, on the high seas, and
- Expanded activities under the Niue Treaty in respect of joint operations and shared facilities.

As the Commission builds its MCS frame work PICs should strive to gain the greatest level of adoption possible of current in-zone fisheries compliance measures. The aim should be to transfer (and strengthen) the existing in-zone compliance environment onto adjacent high seas, leading to more cost effective and efficient MCS outcomes.

1.2 Rights-based Management

The value of rights-based management in fisheries is well known as a means of addressing economic and biological sustainability (Cartwright and Willock 1999). The concept of rights-based fishing in a tuna fishery is not well developed, but was considered in some detail at a regional workshop in Nadi, Fiji (FFA 2002). This workshop noted that consideration should be given to strengthening property rights at three levels.

- **National:** using enhanced licensing conditions, for example, i) by extending terms to five years or more, making them transferable and using more flexible units of right (such as hook numbers) for catch allocations; and ii) by using the increasingly valuable rights to be allocated under the WCPFC to reduce DWFN effort and leverage domestic involvement/industry development.
- **Regional:** using the power of FFA members to determine TACs or level of effort for areas under national jurisdiction, with allocations of high seas fishing opportunities among all participating countries, and FFA members cooperating for reciprocal access for longline vessels, mirroring the FSM arrangement. The rights afforded under the VDS scheme among the PNA group will be pivotal in at least two ways; i) to deal with ENSO-driven variations and ii) through options to reduce days and make the right more valuable.
- **Multilateral:** using the power of the FFA group, and the PNA sub-group, to influence negotiations for participatory rights for allocation of catch/effort at the WCPFC.

Gillett (2003) sees that rights-based management could be really useful for development but that two things are needed before aid donors can try to support it; i) a greater awareness among domestic fisheries managers of the benefits of rights-based regimes; and ii) improved infrastructure necessary for rights-based regimes, including policy stability and protection of use rights. Corruption is another issue that needs to be addressed by PICs before rights-based management could produce maximum benefits for national economies.

Another role for rights-based approaches is as a potential means for solving the gear interaction issue. As 'real' management measures (that is, those that effectively constrain) are introduced (or in the case of the VDS begin to take effect), there will be opportunities to introduce methods that enable trade offs between gear types and target species. For instance, bigeye and yellowfin could be traded for skipjack in equatorial waters, and albacore in tropical and temperate waters.

Recommendation 2

Follow up the 2002 FFA Rights-Based Workshop, possibly through a series of in-country seminars, to increase awareness among domestic policy makers and fisheries managers of such approaches.

1.3 Managing Social, Political and Environmental Issues

Fisheries managers tend to see politics as something that ideally should be kept out of fisheries management, science and economics being the only rightful influences. Some politically motivated fisheries management decisions have certainly been disastrous, economically, socially and environmentally. On the other hand, decisions for ecologically sound fisheries management, and economically sound development strategies, are political decisions as much as anything else.

The Marshall Islands government decision to go for service and supply industries rather than attempting to domesticate fisheries was a political decision, based on astute technical advice, which has had good economic outcomes. Since fisheries management is more about managing people's impact on fish rather than about managing fish *per se*, fisheries management will always involve dealing with political issues.

Social issues are not usually given high priority, and are usually listed simply as 'negative impacts' with the inference that they should be avoided if we could only work out how, and if the resources were available. However, social issues are not simply unintended by products of fisheries development. Social and environmental problems arising from tuna developments must be addressed, not just for the general good of society, but also because the ill will generated by socially divisive developments rebounds negatively on those developments. In other words, it is easier for a company to be successful if it has good public relations than if it has bad public relations. Public relations are a company responsibility, but the way fisheries developments fit with their social context is a matter of government policy.

As with the desire for sustainable tuna fisheries in the offshore area, the desire to minimize negative social and environmental impacts in coastal and port areas was one of the aspirations mentioned by virtually all interviewees and documents studied for this project. Despite the widespread nature of this aspiration, however, very little has been done by governments to alleviate social and environmental problems associated with tuna industries. None have gone so far as to develop and implement concrete strategies to minimize these impacts.

The impacts on coastal areas of commercial tuna developments generally fall into two categories: impacts on coastal fisheries and impacts on the surrounding environment as a result of pollution.

Impacts on Coastal Fisheries

One of the factors contributing to widespread social ill will against industrial tuna developments is the pervasive belief that commercial tuna industries are depleting the resources villagers catch for food and income. Nearshore fisheries are of paramount importance for food security, health and income of coastal PIC populations.²⁴ Some studies suggest that the economic value of the informal catch in PICs would far exceed the value of the commercial catch if it were systematically calculated (King, pers. comm.) (although comparisons involving multiplier effects can be problematic).²⁵ Most coastal fisheries concentrate on reef fish, because it is easier to catch reef fish from small vessels than it is to venture out to the open sea to catch tuna. The available evidence, however, indicates that fishing pressure on reef fisheries should be alleviated in many PIC areas (Bell, pers. comm.; King, pers. comm.). In this case refocusing nearshore fisheries on relatively healthy tuna stocks, facilitated by the use of nearshore fish aggregating devices (FADs), would seem a sound policy, although research indicates that FADs are not always used by villagers in ways that reduce pressure in other coastal fisheries (Gillett 1999). Several PICs, including Papua New Guinea, are following Samoa's lead and establishing community-based resource management regimes for coastal areas. Solomon Islands is doing this in conjunction with Marine Protected Areas under the sponsorship of several NGOs.

Small-scale coastal fisheries targeting tuna based on the Samoa model were seen in the 1990s as a major opportunity for domestic fishers. The experience of Samoa, however, where hopelessly over-capitalized small-scale fisheries led to a collapse in nearshore tuna resources (Watt, pers. comm.), demonstrates the need for sound resource management for nearshore fisheries. Furthermore, part of Samoa's success was based on a unique economic opportunity for trade with nearby American Samoa, a situation not replicable in other PICs. Examples where PIC governments have acted to manage fishing pressure on coastal resources include Morobe Province in Papua New Guinea, which has decided to limit the number of pump boats that may operate out of Lae and increase effort incrementally to avoid local area depletions.

Since shark may be targeted by longline and hand line gear that also target tuna, shark fisheries are connected to tuna fisheries. The escalating price of sharkfin presents a growing risk for shark populations. The reported export value of sharkfin from Milne Bay PNG rose to over PGK\$1 million last year (the actual value may be higher). As traditional stocks in South East Asia become decimated, buyers are likely to turn increasingly to Pacific Island shark fisheries.

It is also important to know whether offshore commercial tuna fisheries have an impact on coastal tuna fisheries. It is common to hear from small-scale and recreational fishers in PICs that it is now much harder it is to catch tuna than it was 10 to 15 years ago, and commercial tuna fisheries are usually seen as the main cause of the apparent decline in resources (Bauro, pers. comm.; Dunn, pers. comm.; Kingston,

²⁴ For an overview of nearshore fisheries development in PICs see *Nearshore Domestic Fisheries Development in Pacific Islands Countries and Territories* (Chapman 2004).

²⁵ Thus far little work has been done on the economics of small-scale fisheries, although the Asian Development Bank supported Coastal Fisheries Management and Development Project and the European Union Rural Coastal Fisheries Development Programme in PNG collected socio economic data in 2004 and 2005.

pers. comm.; Ramohia, pers. comm.; Tamba, pers. comm.).²⁶ While increasing levels of exploitation can reduce CPUE, particularly if focused within a particular area, industrial fishing does not always equate with overfishing, as so frequently alleged by small vessel operators against large, industrial scale vessels. Where scientific research into interactions between small scale and industrial fisheries has been conducted the connections between catch rates in the fisheries can be quite complex (Hampton, Lawson, and Williams 1996). Despite the high mobility of tuna populations and depending on the circumstances, it seems likely that the availability of particular tuna stocks to local nearshore fisheries may be significantly impacted by large scale industrial fishing activity.

Impacts of pollution

It is commonly believed that large-scale tuna processing plants in PNG and Solomon Islands pollute the surrounding environment, including damaging reef fish stocks (Barclay 2001; Sullivan et al. 2003). Some research has been conducted into the pollution effects of large-scale canneries Solomon Taiyo and RD (Benet Monico 2003; Mani 1994; Wallis 1999), but there have not yet been ongoing environmental monitoring or enforcement schemes implemented by PIC governments to minimize negative environmental impacts. Indeed, in the case of Solomon Taiyo, the greatest impetus for environmental monitoring and improving waste disposal was meeting the requirements for EU market access, not domestic government regulation (Barclay 2001). Ongoing environmental monitoring of effects from the Pafco cannery around Levuka has been sponsored by an aid donor (Gillett, pers. comm.), not by a PIC government.

The effects of commercial fisheries, including processing industries, on nearshore areas, however, is not only a *resource* management issue, it is also about social and political management of fisheries. Scientific data about the effects of tuna industries and policies to mitigate any negative effects are only part of the solution. It is also necessary to effectively disseminate of the results of such research to all stakeholders, including villagers, to enable better informed debate about the merits and otherwise of tuna industries. Village level stakeholders should also be part of consultative advisory and decision-making committees to enable their input, and also to act as a conduit for information between fisheries officials and villagers affected by tuna developments.

Social Policies

The optimal public policy mix should manage tuna industries development such that it facilitates a widespread sense of social progress rather than social dislocation and polarization of groups for and against the development. Furthermore, while it is extremely unlikely a tuna-related coup will eventuate, the social ill will generated by many tuna developments in the region which results in petty sabotage adds to already difficult business environments, and if not addressed, could escalate. It is part of the social and political instability that discourages investment in several PICs.

One of the notable features of the tuna processing factories in Fiji, Solomon Islands, and PNG, is that while people appreciate the employment opportunities, the factories have had bad public reputations. They have been widely seen as offering unpleasant unsafe work for substandard wages, as causing social breakdown, and as polluting the

²⁶ Provincial fisheries officers in Solomon Islands, however, feel that increased populations in coastal areas, pollution, over fishing, and unsustainable fishing practices (such as dynamite fishing) are also having a negative impact on the health of coastal fisheries resources (Government of Solomon Islands 2005).

surrounding environment (Emberson-Bain 1994; Hughes and Thaanum 1995; Sasabe 1993; Sullivan et al. 2003). Based on our research these companies have been more responsible corporate citizens than their reputations suggest. It is worth bearing in mind, however, that although developing tuna processing is clearly a national government aspiration, there are large sectors of PIC populations who have quite different opinions about the desirability of such development. Failure to address the negative social reputations of tuna processing companies has meant social groups continue to attack them. RD has been tied up in legal battles with landowner groups and an NGO that RD perceives as having slandered the company (Friends of Kananam c.2003), and RD has been the target of petty extortion rackets (Post-Courier 2005).

Social Issues Around Ports and Factories

Apart from Cook Islands, all of the PICs covered by this study have significant levels of DWFN fleets visiting local ports and/or large-scale onshore processing factories. International ports and tuna factories are magnets for a range of social problems including prostitution, substance abuse and violence. 35,000 men from the southern Philippines work overseas on fishing vessels and call into ports including those in Solomon Islands as well as Papua New Guinea, Indonesia, Malaysia and Taiwan. According to a health official from General Santos City in Mindanao, many of these fishermen engage in 'extremely risky behaviour' when they finish a trip, including sex with multiple partners (often involving binge drinking and sex workers), injection of recreational drugs, and insertion of penile implants. Some people in this part of the Philippines have tested positive to HIV. While no cases of HIV/AIDS had been reported among the fishermen at the time the article was published, the article noted that there appeared to be a high rate of tuberculosis among the fishermen, which is recognized to be an indicator of AIDS (Solomon Star 2004). Papua New Guinea's rates of HIV/AIDS are now very high. Fishing crews visiting Papua New Guinea could contract the disease and spread it around the Pacific very quickly.

To ensure that development benefits from tuna industries are not cancelled out by social disruption, a range of social welfare and health services are needed around international ports and industrial processing centres. Local women and incoming men may need advice about prevention of and treatment for sexually transmitted infections (STIs). Women who are subject to violence related to substance abuse or the stress of fishing crew lifestyles need particular kinds of welfare services, as do women ostracised for being perceived as prostitutes. The lifestyles of fishing crews are very difficult, meaning many have mental health problems. The 2005 Forum Leaders' Communiqué pointed out the importance of regional strategies for dealing with HIV/AIDS, and the role of the Pacific Health Fund to help fund initiatives to combat health challenges (Pacific Islands Forum Secretariat 2005). Addressing the health implications of international port areas could be tied into regional as well as domestic services.

In addition to help for when problems arise, a greater range of 'normal' activities (not involving sex or substance abuse) should be provided for visiting fishing crews. While vessels are in port crews may have virtually nothing to do, and crew who do not want to engage in sex or substance abuse have nowhere to escape these activities occurring on board. The kinds of activities crews often appreciate include visiting restaurants, shopping, and recreational fishing. Many simply miss social contact outside the crew with whom they are incarcerated with for the duration of the fishing trip. Houses for crew to stay at while ashore, such as the 'Seafarer's Angel' houses

around the world, would help normalize visiting crew behaviors. Churches and other social NGOs can help government departments provide such options for visiting fishing crews so that negative social impacts are reduced.

Rather than noting and passively accepting the increasing social impacts of tuna fishing, including port calls, PIC governments, NGOs, regional initiatives and aid donors should actively monitor and develop approaches to deal with these impacts, particularly by considering alternative recreational activities.

Gender Issues

Gender is a social issue for tuna industries, especially around relationships with fishing crews and disparities in pay and seniority in shore-based tuna business. Inequitable gender relations are some of the problems that foment social ill will against tuna developments, although previous research indicates that gender inequity is less likely to cause social disruption in the way that perceived ethnic tension has (Barclay 2004). One reason for this is that people do not consider inequity between men and women to be as serious an issue as inequity across ethnic groups. Nevertheless, addressing gender inequities were one of the aspirations for tuna development mentioned in government documents, so PICs clearly feel that gender inequities are part of the social issues that need to be addressed in best practice fisheries management.²⁷ (Alternatively, PIC governments may be simply reproducing the mantras of gender analysis stipulated in most aid projects)

Distribution of Benefits

Almost all documents outlining strategies for tuna development listed equitable distribution of benefits among the citizenry as a key aspiration under the umbrella of capturing more wealth from tuna. Indeed, one of the main reasons domestication is so popular is because benefits from access fees have largely not been felt by PIC populations. With domestic developments at least some of the wealth from tuna is distributed among the people via salaries and wages.

Pacific Islander interviewees were particularly concerned that benefits from tuna developments should be felt in rural or outer island areas. The fact that benefits from tuna industries have generally not been realized at the village level was seen by interviewees as a major failing in PICs' fisheries development policies. This was often expressed in the following terms: 'villagers see the tuna boats fishing off their coast, they feel the tuna boats are taking their resources, yet they get nothing in return' (Aini, pers. comm.). Strictly legally villagers have no claim in customary tenure to offshore resources (Turaganivalu, pers. comm.). However, the social reality of customary marine tenure in PICs is that villagers sometimes assert rights over resources they did not use in custom (Kinch et al. 2005). Furthermore, anecdotes suggest that industrial fishers often come in much closer to shore than they should. The belief that commercial tuna fisheries are taking villagers' resources without giving any return to villagers is one of the factors contributing to social ill will towards commercial tuna industries in PICs.

²⁷ For details of gender issues in tuna industries in Solomon Islands, Fiji, Kiribati and Marshall Islands see (Pacific Islands Forum Secretariat 2004; South Pacific Forum Secretariat 2000).

Interviewees often hoped that rural fishers could somehow become involved in commercial tuna fisheries, but there are intractable problems with involving rural small-scale fishers in commercial tuna industries, mostly because the perishable nature of the product makes it difficult to transport to markets at a reasonable cost. Other ways for coastal villagers to benefit from commercial tuna industries include channelling proportions of commercial fisheries license fees into trust funds for rural coastal development projects. Most of the Tuna Management and Development Plans in the region included such a plan, but Marshall Islands was the only one of the countries covered by this report that had instituted such a fund by 2005.

The most significant strategy employed to distribute benefits has been spreading industrial tuna developments out away from established industrial or urban centres. In PNG this has led to large-scale processing ventures in Madang, Wewak and Lae, with longline developments spread even more widely. In Solomon Islands there are fisheries bases at Tulagi and Noro, with many people aspiring for an additional base in Malaita (Bina Harbour). In Fiji the Pafco cannery/loining plant is located at Levuka on Ovalau, rather than in Suva (substantially increasing operating costs).

The problem with spreading tuna developments out geographically is that it exacerbates the diseconomies of scale that already damage the economic viability of PIC developments. Having many locations for industrial development means each suffers from infrastructure and human resources deficiencies that make them uncompetitive internationally. RD has been trying to attract more businesses to Madang for some years but the Papua New Guinea government seems to want ‘a tuna factory in every port’, echoing the ‘meat cannery in every town’ scenario of the late 1980s that saw the establishment, and subsequent collapse, of several competitors to James Barnes Pty Ltd’s monopoly (Bowman 2005). Political and social aspirations to spread developments around the country thus constrain the economic viability of domestic industries, thereby confounding the overarching economic aspiration to capture more wealth from tuna resources via domestication. Policy decisions about the geographic locations of tuna developments are a juggling act between the economies of scale and synergies provided by consolidating industries, with social and political imperatives to bring developments to particular locations.

Recommendation 3

Base tuna management and development on the principles of Ecologically Sustainable Development (ESD), balancing economic, environmental and social goals and outcomes.

2. Increase Access Fees

Access fees for DWFNs constitute an important source of revenue for four of the PICs covered by this study (Marshall Islands, Kiribati, PNG and Solomon Islands), all of which are members of the PNA group. Revenue shortages mean many PNA countries are unable to provide adequate health and education services for their populations, and income from access fees provide vital discretionary budget support. Many commentators, for example, at the Pacific Islands Forum, have remarked on how little of the gross value of the tuna fishery (usually 5-6%, with 7-8% achieved some years by some countries) is returned to states through access fees. This complaint is somewhat misleading, however, because access fees must be taken out of profits. It is

arguable that with current economic status of tuna fisheries, especially with fuel cost increases, 5-8% of gross value is possibly as high as DWFNs can be expected to pay (Tumoa, pers. comm.; van Santen and Muller 2000, Lewis 2006). Nevertheless, there are three main ways PICs can increase the revenue raised through access license fees, (in addition to making the license more valuable through improved management, as discussed in the previous section).²⁸

Re-consider the Basis of Access Agreements

While this paper assumes that DWFN-driven fishing will be an ongoing feature of tuna fisheries in many PICs, there should also be careful consideration of alternative models. One model is DFWN fishing that acts as a 'kick start' for appropriate domestic industries. Clark (2002) considers a range of options for replacing access agreements, using approaches successfully introduced in Namibia, based on fishing rights. It is a basic economic principle that by restricting rights their value increases. To introduce rights-based management of fisheries means establishing rights and empowering the individuals and locally registered companies holding the rights, who are in turn be obligated to pay fees and expected to meet certain standards in terms of investment, job creation and so forth. Clark suggests that through this approach the role of distant water access agreements is reduced or eliminated because vessels from outside the region are only allowed to operate under charter to or in joint ventures with domestic right holders.

Papua New Guinea has also been successful in pursuing a strong domestication policy by providing preferential access to fishing opportunities to those companies prepared to make onshore investment, particularly in the area of processing. Having one of the most productive EEZs in the region has strengthened PNG's capacity to implement these policies.

An approach similar to the one Clark recommends has been applied in longline fisheries in three of the countries studied (Papua New Guinea, Fiji and Cook Islands), with definite increases in domestic industry activity. Various factors including ineffective fisheries management, governance problems, and policy instability have tended to erode some of the potential gains. Nevertheless, the results show the potential benefits arising from careful review of distant water access agreements and pursuing alternatives.

Other approaches include reconsidering the current form of bilateral access arrangements, many of which are based on agreements between distant water fisheries associations with PIC governments. Such agreements tend to result in a large number of vessels being licensed, some of which are relatively inefficient. It is good economic sense to look for the most profitable vessels (and thus those most able to pay the maximum fees) through more direct licensing arrangements, possibly directly with individual companies. If current plans for the VDS are successful, these more efficient vessels will then take up the limited (and therefore more valuable) fishing opportunities (licences).

Improved Administration and Governance

PICs' fisheries administrators prefer to keep information about the real price of license fees secret, and regional bodies like FFA and consultants working in the

²⁸ Using fisheries access as an inducement for onshore development may also be seen as a way of generating benefits from DWFNs. See section 5.2 Tying Distant Water Fisheries Access to Domestic Industry Development.

region often support them in this. It has been argued that in order to be able to make a useful assessment of the economics of tuna fisheries in the region economists must know how much the access fees are, as well as the level of tied aid and other features of the agreements which many consider form part of the access equation (Gloerfelt-Tarp, pers. comm.).²⁹ Fishing operators also need clear information about fees to make long-term strategic decisions about their investments. In addition, a more transparent exchange of access agreement information, including fee levels, would help deal with the long standing divide-and-conquer tactics employed by DWFNs, who thrive on intense bilateral negotiations. More information sharing is thus one improvement to distant water access negotiation frameworks that could help capture more wealth from tuna.

Another improvement that could be made is to increase the level of expertise available to coastal state negotiation teams, which would be a useful addition to the exchange of information suggested above. Usually DWFNs host negotiations and only offer to pay for a limited number of fisheries officials (often two) to come to negotiate. One interviewee suggested FFA advisors should join coastal state negotiation teams, as was the case in the early days of establishing fisheries agreements in the region. A number of interviewees also said that it would be of value to have negotiations conducted in the coastal state, so that experts from all relevant government departments could participate, strengthening negotiation teams.

Some form of ‘gift’ to coastal state negotiators was widely assumed by interviewees to be part of distant water access negotiations with at least several of the DWFNs. It was felt that such gifts were probably a negative influence on the outcome for PICs, because they carry an expectation that the recipients of gifts would not push so hard for higher fees. An added advantage of having negotiations conducted in coastal states would be to diminish the opportunity for the passing of ‘brown envelopes’ in various forms to influence negotiations. Dealing with governance problems in access fee negotiations has an immediate positive effect on the amounts of revenue generated. Papua New Guinea’s fisheries bureaucracy reforms led to revenue from access fees jumping from an estimated USD\$5.8 million in 1999 (Gillett and Lightfoot 2002) to over USD\$9 million in 2002 (Lewis 2005), to USD\$13.6 million in 2003 (Preston, pers. comm.). In Solomon Islands the Fisheries Department was audited in 2003 and several millions of (US) dollars were found to be missing (Islands Business 2005). Some bureaucrats were removed from office for suspected corruption. After the audit revenue from fees jumped from an estimated USD\$1.9 million in 1998 to USD\$3.9 in 2004 (see Country Profile).

Governance issues in access fees are not just about corruption and setting up systems that are transparent and accountable; they are also about capacity. Small government departments without experts in fisheries finance find it difficult to know the best basis for calculating fees, and to independently check market figures to make sure DWFNs are paying the appropriate amounts (McCoy and Gillett 2005; van Santen and Muller 2000; FFA 2001). FFA has provided assistance in the form of bilateral briefs to individual countries to inform bilateral negotiations, but could do considerably more

²⁹ Although PICs have kept information about the precise amounts of aid connected to fisheries access secret, the extent to which aid from sources like Japan and the EU is directly tied to fisheries access may not be as great as often assumed. For example, both Japan and the EU have large aid programs in Tonga, which gives them no particular fisheries advantage.

if FFA personnel were included, at least on occasional basis, as advisors on national delegations.

Alternative Negotiating Models

Over the years there have been many studies of alternative access arrangements that could enable PICs to increase fees. The most obvious one is that PICs should negotiate collectively with DWFNs rather than bilaterally. Lewis (2004) suggests at the very least sharing information amongst neighbours or like-minded countries to enabling a semi-coordinated approach to access negotiations. Lewis notes that coordinated or semi-coordinated approaches have not been tried in the prevailing atmosphere of secrecy and mistrust that pervades access negotiations in the region.

PICs have never tried most of the ideas raised in previous studies³⁰ on how access fees may be increased. Some of the reasons they have not been tried may include:

- Most studies were done by consultants who submitted reports to the FFA Secretariat who are already well aware of the issues; they were not discussed in consultative forums/workshops, either at a national or regional level,
- A perception that cooperation would mean surrendering sovereignty and decreasing the ability to negotiate ‘tailor made’ agreements suited to each PIC,
- Unwillingness to redistribute benefits to recompense for cooperation from less endowed PICs in the FFA group,
- A perception that PICs that might lose out from bilateral aid deals if they join a multilateral push to negotiate fees (a threat Japan has made),
- Unwillingness to forgo personal ‘perks’ of bilateral arrangements, and
- Inertia of small government departments trying to get by on very limited resources with limited capacity simply being unable to try new things or organize joint negotiations.

Recommendation 4

Hold an access fee summit (hosted by FFA) including PIC fisheries officials, other stakeholders and experts to discuss various ways of licensing DWFN vessels, including improving the existing access fees-based arrangements and alternatives, such as appropriate rights-based/licensing/chartering arrangements. The summit should revisit the many reports on increasing access fees that have been produced over the years and consider seriously which ideas may work in practice.

3. Creating a Business Environment for Capturing Wealth

Probably the biggest impediment to domestic tuna industry development in PICs is that the business environment is largely not conducive. Production environments are high cost and macroeconomic policies encourage investor mentalities of short-term gain rather than long-term commitment. While the much maligned Ting Hong company was infamous for this kind of mentality in the 1990s, it should be noted that PIC governments have attracted this style of operation by making it very difficult for foreign and even locally based companies with more long-term visions to be

³⁰ Lewis (2004) provides an excellent summary of the current status of access agreements, including possible strategies for improving the outcomes of access fee negotiations.

successful. Improving macroeconomic policies and fixing some of the policies obstructing business development will improve levels of foreign and local investment in business in general, including in tuna industries. Following is a list of areas where PIC governments can facilitate investment, including for tuna industries, drawn from ideas put forward by interviewees and the literature (especially Gillett [2003]).

3.1 Role of Government

Our research found that very few fisheries officials believed state ownership of enterprise was a good idea. State ownership has continued in places like Kiribati where it is not clear how government might best withdraw from commercial operations set up by government years ago, and how public sector involvement can be avoided when there is a negligible private sector (Onorio, pers. comm.). Most fisheries officials interviewed felt that the private sector was the appropriate engine of development, so government's role was to set up a policy environment that would encourage private sector investment. Translating this very appropriate aim into reality has some way to go in most PICs and should be a key objective for those states wishing to attract and hold appropriate investment in tuna fisheries.

Coordinated Approach by the Whole of Government

With tuna being one of the major economic resources for many PICs, it is important that the whole of government has a working knowledge of tuna fisheries development policies, not just the fisheries departments. Sometimes senior government officials in other parts of government, who are not aware of the history of failure of virtually all government-owned fisheries enterprises in the Pacific, keep the call for state ownership alive:

I suggest that the State should establish a State enterprise to own a fishing fleet to harvest the resources of our economic zone including seabed resources... whilst also giving absolute preference to Papua New Guinean investors in the fishing industry. (The National 2005)

If such calls become influential in policy-making then vast amounts of revenue could once again be wasted.

Another reason it is important for other government departments to be aware of developments in fisheries is that other departments can unintentionally obstruct tuna industries. For example, the national carrier Air Niugini did not effectively have the capacity, competitive prices, or the route connections to be suitable for chilled fresh tuna exports, so Papua New Guinea longline fishing companies tried to organize charter flights from an airfreight company. Air Niugini, however, wanted to retain its monopoly status, so lobbied effectively to prevent departmental approvals for regular use of the airfreight company and prevented any tuna shipments from using the cold store facilities for tuna at Port Moresby airport (The National 2005). After several years the company Heavylift secured permission to run regular tuna freight flights from Port Moresby, without access to the cold store, but by that time all of the longline fisheries outside Port Moresby had closed down, largely due to the high price and logistical difficulties of Air Niugini's services (Tai 2004). Everything from taxation on inputs, through immigration rules for crew/other staff, to port infrastructure and roads affects tuna businesses, so interdepartmental coordination of policy-making and administration is vital.

3.2 Policy Stability

Policy uncertainty is a major constraint to industry development in PICs (Bowman 2005). Without it businesses cannot estimate their future costs and business options. The nature of politics in many PICs is not conducive policy stability. Frequent changes of minister and government means policies of the previous government may be discarded. Research for this report uncovered many instances of policy instability, and industry interviewees cited it as a problem. Frabelle in Lae in Papua New Guinea had built a fresh tuna loining plant attached to its cannery, and hoped to source the raw material (tuna) from pump boats. Someone in the government had given Frabelle ‘in principle’ approval for 100 pump boat licences and Frabelle was planning its enterprise accordingly (Defensor, pers. comm). However, because of concerns about coastal resource management, neither the national nor the provincial government wanted this many licenses in one place, and as of 2005 Morobe Province was planning to allow only ten licenses, at least initially. The Tuna Pacific company encountered similar problems in Solomon Islands. For a couple of years the company had been granted a ‘Development License’ as a domestic company under the 2000 Tuna Management and Development Plan. Then in 2004, because the Plan had never become legislation it was found that ‘Development Licenses’ did not legally exist, Tuna Pacific’s status was changed and the company had to pay much more expensive fees as a distant water company. In both of these cases the second government decision was the correct decision; the problem lay in having given out and promoted incorrect policy advice in the first place.

It is important that investors are provided with accurate ‘bankable’ information about policies when seeking to undertake domestic tuna industry developments, rather than receiving conflicting advice from government.

3.3 Taxation and Other Government Fees

Fisheries managers understand that excessive taxes can threaten development, but taxation officials may see tuna developments as a source of revenue to be ‘milked’ (Gillett 2003). Locally-based foreign fleets were ‘chased out’ of Papua New Guinea in the 1980s by increasing duties on fish exports. Economists recommend a stable, fair, effective tax regime as beneficial, while ‘rubbery’ tax regimes where companies feel they can pressure government to avoid certain taxes as an incentive to invest are not helpful to business development (Hand 1999). Previous reports have found that investors in general tend to prefer stable reliable policies and trading environments over financial concessions (Gillett 2003; ADB 1997).

Our research found that PICs still tend towards punitive taxation regimes with *ad hoc* tax relief offered to some investors. In Papua New Guinea one report estimates that the level of incentive given to RD in its first five years of operation means lost revenue cancelled out the development gains in those years of having the large processing factory employing 3,000 people in Madang (Gillett Preston and Associates 2000). Kiribati has had charges of up to 60% on some tuna industry inputs. Solomon Islands government contributed to NFD leaving the pole-and-line fishery by charging 35% duties on a new vessel. On the other hand, the Marshall Islands government decision to cut taxes on fuel for tuna vessels was one of the factors that enabled its

service and supply industry to take off, in line with Gillett's (2003) finding that low fuel taxes were directly related to domestic industry development.

3.4 Effective Efficient Government Services

One of the main ways government can create an enabling environment for businesses is through providing timely, accessible, effective, consistent and reasonably priced services. The World Bank's Foreign Investment Advisory Service (FIAS) Sydney office could assist with implementing such changes in PICs. Some of the main government services raised by interviewees as important for tuna industries include:

- Fisheries Licensing
 - In Papua New Guinea lengthy delays in fishing licenses for domestic operators add to investor uncertainty.
- Foreign Investment and Working Visa Approvals
 - In Cook Islands the Development Investment Board (DIB) facilitates investment applications through other government departments. The DIB can facilitate 3 year working visas in a two week turnaround,
 - 'Silo' departmental approaches in Solomon Islands, PNG, and Kiribati means investment authorities can do little to facilitate applications; business and work visa application processes are said by investors to be cumbersome and add considerably to costs.
- Meeting Food Safety Requirements for Export Destinations
 - Meeting the requirements for the USA Food and Drug Administration and the EU 'list one' status on monitoring and regulating food safety standards to enable fishery producers to export easily to these lucrative markets. Currently only PNG has EU list one status.
 - Marshall Islands has used FAO assistance with hazard analysis critical control point (HACCP) systems to improve market access for its fresh tuna exports.
- Administration of Land Tenure
 - Access to land for business development was a constraint in all of the PICs covered in this report; for reasons of limited space in Kiribati, Marshall Islands and Cook Islands, but also because customary land tenure systems make it difficult to acquire secure, reasonably priced access to land for commercial purposes in many PICs.

Recommendation 5

PIC government officials, with industry representatives, review the delivery of government services, to highlight bottlenecks and ways of streamlining bureaucratic processes to increase industry efficiency and thus profitability.

3.5 Infrastructure

Domestic industries and service and supply industries for DWFNs have been constrained in many PICs by a lack of infrastructure, and inadequate maintenance and management of infrastructure (Gillett 2003). To some extent the private sector will

provide its own infrastructure where necessary. On the other hand, the RD and Soltai³¹ processing companies have had to install infrastructure (such as a fresh water supply) that in competitor countries would be provided for them, which has added to already high production costs, detracting from their economic viability and therefore their capacity to generate wealth for PICs. Sea port and airport infrastructure were most commonly cited as in need of improvements.

Freight

An FFA study into air freight from 2002 identified regional domestic longline industries as being at risk from their reliance on passenger routes provision of low capacity high cost air freight (Tamate 2002). Conditions have deteriorated since then, with fuel price increases and new passenger planes having lower freight capacities. Of the countries covered by this report, only Cook Islands and Fiji had large enough tourist industries to have the connections for reasonably priced airfreight on passenger planes to the appropriate destinations (Japan, Europe and the USA). Remaining countries covered by this report used a combination of dedicated freight and passenger flights. Amongst many other recommendations, the FFA report recommended regional coordination of air freight to address these problems. This report was one of those that failed to be disseminated to people who might be able to use it—apparently only one industry person saw the report during the period when it was ‘fresh’ and its recommendations might have been useful (Gillett, pers. comm.). However, it seems likely that if regionally organized commercial freight routes for tuna industries were commercially viable the private sector would already have moved into this area.

High cost infrequent sea freight was also cited as a major impediment by industry interviewees. Sea freight added greatly to canning/loining production costs in Papua New Guinea, Solomon Islands and Fiji. Marshall Islands’ loining plant had a sea freight advantage, with a high volume of vessels bringing fresh food and drink for USA military personnel based in Marshall Islands.

There is a limited amount PIC governments can do to effectively facilitate freight, especially if they have small populations and are geographically remote from major trade routes. Getting goods in and out at competitive prices effectively limits domestic tuna development in many PICs. The only way freight costs can become economic in these circumstances is if freight is consolidated and its volume increases, for example, through large-scale domestically based production.

The private sector can work out for itself whether a particular location has adequate transport links, and whether air and sea port infrastructure is adequate and efficiently run. There is a great deal of scope for government improvement of infrastructure facilities and management, but investments in expensive infrastructure should only be conducted after extensive industry consultation to avoid wasting money on inappropriate facilities. Regionally, the increasing interest in establishing land-based ultra-low temperature plants to produce high-quality frozen loins may justify the establishment of a limited regional fish sea freight service, as long as this is private sector driven.

³¹ While the Japanese partner company was involved this company was called Solomon Taiyo Ltd. When the company was reconstituted following the withdrawal of the Japanese partner in 2000 it was called Soltai Fishing and Processing Ltd.

3.6 Finance

Interviewees for Gillett's 2003 study raised government facilitation of credit for fisheries as a necessary intervention for development of tuna fisheries (Gillett 2003). In our study, credit only seemed to be a constraint when there was a lack of commercial track record. Interviewees from profitable companies such as Land Holdings in Cook Islands and NFD in Solomon Islands said they had no problem with access to commercial finance. Companies such as Soltai, with a poor profitability record, did have problems accessing finance. Access to finance is thus directly related to profitability.

Robert Stone, Fiji

After managing the Fiji government owned fishing venture Ika Corp for some years in the 1970s, Robert Stone wanted to enter the industry himself. He approached the banks for a loan to buy a tuna pole-and-line vessel, but was refused on the basis that he had no track record as a commercial fisherman. He then bought a small boat with his own money and fished commercially for snapper for three years. He returned to the Development Bank with the records from his snapper fishing venture and was given 100 per cent credit for his first pole-and-line boat. He successfully operated this vessel, and others he bought, for more than a decade before declining skipjack prices encouraged him to leave the fishery.

Gillett (2003) has pointed out that failed domestic development attempts in the past have had negative effects on the availability of credit for fisheries industries. Most PICs have made finance available for domestic fisheries development via development banks or aid projects to businesses that would not be financed under commercial lending criteria. Virtually all of these have failed, with negative financial consequences for the borrowers. Giving PIC fishers access to credit when they may not be credit worthy and are unlikely to make a commercial success is generally worse than not helping them. The resulting financial ruin and damage to their confidence as well as that of the lending institutions impact severely on future development.

Tuna fishing is a high risk industry so governments, donors and other institutions should be wary of facilitating access to credit for inexperienced business people, and heed should be taken of the commercial banks' views of the sector.

3.7 Investment Hubs

Fisheries, fishery service and supply industries and fish processing industries may all enjoy economies of scale and synergies from consolidating in industrial investment 'hubs'. China's 'export processing zones' have become the center of the economic boom on the east coast. Other countries have also successfully generated business development through clusters of firms with operational synergies, which share a pool of infrastructure and resources (including human) that improve as more companies join the hub. Business studies have long recognized clusters as drivers of innovation, facilitating business development by increasing the productivity of the companies in the cluster, and by stimulating new businesses (Bowman 2005).

Economic viability has been a major constraint on PICs generating more wealth from their tuna resources, especially because of high cost business environments. Policies

encouraging the development of hubs with core competencies and supporting infrastructure may assist with tuna industry development. RD in Papua New Guinea has attempted to attract other investors to a marine industrial park north of Madang, but PIC governments have not employed the idea of hubs in development policy. Indeed, for social and political reasons outlined earlier, PIC governments have done the opposite and damaged the economic viability of domestic industries in order to spread the benefits of development, often for political reasons.

A hub approach to development policy would help alleviate diseconomies of scale for freight, and make it more likely governments could afford to provide and maintain adequate infrastructure.

4. Creating Public Policy Systems for Capturing Wealth

Fisheries policy reform and departmental restructuring in some PICs has led to improved business environments and therefore greater private sector development. On the whole, however, fisheries departments have not tried most of the ideas suggested in the many reports on fisheries development produced by the FFA, SPC and ADB. PICs unable or unwilling to adopt governance reforms in recent years have had stagnant private sector development. Some of the key changes that can enable PICs to capture more wealth from tuna are:

- Reorienting public policy towards enabling private sector development,
- Greater openness with useful information about tuna, and
- Improving governance.

Below are some suggested improvements to fisheries government systems and related processes that may improve returns to PICs.

4.1 Fisheries Authorities

The experiences of Papua New Guinea in restructuring from a government department oriented to fisheries extension services to a relatively independent statutory authority oriented to provision of services to industry and collecting fees on behalf of government (ADB 1998), offer many lessons for the region, both in terms of successes and of things that have not worked so well. Most PIC fisheries bureaucrats are paid extremely low salaries, which is not a good incentive. Under the National Fisheries Authority (NFA) reform, staff were paid more, and expected to work at a higher level than they had in the old department. NFA was well funded and equipped to do its work, which had a positive influence on outcomes, such as greatly increased revenues gained through access fees. Improved policies and administration also contributed to a boom in domestic development. The value of Papua New Guinea's tuna exports went from around PGK3.5 million in 1996 to over PGK220 million in 2002 (Gomez 2005). The main problem for NFA proved to be that which devils statutory authorities the world over—it is difficult to ensure good financial governance. A number of PICs in this study were considering a move to the Fisheries Authority model because it has much to offer in terms of staff incentives to excel, arms length operation from the Minister, ability to make decisions and accountability, but these PICs have hesitated because the authority model requires a high level of

good governance and trust. A powerful but dysfunctional Board structure open to bias and corruption presiding over many millions of dollars of public funds may actually be worse than existing bureaucratic structures.

4.2 Tuna Management and Development Plans

Gillett (2003) found that countries that adopted Tuna Management Plans had positive outcomes in policy making for and administration of tuna industries in terms of transparency, stability of policies affecting the sector, and government-industry consultation. Based on our observations, it would appear that the Tuna Management Plans were not the causal factor behind improved policies and administration; rather, the improvements came from the will and capacity to improve governance, and Tuna Management Plans were a valuable guide for those improvements. For example, Fiji and Papua New Guinea made extensive reforms to their governance of tuna industries over the last decade, and actively used their Tuna Management Plans as part of that. Marshall Islands and Cook Islands did not have Tuna Management Plans, but they also made governance improvements, some of which were along the lines suggested in reports commissioned as preparation for making Tuna Management Plans, such as Chapman (2004b), Anonymous (c.2003), Chapman (2001), and Aldous (2004). Solomon Islands and Kiribati both had comprehensive detailed Tuna Management Plans, but had not followed them.

Some form of publicly available plan or charter of fisheries policy is important for transparency and for the private sector to be able to rely on policy directions. However, for the plans to be reliable they should have legislative force. One of the problems with the Plans drafted over the last five to seven years is that they were not well 'owned' by Pacific Islanders, being drafted by short-term consultants rather than PICs themselves. In addition, there has been limited follow-up in terms of evaluating progress with the plans and regularly revising them to take account of the highly dynamic nature of the tuna fishery.

A great deal of effort and resources have been put into Tuna Management Plans regionally over the last decade. It may be a good time to review this process and consolidate understanding about what has worked and what has not and why before moving forward with more work in this vein.

Recommendation 6

Review successes and failures in tuna management and development planning processes to date and base future efforts on lessons learned. Develop tuna management plans such that they are 'owned' by nationals and have agreed, achievable goals and timelines. Plans should have legislative force, rather than being 'flexible' enough to be ignored. Progress needs to be assessed on a regular basis, and goals and strategies revised to ensure alignment with national and regional policies, as well as tuna fisheries and market dynamics.

4.3 Consultative and Transparent Decision-making

Consultative decision-making can make for more effective policies in various ways.

- **Industry** can help make better informed management and development policies and administration,

- **Environmental NGOs** can help with resource management and public relations,
- **Social and political stakeholders** can help make more socially and politically apt policies and administration, and help with public relations,
- **Other government departments** can promote consistent policies and help address relevant issues outside fisheries' jurisdiction (like taxation), and
- **Other PICs** can improve and harmonise management and development initiatives.

PIC governments, however, tend not to see the potential value of external input to decision-making processes. Tuna Management and Development Plans included institutionalising and regularising inter-government departmental and other stakeholder input into decision-making through consultative committees but none of these ideas have been implemented in a significant way, although some governments amongst those covered by this study have *ad hoc* cross sectoral consultation. On the whole PICs have been 'slow to embrace the concepts of transparency and consultative processes' (Cartwright 2004).

Non-government Organizations (NGOs)

NGOs can act as a conscience to help moderate government policies and help keep governments in contact with their constituents, but NGOs have not thus far played much of a role regarding tuna management or development in the region. PIC governments are not used to including NGOs and do not really see NGOs as being legitimate voices in decision-making processes. PIC governments fear that a range of problems will arise if NGOs are allowed into government processes (Cartwright 2004). Some PICs take an adversarial approach to industry NGOs (INGOs) (Gillett 2003), and many are suspicious that environmental NGOs (ENGOS) are anti-government and/or anti-development. One of the problems accepting NGOs into decision-making processes seems to be the perception that NGOs are 'Western', so developing a 'Pacific Way' for NGOs could help them being seen as legitimate stakeholders by PIC governments. In addition, PIC NGOs are not well enough funded to participate effectively when participation requires travel (Cartwright 2004).

Strong fishing associations seem to be positively correlated with industry development, while poor industry-government dialogue correlates with difficult business environments (Gillett 2003). The relationship between industry and government should ideally be one where industry can freely provide constructive criticism of government without fear of reprisal, and where government is able to constructively respond and make changes where appropriate. PICs' presentations of issues in the MHLC and PrepCon processes leading up to the WCPFC showed the lack of INGO input, being government focused rather than tailored to meet the needs of domestic industry development (Cartwright 2004). INGOs are important because they are at the 'coal face' of fisheries management, and so understanding of their situation is crucial for effective management, especially in terms of setting fees and compliance (Cartwright 2004).

Notwithstanding a general reluctance to include other stakeholders in decision-making processes, Gillett (2003) found that INGOs were seen by PIC governments as a positive thing. And PICs have included INGOs in some decision-making and negotiating processes, certainly more often than ENGOS (Cartwright 2004). In July-

August 2005, the Solomon Islands government held a national fisheries workshop to set government's strategic plan, which included ENGO participation. In late 2005 the Fijian government was working closely with industry groups to improve fisheries license conditions for 2006.

Interviewees noted that the regional fishing industry association (Pacific Islands Fisheries Industry Association—PIFIA) established in September 2004 had, despite a promising start, not really worked as planned because company owners were mostly too busy to participate effectively. This reflects findings from another study that found industry representatives did not have the time to attend lengthy regional fisheries management meetings (Cartwright 2004). The Tuna Boat Owners Association of Australia worked around this problem by employing a professional representative familiar with government processes and able to effectively disseminate information both ways and lobby government on behalf of industry. This model may be a useful one for PIFIA to consider.

Recommendation 7

Appoint a professional regional representative (possibly part-time) to represent the interests of PIC tuna industries, working closely with the FFA. The representative should be adequately funded to travel and liaise to improve consultation and inclusion. In particular, the representative should attend regional meetings and set up information networks with industry players.

Constraints relating to environmental issues are becoming increasingly important for tuna industries. These issues may be relatively minor compared to tuna stocks and bycatch management, but they impact on PICs' ability to sell their products in the sensitive markets of the USA and Europe. A recent study has found that 79% of European consumers, supermarket buyers, chefs and restaurateurs said that the environmental impact of seafood is an important factor in their purchasing decisions (WWF 2005). In 2004 sales of loins from Soltai in Solomon Islands to Italy were blocked by environmentalists campaigning against Solomon Islands allowing live dolphins to be caught and exported for amusement parks. International campaigns to ban long lining because of stock depletion in some tuna species and incidental deaths of birds, turtles and sharks damage the public image of tuna as a product, as does damage caused by pollution from vessels and ship groundings. If brought into the decision-making process, some ENGOs can work with governments and industry to improve in these areas.

Recommendation 8

Bring industry, environmental and social/community NGOs into consultative decision-making processes as envisaged in Tuna Management Plans.

4.4 Availability of information

One of the contributing reasons for the lack action by PIC governments in exploring the feasibility of more of the ideas in reports already commissioned on developing tuna is that they are often not easily available. SPC and ADB have made many of

their reports available on their websites, although the SPC website is not very easy to use. FFA, however, keeps country specific reports confidential, leaving it up to PIC governments to disseminate them as they see fit. SPC treats its very useful national tuna status reports the same way. PIC governments rarely make reports freely available within relevant departments, let alone to industry or other stakeholders. As a result the usefulness of the many expensive reports produced is curtailed, the main beneficiaries being researchers and consultants like ourselves who have the contacts to be able to access them. The second step therefore is to make the reports more widely (in most cases publicly) available so that other stakeholders, especially industry, may also make use of the ideas in them.

Recommendation 9

Sponsoring agencies to make consultants' reports publicly available as a general rule. FFA or SPC to develop and manage a publicly accessible bibliography database of publications and reports with relevance to tuna in the region.

4.5 Accountability in Tuna Governance

Papua New Guinea's reforms in fisheries governance since the late 1990s demonstrate useful lessons for other PICs. On the one hand the improvements to government capacity and policy were reflected in booming domestic industries and increased revenue from license fees. On the other hand improvements in the fisheries sector could not be quarantined from the governance problems remaining in the Papua New Guinea government system as a whole (Pitts 2002; Lewis 2005). Current thinking on corruption prevention indicates that it is best approached as a whole of government (or even whole of society) issue (Larmour and Wolanin 2001). In this sense fisheries policy makers can improve transparency and accountability within fisheries, while collaborating in wider efforts to improve these factors in government as a whole.

In recent years both the Fijian and Solomon Islands governments have taken steps to make fisheries officials accountable for apparent corruption with license fees. In addition, the Solomon Islands Fisheries Department, as part of a government-wide initiative, has started improving its administrative systems to be more accountable, through having the budget tied to documented planning, budget estimates, and annual reporting of achievements and expenditure.

While high levels of corruption have not necessarily impeded economic growth in countries around the world (China is one example), industry interviewees for this study were unanimous in describing corruption as a constraint on their business. They said corruption inhibited their investment because it meant the costs for fees and government services were uncertain, it meant policies and government treatment of their business were unreliable, and they also felt it made the future of the resource uncertain (because corrupt officials may allow overfishing to occur).

5. Industrial Development Policies

It is a widely held belief that because most PICs have a high cost production environment, they do not have competitive advantage for developing domestic tuna fishing or processing industries. Some economists therefore advocate that PICs would

gain more wealth from maximizing access fees from fleets from countries that do have competitive advantage in tuna fisheries, while concentrating on improving economic institutions and business conditions so that private sector development may occur independently (Petersen 2002, 2002). On the other hand many of the fisheries development projects of the past were government owned, and were thus almost by definition inefficient. And as we have discussed in a previous section, individual PICs have very different potentials for achieving domestic tuna industry development.

Furthermore, domestic tuna industry development in PICs, even if somewhat economically skewed, at least brings some benefits in terms of employment and human resources development (Rodwell, pers. comm.; Barclay 2000, 2005). In any case, most PICs strongly desire to develop domestic tuna industries and use taxation incentives and tied fishing licenses to encourage such development.

The many failed domestic development attempts from the past contain lessons about what does not work. These failed projects have damaged Pacific Islanders' faith in business as a way to achieve development and influenced the confidence of banks and other lending institutions in fisheries, as well as wasted a lot of government revenue that could more usefully have been spent in health and education systems. One of the important recommendations from Gillett's (2003) report was that any new developments should be technically and economically evaluated before any investment is made. The following sections (5.1-5.5) detail strategies for industry development based on what has worked and what has not worked in the six PICs covered by this study.

The importance of undertaking comprehensive and well-considered feasibility studies of prospective projects, including economic, biological and social impacts cannot be underestimated.

5.1 Developing Domestic Fishing Industries

Natural resources specialist with the Asian Development Bank Thomas Gloerfelt-Tarp is puzzled by PICs' determination to domesticate industrial tuna fishing as a way to bring more of the profits from tuna industries in-country, considering that in his view tuna fishing has not been very profitable for more than a decade (Gloerfelt-Tarp, pers. comm.). Many of the Pacific Islander fisheries officials interviewed for this project were aware that it is very difficult to make a profit in tuna fisheries, but they still aspire to have locally owned and managed tuna fishing companies. Kiribati's Permanent Secretary for Fisheries David Yeeting explained that this aspiration was 'an emotional thing'. The sea and fish are so important in Kiribati culture, I-Kiribati want to be involved in tuna fishing despite the difficulties (Yeeting, pers. comm.). This being the case, it is vital that PICs learn from previous fisheries development successes and failures to help identify those fisheries projects that are most likely to cover their costs and least likely to cost PIC governments scarce revenue.

Many reports have outlined potential fisheries development policies for purse seine, longline and pole-and-line fisheries (ADB 1997; Chapman 2004; Gillett 2003).³² We do not therefore present an exhaustive list of all possibilities for domestic fisheries

³² See also the many reports available on the SPC and FFA websites.

development; rather, we present a list of principles underpinning successful domestic fishing companies in the PICs covered by this report. Most of these relate to longlining, as this is the option most commonly pursued for domestic development.

Decreasing the Fuel Bill Helps Viability

Rising fuel prices are part of the reason fishing is less profitable these days. Governments can provide some relief by making sure their taxation regime and infrastructure for fuel delivery do not unnecessarily add to fuel prices. Some companies with fleets of ten or more vessels have been working out ways to reduce their fuel consumption by using carrier vessels to take fuel to their fishing fleets in the fishing grounds, and bring back the catch, rather than have each fishing vessel steam to and from port to offload catch and fill up with fuel. Central Pacific Producers avoids Kiribati's high fuel costs by using its carrier vessel to source fuel in Marshall Islands. CPP also intends to source fuel from DWFN bunkering vessels rather than the domestic supplier when its fishing operation in the Line Islands comes on line.

Fisheries Should Be Precisely Targeted to Local Resource Endowments

The case of Cook Islands' southern longline fishery demonstrates clearly the importance of matching fishing style to local resource endowments. A Taiwanese company Gilontas used vessels and crews accustomed to fishing for albacore for the cannery market, but Cook Islands albacore stocks are not productive enough for this kind of relatively high volume low value per unit style of longline fishing. Gilontas withdrew from Cook Islands within a couple of years of entering the fishery. Land Holdings Limited focussed on maximizing the quality and therefore the value of each fish through careful handling on board and getting the fish to market quickly. Cook Islands' southern waters contain fish that can fetch very high prices on the sashimi market, including bluefin. This approach to fishing has built the reputation of Cook Islands tuna in the Japanese chilled sashimi market. Land Holdings Limited has achieved prices of up to NZD\$60,000 per fish and is financially successful, despite the seasonal nature and relatively low productivity of the southern Cook Islands fishery.

Chilled Fish Export Businesses Need Suitable Air Freight Arrangements

No matter how good catches are, if the fish cannot be brought to market in good condition for an economical cost they cannot form the basis of a successful business. Logistically suitable, viably priced air freight continues to be one of the major problems faced by the longline business managers interviewed for this project. Successful companies used one of two kinds of air freight arrangements.

1. The first kind is where large international tourist industries mean there are frequent passenger flights on planes with suitable freight capacity (and there are local markets in the hospitality industry for B and C grade tunas). In this study that was Fiji and Cook Islands. However, even in countries with large tourist industries businesses focussed on exports of chilled tuna are facing difficulties. With recent CPUE declines in Fiji's fishery the business has been marginal. One of the major carriers in Cook Islands recently changed to using the new generation of passenger jets that maximize passenger space at the cost of freight space, meaning Cook Islands logistics are less favourable than they were.
2. In countries without large international tourist industries a few companies arranged workable airfreight by using dedicated freight planes to get fish to a hub where it was transferred to large passenger jets going to chilled fish market destinations. These companies included Equatorial Marine Resources in Papua New Guinea, Marshall Islands Fisheries Venture and, until recently, Solgreen in Solomon Islands.

Ultra Low Temperature Frozen Tuna can be Sea Freight to Lucrative Markets

The difficulties and expense involved with air freight means it is good if fishing companies can use sea freight. Because tuna oxidizes when frozen under normal conditions frozen tuna cannot be sold in the most lucrative fresh fish markets, which is why most PICs have relied on air freight to export chilled tuna. Tuna frozen to ultra low temperatures (ULT, -60° Celsius), however, does not oxidize, but maintains its red hue, so can still be sold as sashimi and tuna steaks. High technology, expensive Japanese distant water longline vessels have for decades been freezing their catch on board. Of the countries visited for this project only Fijian operators have thus far made use of ULT technology. Tosa Bussan of Fiji had a ULT freezer in its processing factory and exported yellowfin and skipjack (*tataki*) loins for good prices to Japan. The Fiji branch of Solander had a third-hand ULT freezing machine it used for exporting sashimi grade loins to Japan. ULT had been banned in PNG under the domestication policy, on the grounds that ULT was such high technology that it could not be easily domestically owned or managed. Solander's machine, however, was maintained and used effectively in Suva, so it seems possible that some kinds of ULT technology might be utilized by more domestic industries in PICs.

Suitable Markets for B and C Grade Tunas Strongly Influences Longline Fisheries Viability

The highest price can be achieved on the sashimi market, but only a small proportion of each catch is A grade bigeye or yellowfin. The rest of the catch must also be sold at reasonable prices, for which there are a range of markets. Expanding sashimi markets outside Japan and tuna steak/fillet markets accept fish of lower grades and smaller sizes than the Japanese sashimi market. In Fiji and Cook Islands the tourist industry provides a relatively high priced domestic market. Papua New Guinean operators also sell a small amount of fresh tuna locally, or to Australia. Southern fisheries that include a high proportion of albacore in the longline catch can sell that to canneries, although the cannery price is low. Fiji Fish airfreights high quality albacore chilled to the UK tuna steak market for a good price. Papua New Guinea's EMR and Marshall Islands' MIFV also export loins and steaks to the EU or USA. In 2004 a couple of operators in Papua New Guinea treated fresh tuna loins with carbon monoxide gas (tasteless smoke) so as to be able to freeze B and C grade tuna and export it by sea to fresh fish markets without the loins oxidizing and going unappetizingly brown (it should be noted that gassing is not accepted in many markets). In Fiji, Cook Islands and to a lesser extent Kiribati it is also possible to sell to small-scale 'gourmet' processors.

Tuna Fishing Businesses Need Large Cash Reserves

Fluctuations in the availability of the resource due to oceanographic effects and the volatility of tuna markets mean that inevitably tuna companies have bad years when they make losses. Some fisheries, such as Cook Islands' longline fisheries and Fiji's skipjack fishery, are highly seasonal. Companies need to be sufficiently profitable and/or diversified to generate cash reserves or loan equity to survive the bad years/off seasons. The revenues from fishing or, in the short-term, from other sources, need to be adequate and sufficiently well managed to allow for the adequate maintenance and replacements of fleet and equipment. A comparison of Solomon Islands' NFD and Soltai show the importance of having large cash reserves. NFD is owned by a large multinational company Trimarine. NFD can absorb losses in the bad years and maintain up to date equipment. Soltai was more or less OK when it was partly owned by Japan's Maruha, because Maruha had large cash reserves, but since the company started operating as wholly government owned in 2001 Soltai has not been able to recover from the bad years, or replace its aging fleet and shore base equipment.

Can Pole-and-line Fisheries Be Revived Through Premium Markets?

The pole-and-line method is higher cost than the purse seine method, so for it to be viable pole-and-line caught skipjack need to be sold at a higher price than purse seine caught fish. It seems possible that with some (private sector) effort in marketing and trade connections for the wealthy markets of Japan, Europe and the USA, premium markets for pole-and-line products might support a revival in PIC based pole-and-line fishing (Rodwell, pers. comm.). A marketing campaign could differentiate pole-and-line product in the minds of quality- and ecology-conscious consumers, particularly if purse seine fisheries are adequately controlled. Marine Stewardship Council (MSC) accreditation could be sought as part of marketing the pole-and-line method as environmentally 'friendly'. The Japanese distant water pole-and-line fleet survives, albeit in a highly subsidized form, so it seems worth investigating opportunities in the Japanese market for pole-and-line caught skipjack. The *tataki* market could be explored further, as could fresh (ULT frozen) skipjack markets in Japan.³³ Pole-and-line product from the Pacific has never been differentiated from purse seine product in the Japanese *katsuobushi*³⁴ market (Nakamura, pers. comm.), but it may be possible to do so and improve prices. There may also be the potential for premium prices for pole-and-line caught skipjack in the 'gourmet' delicatessen style smoked small goods

³³ *Tataki* is a skipjack loin that has been seared on the outside but is still raw in the middle. It is served in a similar way to sashimi.

³⁴ *Katsuobushi* is a popular stock flavouring in Japan, and is also used as a condiment. Cooked skipjack loins are smoke dried at a high temperature for several days then treated with a special mould. This is then crushed to a powder or shaved finely. Solomon Islands' Soltai has the largest skipjack smoking factory outside Japan.

being made in Fiji, Cook Islands and Kiribati (Rodwell, pers. comm.; Stone, pers. comm.). Lower quality fish may also be smoked for local markets. In many PICs fresh skipjack is not a preferred eating fish but smoked and/or dried it may be more popular.

A study of these possibilities could be provided by regional and/or donor organizations and supported by governments, but decisions to explore the possibilities should be made by the private sector on commercial considerations.

Suggestion:

Undertake a study into the possibilities of creating/rekindling premium quality and ecology-conscious markets for pole-and-line skipjack products.

Supply Side Measures to Increase Profitability of Fisheries

PICs have considered the idea that falling prices may be due to an oversupply of fish, and that if the FFA group of countries could restrict catches in their area it may push the prices for fish up. An economic study of this option found that the necessary conditions, such as total demand for tuna being insensitive to price changes, and the support of all member governments to impose catch restrictions, were only partially met in the case of the FFA fishery, but that small price increases in the short-term should be possible (Owen 2001). The World Tuna Purse seine Organization (WTPO) has had some success pushing prices up by restricting the fishing activities of its members, and therefore supply. Models that consider economic as well as ecological sustainability could inform supply side measures, however, the difficulties of developing such measures in a global, highly competitive market should not be underestimated.

5.2 Developing Domestic Processing Industries

All of the PICs covered in this report had aspirations to develop domestic processing industries, because 'value adding' processing was seen as a good way to capture more of the wealth from international tuna industries, and also for spreading the wealth among the population through employment, procurement, and spin-off businesses. Papua New Guinea's aspirations in this regard are the most ambitious; it hopes to replace Thailand as the world centre for tuna processing.

Chilled and frozen fresh tuna can be processed to a certain extent before export, but the highest labour (hence employment) tuna processing is associated with canning, in particular the loining process. Because of the high cost production environment in PICs compared to competitor countries in South East Asia, canneries/loining plants in Solomon Islands, Papua New Guinea and Fiji have all relied on preferential trade access to European markets and hefty tax remissions or other kinds of subsidy to be economically viable. Marshall Islands had a loining plant connected to the Starkist cannery in Pago Pago for a few years, but it eventually failed for lack of appropriate management. Kiribati is interested in establishing a loining plant but is likely to face substantial challenges, including those associated with fresh water supply and diseconomies of scale with freight.

Another kind of processing that has potential for domestic development is small-scale ‘gourmet’ plants. Because small-scale processing plants are cheaper and easier to build and operate than large-scale canneries, they constitute a form of development that may feasibly be owned and run by Pacific Islanders, subject to adequate training and management capacity. This kind of processing proportionately adds a great deal of value. In the words of one interviewee: ‘You can take a fish worth \$2 a kilo and turn it into a fish worth \$15 a kilo’. Stonefish in Fiji established a small plant with HACCP systems and sold smoked fish, tuna bacon and tuna jerky, mostly as exports to the USA. Based on that a similar plant was built in Cook Islands, with its produce sold domestically. A small plant focussing on tuna jerky for export to Asia via Fiji was built in Kiribati. A plant that could be used for smoking and related kinds of processing was built under an aid project in Kavieng, Papua New Guinea, but so far has only been used for fresh fish filleting and packing.

Tying Distant Water Fisheries Access to Domestic Industry Development

In recent years Papua New Guinea has been the main proponent of tying fisheries access to investment in shore-based developments, and has had some success. However, where access is preferential, or fees waived, there is not always an adequate assessment of whether the value of the investment to the PIC is greater than the fees foregone. Allowing exclusive access to particular waters for domestic fleets is another strategy employed with some success, as is the case with the access to The Slot and Main Group Archipelago in Solomon Islands waters, and archipelagic waters in PNG.

The 2002 FFA Workshop on Property Rights in Nadi, Fiji, discussed an alternative approach to access fees. Broadly speaking, this was based on taking strong national participatory rights to access, as strengthened by the WCPFC allocation process, and allocating them to domestic companies as a means of increasing Indigenous involvement and domestic industry development. Under such an approach, DWFNs could still fish in PIC EEZs, but only under charter or through joint ventures with a domestic participatory right holder. The right holders are then required to make investments and create jobs rather than simply pocket the earnings from the sale or lease of the license (Clark 2002).³⁵ The Country Profiles for this report note that this strategy has not domesticated benefits from fisheries as much as hoped, however, and one regional commentator sees benefits from these arrangements going to more individuals than governments or national economies (Gillett, pers. comm.).

5.3 Domesticating Trading and Marketing

Almost no interviewees cited trading and marketing as one of their aspirations for capturing more wealth from tuna; they talked primarily about fishing and processing. Since the 1980s, however, there has been much more money in tuna trading than in fishing (Reid 2005; Schurman 1998). ‘Foreign investment in the tuna fishing sector of new and upcoming fishing nations has in the past been mainly from trading houses that stand to benefit from marketing and not necessarily from fishing operations’ (McCoy and Gillett 2005). Luen Thai Fishing Venture, which operates in Micronesia, is not primarily a fishing company. It contracts a fleet to which it sells supplies and from which it markets the catch. It is believed Ting Hong operated this way too (McCoy and Gillett 2005). Taiyō Gyogyō, the Japanese partner in Solomon Taiyo, was also motivated by a trading aim; it wanted a high quality reliable supply of

³⁵ See also the discussion and recommendation under section 1.2 (Rights-Based Management).

canned fish for its UK buyers (Hughes and Thaanum 1995). Lack of international trading networks seems to have been an important factor in Soltai's financial downturn since 2003 (Barclay 2005). The sophisticated accounting systems and active international trade networks used by veteran Fiji longline companies Solander and Fiji Fish have undoubtedly played a role in their success.

Fisheries managers used to believe that as markets matured, fishers would start to take over the role of 'middlemen', marketing their products more directly (Dunn, pers. comm), but this has not happened and the middlemen have taken profit away from the fishing end of the business (McCoy and Gillett 2005). Increasing competition in the fishery seems to have resulted in a large enough supply that in times of high landings, traders have been able to push the prices down (ADB 2003). So if PICs want to capture more wealth from tuna, marketing and trading are important areas to think about.

Some kinds of fish marketing and trading do not require much capital outlay—an office with reliable telecommunications is enough—but this business does require contacts, business acumen and knowledge of markets. The difficulty for PICs lies in acquiring the skills and experiences needed for marketing and trading. A first step might be supplying gear and food for vessels. At the other end of the spectrum is marketing high price seafood products in the wealthy markets of Europe, Japan and the United States, and supplying those markets in sufficient bulk with sufficient quality and reliability. Nothing in most Pacific Islanders' background prepares them for a career in international trading and marketing. On the other hand, PIC economies are no more suited to industrial fishing or processing than they are to international trading, and PICs have attempted to become involved those sectors. It will be a challenge to successfully facilitate the development of seafood trading and marketing businesses, but it should be possible, especially with plenty of consultation with industry and other relevant stakeholders, and some capacity building. Governments can assist by coordinating marketing and trading initiatives through agencies such as the Pacific Islands Trade and Investment Commission (PITIC 2002), which Cook Islands has used to establish markets for its marine resource exports, and the World Bank's Foreign Investment Advisory Service (FIAS 2005).

If PICs can develop seafood marketing and trading expertise, this could revolutionize the ways countries with substantial tuna resources but a geographic environment not conducive to domestic industrial development, think about generating wealth from tuna. For example, instead of selling the rights to fish to DWFNs, they (through the domestic private sector) could organize lucrative markets for their fish and then contract DWFNs to catch the fish for them at an agreed price, and make profits on selling the fish to the buyers.

As an alternative to scraping a proportion of the profits as access fees from the least profitable end of the tuna commodity chain³⁶ (the catching sector), PICs should investigate involvement in the profitable end of the chain through trading and marketing.

³⁶ The idea of commodity chains in relation to tuna is discussed by (Schurman 1998).

5.4 Service and Supply Industries for DWFNs

Of the countries covered by this report, only Cook Islands did not have some kind of service and supply industry for transshipping DWFNs. Governments in Solomon Islands, Kiribati, Fiji and Marshall Islands have actively encouraged the development of such industries. Marshall Islands in particular chose this option over domestic fishing as the way to generate local business development with a great deal of success, generating revenue in transshipping fees and spin off businesses in minor repairs and procurement. Majuro is attractive as a transshipment, service and supply base because it has good air connections for flying crew in and out, an adequate fresh water supply, not-too-difficult bureaucratic requirements, cheap fuel, a large sheltered harbour, and its range of food supplies is plentiful and cheap compared to nearby small island countries. Another attraction is that Majuro is not USA territory. Post September 11th USA territories tightened up on transit visas for crews so many DWFNs stopped using USA territory ports.

Constraints on domestic service and supply industry development are similar to those for business as a whole in PICs. Fiji's longline transshipping businesses are constrained by a lack of wharf infrastructure, and somewhat by the range of skilled tradespeople. Kiribati cannot attract longliners because of a lack of air connections to export sashimi grade fish. Kiribati does attract purse seiners, but has limited and expensive supplies of fresh food and water for them.

The most intractable problem for service and supply industries is fluctuations in the availability of the resource. The numbers of purse seine and pole-and-line vessels operating in Marshall Islands EEZ dropped dramatically in 2002-2003 when oceanographic effects moved the fish further west. Solomon Islands' purse seine fishery declined just as Marshall Islands improved, in mid 2003 and stayed bad until mid 2005. Kiribati suffered a downturn in 2003 and 2004 with almost no vessels transshipping in Tarawa, then picked up again in 2005. International net making company Casamar was ready to set up a factory in Honiara for the service and supply industry in 1999, but backed out when they noted that some seasons bring very few vessels. Like fishing companies, service industries have to either be able to follow the fish, or earn enough in the good years to tide them over the bad years.

Another point to note about service and supply industries is that while they bring economic activity within the domestic economy of PICs, large proportions of this activity is simply funnelling imports and so is not of much developmental value. McCoy and Gillett (2005) found that more than half of the total expenditures of Chinese longliners operating in the Pacific were spent on fuel, and around 30% on bait. None of the PICs covered by this report had a fuel refinery or commercial baitfishery so this expenditure did not add value domestically. The negative impacts of prostitution and substance abuse that go on around busy international ports where there are insufficient health and welfare services to mitigate these impacts should also be considered.

6. Developing Human Capital

Human capital is often considered an industrial policy issue for encouraging development in particular sectors. We have drawn it out as a strategy for capturing wealth for tuna on its own because we believe it is vital for PICs, and also because we

are envisaging the development of human capital not only in terms of producing employees for the private sector, but also in terms of building public sector capacity.

6.1 Public Sector Capacity

Fisheries revenue has not historically been reinvested in fisheries governance, but has been directed to central government revenue, although this is changing recently in some countries with moves towards self-funding statutory authorities. Governments have not prioritised training or education in areas relating to fisheries management by specific allocation of scholarships (Tarte 2004). Fisheries management and development are hampered by government departments with insufficient numbers of staff and staff without the appropriate types and levels of education. One of the reasons PIC governments have not taken on ideas for improvements for fisheries development and management from the many reports on the topic is that they have not had the time or the background to be able to make the recommended changes. Areas where Pacific Islander interviewees said PICs' public sector capacity needed improvement included fisheries science, fisheries management, economics, and fisheries law.

The Papua New Guinea examples mentioned earlier have shown how improved fisheries bureaucracy capacity improved the amount of revenue generated by access fees, and improved policies contributed to the generation of a great deal of domestic industry development. On the other hand, there are also many examples where lack of capacity means losses for PICs in terms of fisheries management and development. Pacific Islander interviewees noted that some PIC delegates to international meetings show through their questions that they have not grasped the information in the briefs for the meeting. Delegates who do not understand the issues or the discussion properly are unable to contribute to the discussion, and they are also unable to act as effective conduits for their governments, in putting forward their government position at the meeting, or in feeding back to their government information about what has been decided and committed to on behalf of the government. PIC politicians are sometimes not sufficiently briefed about regional and domestic fisheries issues to be able to make consistent workable policies.

One of the other ways government capacity has a direct influence on the ability of PICs to capture wealth from tuna is the capacity of their distant water access negotiation teams. Many of the strategies identified by interviewees and in reports for ways to secure greater revenues from DWFNs require building the capacity of PIC government negotiators. Instituting systems whereby PIC negotiators have an incentive to perform well in these negotiations would also help (Gillett, pers. comm.).

In addition to skill and experience levels, there is also the issue of adequate resourcing of fisheries departments. For some states like Kiribati, the need for adequate numbers of qualified Fisheries staff cannot be overemphasised. Sound advice from fisheries departments is vital to making the right decisions and creating the right policies to guide sustainable fisheries management and development.

Poor governance is driven by under resourced and pressured government officials, a lack of direction and planning, low accountability, and low productivity. Excessive overseas travel and back-to-back meetings also impact governance because in small government departments relatively low-level officials are left responsible for high-level decisions. It is easy to see how creeping corruption can gain a foothold in such

situations. Many regional fisheries departments could benefit from staff having more time to do their jobs at home, assisted by more experienced fisheries managers.

Compile an inventory of fisheries department capacity at the regional level and develop a strategy to address shortfalls that go beyond training courses to include mentoring programs and extended on-the-job training.

Fisheries Managers' Understanding of Tuna Industries

Interviewees for this project and reports on similar topics raised a range of areas where PICs' ability to capture wealth from tuna is being constrained by a lack of understanding of tuna businesses. Several interviewees noted a naivety on the part of PIC officials who felt they were capable of making advantageous deals with the representatives of large international fishing companies. The same circumstances apply to fisheries access negotiators who need a great deal of understanding about the economics of tuna industries, which very few PIC government staff currently have. McCoy and Gillett interviewed Chinese longline business managers who found local officials they dealt with 'very inexperienced' and sometimes lacking competence. This lack of competence or experience on the part of the PIC party was then seen as a business opportunity (McCoy and Gillett 2005).

One NGO worker from Solomon Islands felt that this naivety was partly due to the dual economy existing in most PICs meaning many Pacific Islanders lack experience in capitalism, and he also thought it was due to the prevalence of cargo cult style beliefs that there is a simple road to wealth somewhere out there. A Solomon Islands government representative noted that a major drawback for the Solomons side in joint venture negotiations with the Japanese partner company over the decades was that officials 'failed to do the homework' necessary to be able to critically evaluate the positions put forward by the opposing side (Barclay 2001). At a basic level, fisheries managers need to know how tuna businesses run in order to be able to maximize the number of 'golden eggs' they accrue in revenue without killing the goose that lays the eggs.

While financial and economic literacy is an important skill for fisheries managers, at the same time it is probably unrealistic to expect that each PIC will develop the financial and economic expertise necessary for all leadership and decision-making. As well as institutional strengthening including further education in these areas for fisheries managers, utilizing skills from other government departments and utilizing skills from organizations such as FFA can add to PICs' capacities in economics and business management. It is vital that the skills and experience shortage within the public sector with respect to human capacity is addressed, using a range of short and long-term strategies.

Much of the technical assistance provided to fisheries departments in the region is of a 'fly in—fly out' nature both by consultants and staff of regional fisheries organizations. While regional fisheries agency staff are able to make multiple visits and thereby build corporate history, there is a lack of systematic mentoring and leadership capacity building in fisheries. Such mentoring could be provided by well-qualified technical advisers (especially fisheries economists and managers) appointed

for 2-3 year posts with fisheries departments.³⁷ These should not be line positions because of the risk that the mentor instead of the local official ends up ‘owning’ institutional development; the mentors’ role should be to facilitate improvements by local officials, not make improvements themselves.

Recommendation 10

Build capacity in PIC fisheries departments in the following fields: fisheries management (including working knowledge of stock assessments); economics; business management; and public policy. Where capacity gaps exist, consider recruiting suitably qualified and motivated staff from other government departments and externally.

6.2 Private Sector Capacity

A great deal has already been written on strategies to improve PICs’ human resources pool of qualified and experienced fishing crews, technical managers for processing facilities, and tradespeople for service industries,³⁸ so such strategies are not canvassed in this report.

One point worth noting here, however, is the synergies and cost savings that may result from greater regional coordination of training. The 2005 Forum Leaders Communiqué noted the importance of expanding regional technical and vocational education training (TVET) and having technical qualifications ‘portable’ (Pacific Islands Forum Secretariat 2005). Papua New Guinea’s National Fisheries College has successfully run some short courses on fisheries small business development in other PICs. Kiribati’s Fisheries Training Centre has a long record of training crew and placing them in work on DWFNs, and looks soon to expand into officer training. Perhaps some other PICs may want to extend this opportunity for their citizens through cooperation with Kiribati.

Business Skills and Experience

The main issue in private sector human resources we address in this report relates to one of the principles raised at the outset of this discussion on capturing more wealth from tuna; tuna development = business development. One of the greatest constraints on greater Pacific Islander involvement in management and ownership of tuna businesses is a lack of skills and experience in business. One of the tendencies in PIC strategies for tuna business development noted in this study, as well as Gillett’s (2003) earlier study on domestic industry development, is the expectation that small-scale fishermen can upscale to medium and larger scale fishing enterprises, because they are skilled fishermen. Gillett noted that there have been ‘very few cases’ of small-scale operators successfully upgrading to become medium or large-scale operators. He explained this by pointing out that fishing is different to managing fishing and medium and larger scale fisheries businesses, and small-scale fishers are unlikely to have management skills.

³⁷ This suggestion is not advocating a return to colonial fisheries officers. These days many regional fisheries technical advisers are Pacific Islanders.

³⁸ (Chapman 2002, 2003, 2004; Gillett 2003; McCoy and Gillett 2005)

Many PIC small-scale fishers live in a social context wherein they have had little or no exposure to business principles, where business as an economic activity may not be highly valued, and where other social obligations may be prioritised more highly than the covering of one's operating costs and generating a profit—meaning, for example, strong pressures to 'dip into the till' to pay for family obligations. Business failure rates are still high in cultures where people are exposed to business principles from childhood, and where business is highly valued as a social and economic activity, so it is understandable that there is limited business acumen to support commercial tuna development projects in PICs.

We therefore agree with Gillett's (2003) suggestion that businesspeople who have had success in other sectors are more appropriate targets for commercial tuna development than small-scale fishers. There are two problems, however, with attracting lateral movement of established business people as a strategy for achieving PICs' aspirations regarding domestication. One is the small pool of Pacific Islanders with any kind of business skills and experience, since in most PICs other ethnic groups have tended to dominate the business world. The other problem is the lack of profitability in tuna fisheries means they are unattractive as businesses, especially for business people with no technical expertise in fishing. The many fishery development failures in the past contribute to wariness about investment in fishing. Processing or trading projects may have greater success in attracting lateral movements of established businesspeople.

All recent projects for tuna development covered by this study included feasible-looking business plans as a criterion for participation, and all of the Tuna Management Plans included business training as a strategy to improve success rates, especially for small-scale tuna businesses. In light of the assertions above, however, business plans and short training courses could only be a first step in inculcating the major cultural shift that may be necessary for large numbers of Indigenous Pacific Islanders to become successful businesspeople. The important lesson from Robert Stone's experience, cited earlier, seems to be that he started off his fisheries business independently at a financially manageable level (one small boat fishing for snapper), and gained experience at operating as a commercial fisherman for some years before taking out a large loan. Perhaps tuna business development strategies should be aimed at encouraging Pacific Islanders to gain training and experience in managing low risk businesses for some years before facilitating their access to large loans in the high risk tuna fishing sector.

Design projects for Pacific Islanders to gain extended exposure to the management of tuna businesses, through internships, for example, and encourage Pacific Islanders to undertake tertiary studies in business and enterprise to lay the groundwork for management and ownership of tuna businesses.

Think about rights-based management as a strategy for encouraging Pacific Islander fisheries entrepreneurship.

Establish projects that facilitate business learning rather than distribute largesse. Leave entry requirements for tuna business projects to normal business processes.

Who is Best for the Job?

The desire for domestication of tuna industries may be seen as part of a broad historical process emerging from decolonisation; whereby Pacific Islanders were to take over from expatriates in all areas of government and business. It is related to the term 'localization', which has usually referred to the replacement of expatriate employees with locals, and which has also been a long-term concern for Pacific Islanders in regional tuna industries.

However, the small populations and economies of PICs have meant that there has been a very limited pool of trained and experienced managers, both for the public and private sectors. For this reason the most senior positions in tuna businesses have mostly been held by people who are not ethnic Pacific Islanders. This is a fact of life even for much larger wealthier countries—sometimes the best people for particular jobs, particularly very specialized jobs, come from overseas. In Japan the CEOs of some companies are non-Japanese. Some of public sector reforms have also involved 'expatriate' consultants. As agents of change non-national consultants can be very effective in the short-term, not least because they have no vested interests in the status quo compared to permanent employees. Non-nationals are not as susceptible to pressure from relatives, or other political/cultural issues that may negatively affect governance. But there are often problems with maintaining changes engendered by non-national contractors because nationals may not gain a sense of 'ownership' over the reforms. Furthermore, the great pay disparities between non-national consultants and their national colleagues may generate resentment against the reforms.

This situation is a conundrum, whereby non-national input at senior levels is sometimes the most pragmatic option, but it is politically unacceptable, especially if non-nationals are seen to dominate senior positions and localization does not appear to increase over time. It would be best to achieve some kind of middle ground between the problem of expert expatriates sidelining their local colleagues and therefore failing to engender long term skills improvement, and the problem of completely local but insufficiently experienced management. There is no easy solution to this dilemma in the Pacific, where there is a chronic shortage of qualified and trained local managers, and where prevailing levels of remuneration do not offer a good incentive for training and retaining high calibre local staff. Some contributions towards addressing the issue are suggested below:

- Non-national leadership input in fisheries management and businesses could be more developmental and less detrimental by assessing the success and achievement of their national colleagues, not how much the non-national him/herself achieves.
- For the medium to long-term PICs and aid donors can continue to build the pool of trained and experienced private and public sector managers through human capital development.
- Encourage suitably skilled and motivated PIC nationals from public and private sectors to enter the fishing industry to inject 'new blood', rather than re-training existing staff or starting 'from scratch'.

7. Cooperating Regionally to Capture Wealth

The cyclical migratory nature of tuna resources means that businesses frequently need have the flexibility follow the fish. DWFNs have long had vessels capable of achieving this, shifting between oceans to seek profitable catch rates and species. Businesses that operate only in one PIC have to suffer inevitable bad years, and since economic pressures on domestic operators have increased in recent years businesses can rapidly become unviable. Organizing locally based industries into national units also has impacts on domestic industry development. For example, employment opportunities are disrupted if locally based companies have to scale back in years of heavy losses due to poor catches and/or economic circumstances. For PIC governments, access fees plummet in the years DWFNs do not fish in particular EEZs, but if fisheries access were pooled across a suitable group of EEZs (such as the PNA group) access fees to individual PICs could be more even across the years. The existing FSM Arrangement and the new PNA Vessel Days Scheme (VDS) and arrangements to 'trade' fishing entitlements between members will go a considerable way in this regard, through developing fishing rights that are not tied to a geographic

area but may be used throughout the region. This means for years the fishing is not good in one PIC's EEZ they can still raise revenue through selling rights to fish elsewhere in the region, thus smoothing out revenue fluctuations between good and bad fishing years.

Even with these mechanisms in place to facilitate regional fishing access, national borders still make it quite difficult for businesses to operate regionally. For example, Fiji Fish has vessels that operate in Solomon Islands and Vanuatu as well as Fiji. Licensing the fishing vessels to operate in more than one EEZ was quite easy, but Fiji Fish found it extremely difficult to gain the necessary permissions from the Solomon Islands and PNG Governments to use carrier vessels to take fuel out to its fleet and bring the catch back to Suva. EMR also started using carrier vessel in this way but only within the large PNG EEZ so was easily able to implement this operational change. Increasingly, it is apparent there would be considerable benefit from developing arrangements for reciprocal access arrangements between PICs.

Increased labour mobility within the region, including fishing crews and skilled tradespeople, could also be beneficial for capturing more wealth from tuna. Lack of labour mobility is one of the factors inhibiting general regional economic development (Pacific Islands Forum Secretariat 2005; Chand 2005; Peebles 2005). Labour mobility could also alleviate some of the human capital constraints mentioned earlier. Easier flows of labour and conceiving of the resource regionally or sub-regionally could enable PICs to gain benefits from the industrial hub principle mentioned earlier. For instance, PICs could conceive of a tuna processing hub in Madang as something they could participate in and benefit from. If Papua New Guinea were to make it possible for other PICs to gain employment and investment benefits from a hub in Madang, this could improve the economic viability of processing in the region, and therefore make capturing wealth from tuna more possible.

National borders build in economic constraints for businesses exploiting this migratory resource. Attempts to protect perceived national interests by throwing up barriers to regional operation through difficult immigration procedures, difficult business licensing procedures, and protection of domestic businesses are preventing Pacific Islanders from capturing more wealth from tuna. The current conventional view where each PIC wants its own processing plant in its national economy and sees developments in other PICs as competition perpetuates the diseconomies of scale that make PICs' production environments high cost in comparison to Asian countries, and therefore prevents capturing more wealth from tuna. Below are some ideas for potential regional economic opportunities.

Regional Approaches to Marketing and Trading

Europe would be an excellent market for fresh (chilled and frozen) tuna from the Pacific because it is large and consumers pay high prices for fish, and there is great demand because Europe has severely restricted supplies of fish. However, EU buyers require large regular supplies. PIC fishing companies as they currently exist, fragmented across national borders, cannot achieve the scale and reliability of supply needed for the EU market. Any one EEZ may not be able to produce the same amount all the time because of seasonal and yearly fluctuations. But a marketing business sourcing fish from fishing companies across the region could guarantee large reliable supplies (Gloerfelt-Tarp, pers. comm.). Such an initiative should be private sector driven, but to be attractive and feasible PIC governments would need to assure

potential investors that they would facilitate the necessary approvals and licenses to enable it to happen.

Mobile Processing, Service Industries and Crews

Although floating factories are used in other parts of the world, in the Pacific they tend to be imagined as representing the worst kind of foreign investment that makes no commitment to local development. However, floating fish processing factories could be managed such that they benefit PIC economies, just like shore-based factories. Such a factory could employ Pacific Islanders.

Small ULT freezing machines fit in shipping containers so small mobile plants for processing fresh chilled and frozen tuna could work the waters with longline fisheries in Cook Islands, the Line Islands in Kiribati, and Fiji. Floating factories could also help with the uncertainty involved in large capital infrastructure in places like Kiribati and Marshall Islands, where fixed land-based infrastructure may be rendered inoperable by rising seawaters in the future.

8. Roles of FFA and SPC in Facilitating Development

SPC has long offered technical developmental advice for small-scale and nearshore fisheries in the region. Until recently FFA has concentrated mostly on providing fisheries management advice, with minimal development advice. From now on, however, FFA's activities will include far more industrial developmental advice (FFA 2005). FFA is to provide better information on the economic benefits to PICs from tuna fisheries, especially DWFNs, including access fees, and how many people are employed by tuna businesses (van Santen 2005). Part of FFA's increased role in development will occur under the European Union funded EDF9 project 'Development of Tuna Fisheries in Pacific ACP Countries (DevFish)'. The DevFish project is designed to work through stakeholder consultation in each country, and aid donors, to dovetail with other non-fisheries areas such as general governance, investment issues, and environmental issues. It is to be hoped this will facilitate an integrated process of developmental change, which should be more effective than previous 'one-point interventions' have been.

To be able to facilitate industry effectively, FFA will need to adapt the services it offers, to include constructive criticism of PIC policies, include direct contact with the private sector, and improve its ability to disseminate information. For example, FFA studies on air freight would have been very useful for industry but industry did not have easy access to them. Another example is that FFA's Tuna Products Catalogue that has not been widely available for investors interested in processing. There is little value in donors funding reports that gather dust on fisheries departments' shelves, when the agreed agent of development, the private sector, is asking for more information on which to base investment decisions. Both FFA and SPC will need to be more honest than they have been in the past about the economic potential of development options. This is a difficult ask when political and other interests are clearly wedded to a particular development option, however, it is vital that regional organisations 'tell it as it is', even when that is 'bad news'. It is also important to be able to clearly identify past and present successes and failures from around the region to assist countries in making their development strategies.

Based on the analysis contained in this report and comments from interviewees, we would suggest the following actions, a number of which form part of FFA's operational plan:

- More effectively utilize the OFCF expert on Japanese markets hosted by FFA,
- Coordinate commercial consultation about freight availability and costs,
- Coordinate studies to explore markets possibilities for PIC tuna products, especially value added products,
 - Assist PICs develop capacity in seafood marketing and trading,
- Coordinate activities between businesses in the region. For example:
 - See if Soltai's pole-and-line fleet supply could sustain a *tataki* factory at Noro,
 - Assist NFA to find a small-scale gourmet business to utilize the facility in Kavieng,
- Coordinate and assist with regional economic initiatives, including trading, mobile industries, and regional training and recruitment,
- Host industry liaison officer (perhaps one each for purse seining, long lining, and processing),
- Expand and update the economic database on key longline and purse seine fleets (DWFN and domestic) so as to build a time series of both prices and operational costs,
- Continue with bio-economic modelling to underpin the successful development and adoption of management measures at the WCPFC, and
- Coordinate with FIAS to improve PICs' foreign investment environments.

9. Small-scale and Indigenous Fisheries Development Policies

Our research indicates that PIC governments are keen that benefits from tuna industries should be felt at the village level. Most rural fisheries development projects based on reef fish have failed to be economically self sustaining and PIC governments have not had the resources to sustain them. Recent versions of small-scale fisheries development projects based on the assumption that economic viability is important, such as the European Union Rural Coastal Fisheries Development Programme in PNG and the Outer Islands Fisheries Project under Central Pacific Producers in Kiribati, have had greater success thus far in facilitating coastal fishers to supply domestic urban markets. Tuna makes up only a small part of these catches, as they are often difficult to catch from small vessels close to shore, and sometimes are not the preferred species for domestic consumption.

Models of Small-scale Indigenously Owned Tuna Fisheries

The Samoan *alia* longline fishery has been hailed as a successful model of Indigenously owned small-scale tuna fishery development. Many PIC governments sent teams off to Samoa to investigate, although none then established an *alia* fishery upon returning home (Gillett 2003). As Samoa was not included in this report, a detailed evaluation of the model is not presented here, but it is worth noting that despite some of the successes of the *alia* model, it also had many problems. Dozens of fishermen were lost at sea in the small vessels in the first couple of years, the fishery did not have HACCP systems in place and so there was a danger of a health scare in

export markets, and effort exceeded the maximum economic sustainable yield of the fishery, leading to a CPUE collapse (Watt, pers. comm.; Chapman 2004). The *alias* then mostly left the fishery, leaving it dominated by larger scale longliners that can more easily fish offshore and which are mostly owned and managed by non-nationals. This is considered to be one of the first material demonstrations showing that while a regional stock (albacore) may be in good condition, it is possible for ill-conceived domestic approaches to have a severe *localised* impact arising from over expanding the locally based fleets. As described elsewhere in this report, Cook Islands and Fiji have experienced similar results, albeit from the impact of larger locally based longline vessels, as well as from stocks damage being done outside the Fiji EEZ.

In some parts of the Philippines, small-scale locally owned and build wooden vessels called ‘pump boats’ using hand lines have had success in commercial tuna fisheries. Filipino resident expatriates in PNG have been involved in a move to have this model adopted in PNG, as a way for Indigenous small-scale fishers to enter commercial tuna fisheries. Pump boat trials were conducted in the late 1990s and early 2000s, without much success, although in 2005 some government and industry interviewees still had hope for this model. The pump boat / hand line model is being included in the next revision of the PNG National Tuna Management Plan (Government of Papua New Guinea 2004). It is to be hoped that the Samoan *alia* experience is not repeated and that expansion is considered both in terms of the overall catch and the effect on existing operators.

A report on various models of small-scale Indigenously owned tuna fisheries around the world would be useful to highlight problems and successes. Such a report should cover cultural, economic and political conditions for business development as well as technical aspects of the fisheries.

10. Recreational Fishing

Recreational fishing based on international tourism is often raised as a development option, since there is a huge economic return per fish caught by recreational fishers, if international tourists utilize locally owned and run businesses. Recreational fishing can be suitable for village level eco-tourism. Since this development option relies on international tourism, however, it is constrained by the same factors that limit tourism potential in Papua New Guinea, Solomon Islands, Kiribati and Marshall Islands. Even in Fiji and Cook Islands, which have large tourism industries, recreational fishing has not been a significant business. None of the six countries covered by this report that had a recreational fishery attracting international tourists fishing for pelagic species such as tuna. Marshall Islands and most of the other PICs covered by this report have active local recreational fisheries targeting tuna and like species, but these have no significant economic development effects.³⁹

³⁹ Lindsay Chapman covered recreational fisheries in his extensive regional study of nearshore fisheries (Chapman 2004).

Objective: Achieving Beneficial Outcomes for PICs in the WCPFC

Effective multilateral management of tuna resources is a fundamental prerequisite for PICs to be able to achieve their goal of capturing more wealth from tuna resources. This section looks in more detail at the issues and strategies that influence the degree to which tuna and related species are managed sustainably throughout their range under the WCPFC. Considering the power and influence of DWFN members of the WCPFC, it is essential that PICs work together effectively if they are to assert their position and develop management outcomes that will be beneficial for them. In achieving this objective there are four underlying principles.

Principles for Achieving Beneficial Outcomes

i) Maintaining the Moral High Ground

PICs have relatively strong rights as coastal states under the United Nations Law of the Sea (UNCLOS) and UNIA⁴⁰ in terms of their freedom to explore and exploit the tuna resources within their zones. In addition, the circumstances of developing coastal states are given particular emphasis in UNIA and the WCPF Convention with respect to special consideration in a range of areas. However, these rights come with obligations to conserve and manage, in particular application of the precautionary approach within EEZs. In addition, states PICs must cooperate through RFMOs to ensure compatibility of measures between EEZs and high seas throughout the range of the stocks.

Tuna is the greatest renewable resource many PICs have, and the social economic and geographic circumstances of the Islands make a strong case for PICs' special treatment with regard to tuna fisheries. However, it remains essential that PICs demonstrate restraint and deal with escalating overfishing problems. The response of the second WCPFC meeting in December 2005 to the WCPFC Scientific Committee's 2005 recommendations (WCPFC 2005) is considered by many not to be precautionary. The Scientific Committee's advice to the Commission was to reduce fishing mortality for bigeye and yellowfin to below current (taken as 2001-2003) levels. The WCPFC decision was for purse seine effort to be set at the 2001-2004 average, or 2004 levels for EEZs and at 2004 levels for the high seas. Setting the purse seine effort at 2004 levels (a record high) equates to a 15% increase over the 2001-2003 average level. For longline the situation is similar. The decision was to limit catches at either 2001-2004 or 2004 levels for each country individually. The 2001-2003 average catch in total was about 80,000 tonnes. The 2004 catch was about 85,000 tonnes and the 2001-2004 average was 81,000 tonnes. If each individual party maximizes their catch by choosing the larger of 2004 or the average of 2001-2004, then the total is 93,400 tonnes. The decision seems to allow for an increase over 2001-2003 levels, which is not what the Scientific Committee recommended (SPC 2004

⁴⁰ 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. This is often abbreviated to the United Nations Implementing Agreement (UNIA) or the Fish Stocks Agreement.

Yearbook data). The point has also been made that while it could be argued that PICs have not set the VDS limit at a sufficiently precautionary level, they have at least continued a history of capping effort, whereas the total high seas catch continues to be unlimited. This is seen by some as a contradiction of the Commission's role.

Similarly, the relatively weak measures introduced by the WCPFC thus far for FAD fishing may be insufficient to address the impact on bigeye stocks caused by increasing use of this technique over the last two years. However, on the positive side, these decisions have at least put some limits in place, and represent a significant step forward.

The Management Measures adopted by the Commission provide an exemption for PICs' domestic industry development. There may be a tendency to over play this facility, for instance, by setting very high national catch and/or effort rates, or licensing a large fleet of foreign charter vessels to circumvent limits. The latter potential action lies behind the Commission decision to consider a Charter Arrangements scheme at its third meeting in 2006. The potential impact on the stocks of yellowfin and bigeye and the revenue generated from them is also clear, particularly if the current high levels of recruitment fall to long-run average levels. While it is an understandable negotiating tactic, expecting other countries to bear all cuts to effort and catch, may weaken PIC positions rather than strengthen them.

ii) All Measures Must Be Acceptable by the Majority of Parties

The only way rules can be developed at a multilateral level is through negotiation and eventual agreement by consensus or under decision-making principles. In the WCPFC only the issues of allocation (which is fundamental to achieving effective management) and new members must be decided by consensus. In the event that an acceptable compromise cannot be reached on allocation, member states can simply walk away from the table, a strategy Japan has already employed, and the status quo will prevail. With chambered voting on management rules it is essential that the majority of PICs support particular key initiatives. If not, there is a danger that individual PICs will, as a result of bilateral and other pressures, 'cross the floor' and defeat votes on key fisheries management-related decisions in the FFA chamber. While ambit claims and positions representing self interest at both national and regional (PNA/FFA) levels are clearly part of effective negotiating strategies, these should not prejudice the achievement of mutually acceptable outcomes in a timely fashion. Failure to achieve these in both chambers will inevitably result in the erosion of the biological and economic status of the fishery and the potential to derive long-term wealth from it.

iii) Ensure equity for PICs in the application WCPFC management measures

From the 2005 stock assessment and subsequent report from the Scientific Committee it is clear that management action is required to deal with overfishing on bigeye and yellowfin. In the case of bigeye, the prospect of 'urgent action' in the more productive purse seine area of the fishery is signalled as a possibility (WCPFC 2005). Clearly, and as articulated well by David Yeeting in Kiribati, PICs are very concerned about the impacts of management action. While PICs are in principle willing to comply with

sound management principles, they have yet to demonstrate this commitment through agreeing to balance management and conservation with losses to PIC economies from prospective reductions in fishing and catch.

At the Scientific Committee held in August 2005 a paper was presented that modelled the results from a range of management options to address the concerns on bigeye and yellowfin (Hampton et al. 2005).⁴¹ The options modelled were 'across the board' cuts in effort (to longline and purse seine) and area closures. The results from this analysis provided guidance 'ballpark' estimates of the likely levels and nature (such as spatial, gear type, closure) of management intervention that may be required to ensure the principles of the WCPF Convention text are realised.

Clearly, the management measure eventually chosen will have very different effects on the various tuna fleets, as well as PICs' aspirations to capture more wealth from tuna. Some preliminary analysis by FFA and an associated ACIAR study (Reid al, 2006) has shown that these differential effects will result in clear 'winners and losers' under each scenario. Perhaps of greatest concern to PICs is the prospect that the effects of across the board cuts could lead to actual outcomes that are more detrimental to PICs than to other members of the WCPFC. Is it reasonable to expect PICs to agree to measures that may have severe economic and other impacts (for example, through cuts in purse seine effort) while other parties gain significant benefits (for example, through elevated yields in the high seas longline fishery)? Some form of compensation or 'side payment' could help achieve agreement, as will careful analysis of the impacts of prospective management actions. For beneficial outcomes for PICs to be achieved at the WCPFC, it is essential that preferred management strategies, including the possible introduction of side payments, are considered as a priority.

iv) Building support for PIC Positions

There is a misconception that PICs 'have the numbers' in the WCPFC. The chambered voting system means that on matters of substance (in effect any matter a state decides) the majority of DWFNs must also be in agreement by three quarters majority. This will be by no means assured on a number of tough decisions requiring the restriction of fishing. There is no doubt that PICs agreeing among themselves is the first step to achieving a strong position. If they can also cooperate with non-FFA member states, they are unbeatable. Building support will, to some extent, be reliant on the degree to which FFA states are able to take the 'moral high ground' (see above) in terms of demonstrating the application of the precautionary approach in their own zones.

v) Unilateral Action by PICs

Given the historical record of fisheries negotiations around the world, decisions on allocation or other key issues may not be reached in a timely fashion. The WCPFC could become bogged down and be unable to agree on measures to effectively halt overfishing. This will inevitably lead to declining stocks and a worsening of the

⁴¹ The paper was presented as a result of the 'Resolution on Conservation and Management Measures' from the first WCPFC meeting in Pohnpei in December 2005, which specified that that scientific analyses be used to inform future management decisions.

economic and biological status of the fishery. If this occurs, the FFA group may need to determine the degree to which it can take action independently of the Commission to secure the future of its tuna stocks. If united, the options for coastal states to influence regional fisheries management, even outside their zones, are substantial. One such option is to allow only fishing access to DWFNs that comply with FFA management initiatives for both EEZs and high seas (such as the Vessel Days Scheme) and denying access to ports for non-complying states.

Strategies for Working Together

1. Capitalize on Existing Strengths

Lengthy preparations for the regional management of tuna stocks culminated in the inaugural meeting of the WCPFC in December 2004.⁴² Many commentators agree that PICs' cooperation in the years of negotiations leading up to the establishment of the Commission enabled them to assert their position against much larger states and influence the form of the Commission such that the PICs' position is a key dynamic in the running of the Commission.⁴³ For example, they note that the voting system is chambered (with the FFA group forming one chamber and other members the other),⁴⁴ sessions have been limited to two per year (which is more manageable for small, government departments with limited funding), and developing countries' participation is funded. Some interviewees described the WCPFC as one of the only international forums where PICs play a central role (Hunter, pers. comm.; Yeeting, pers. comm.). The hope now is that PICs will be able to make use of the WCPFC to protect tuna stocks in the region and maximize their chances to generate wealth from tuna industries. This will undoubtedly require high levels of continued coordination and cooperation between PICs.⁴⁵

Over the years of negotiation for the WCPFC the FFA group has worked out a system for cooperating within meetings. The FFA group meets before the WCPFC meeting and 'hammers out' a unified line on each issue to be discussed in the meeting. Within the meeting then the FFA position is a group position. In addition, the FFA group also developed a 'multi pronged' approach to participation in Commission meetings, which has been seen as making their input more effective (Tarte 2003). The FFA group allocates one member to introduce each proposal or statement on behalf of the group, then allocates another to speak in favour of the proposal/statement, thus maximizing the effectiveness of the group; speaking as several unified voices supporting each other, rather than a single unified voice waiting for non FFA countries to support them.

⁴² For histories of the MHLC and PrepCon negotiations see (Anderson 2002; Ram-Bidesi 2004; Tarte 2003, 2003, 2002).

⁴³ It should be noted that one commentator has argued that for a range of international and domestic political reasons the peak of PIC regional cooperation was in the last years of the Cold War, and that cooperation broke down to some extent in the final years of the MHLC process, so that although PICs gained more than might have been expected, they also lost quite a lot of ground (Anderson 2002).

⁴⁴ The chambered system may be seen as a 'two edged sword' for PICs. A requirement for absolute or three quarters majority would have been more beneficial to FFA states, but was not achievable.

⁴⁵ For arguments about the necessity of cooperation for PICs to do well in the WCPFC see van Santen and Muller (2000).

In 2005 PICs developed a new activity to help them work together in the WCPFC, by meeting at FFA in a workshop to determine management options prior to the Commission meeting. Since the results of the workshop are endorsed by FFC they can be used as an agreed 'template' for negotiation.

Maintaining a 'regional' approach at the Commission, while ensuring it does not become too cumbersome, will be vital to achieving good outcomes for PICs.

Another way existing regional strengths could be extended through the WCPFC is for regional fisheries management arrangements where leverage exists, such as the Vessel Days Scheme (VDS), to be adopted as the backbone of Commission management mechanisms. Since PICs are the only bodies that have started fisheries management in the region, there is a strong logic that their initiatives should be adopted, deepening the likelihood that the measures the WCPFC ends up with are likely to suit PIC interests.

The various regional cooperative initiatives in fisheries management that have already been achieved, largely through the FFA and SPC, are said to have saved PICs millions of dollars, and made possible things that would have been impossible for any individual PIC (van Santen and Muller 2000). Nevertheless, there is still room for improvement to strengthen and build on existing regional cooperative arrangements. For example, the FSM Agreement that regionalizes licenses among PNA countries could be extended to include regional enforcement and possibly also observer programs (Turaganivalu, pers. comm.).

The VDS is a relatively 'blunt instrument' as an effort restriction; PICs should implement adequate catch limits and other controls in their EEZs to complement regional management initiatives.

2. Enhance Sovereign Rights & Responsibilities Through Regional Cooperation

Article 62 of UNCLOS enshrines coastal states' sovereign rights over resources in their EEZ. These are the rights PICs want to enhance through the WCPFC. Along with these rights, however, UNCLOS Article 61 outlines coastal states' responsibilities regarding conservation of living resources in their EEZ, and Article 64 requires states to cooperate directly or through RFMOs on highly migratory species (HMS) management both in and beyond the EEZ. PICs have been very vocal in asserting their rights to the tuna resources of the WCPO but it is also important that equal attention is given to the responsibilities that go with those rights, as well as the agreement to apply the precautionary approach, as required under Article 6 of the Fish Stocks Agreement. PICs have a range of duties including monitoring fishing activity, enforcing regulations, and observing flag state responsibilities for vessels registered domestically.⁴⁶ One of the risks to PIC effectiveness within the Commission is that

⁴⁶ For an overview of these responsibilities see (Ram-Bidesi and Tsamenyi 2004).

they succumb to entrenched patterns of relating to wealthy countries as aid recipients rather than taking a fully equal role with regard to their international obligations.⁴⁷

Enhancing Sovereign Rights to the Resource: Allocation

Allocation is acknowledged as an essential prerequisite for the effective operation of RFMOs to prevent overfishing. In the absence of agreement on allocation (participatory rights) agreement cannot be reached on how the impact of reductions in levels of catch and/or effort will be borne by each Commission member. That is, who will bear the cost of remedial action without a guarantee of longer-term benefits flowing to them? Signals so far from the Commission indicate a reluctance on the part of Commission members, including the FFA group, to make unilateral reductions.

WCPFC fishing states and coastal states have signalled allocation as a priority issue, taking steps to position themselves for a favourable economic outcome as evidenced in the negotiation of the allocation criteria in the Convention, and moves by some Pacific island countries to build up catch history through encouraging DWFNs to fish their waters. The most significant issue of contention is the relative weight to be attached to historical fishing/catch and in particular EEZs. This is often framed as the flag versus area argument. The battle lines are well drawn, with DWFNs preferring allocations by flag, and PICs preferring allocation by area (or zone).

Other problems that may arise from failing to deal with allocation in the WCPFC include:

- A 'race to fish' if the only measures in place are Olympic (competitive) TACs or TAEs, with the usual cycle of over investment, overcapacity and loss of profitability,
- A pre-occupation with allocation issues drawing focus, efforts and resources away from dealing with other conservation and management issues,
- Fishing by non-members contributing to unsustainable fishing and their eventual incorporation into Commission with allocations based on inflated catch history,
- Adoption of measures to combat illegal unregulated and unreported (IUU) activities by non-members, resulting in demands by those states to become members with attendant participatory rights, and
- Potential for significant catch overruns and IUU fishing under a simple TAC or TAE measure noting the intersection with this measure of access rights provided under bilateral fishing agreements.

It is debatable whether it would be in the interests of Pacific island countries to agree to a total allowable catch or effort control in the absence of participatory rights having been allocated, given the potential negative impacts on access agreements with DWFNs.

The value of rushing to build up fleets and fishing activity by some PICs as a means of supporting allocation claims by flag appears questionable. The chances of states with highly productive zones and limited flag history (Kiribati, FSM, Palau, Marshall Islands, Tuvalu, Nauru, etc) agreeing to a flag based approach seem minimal, and the

⁴⁷ For a nuanced discussion of such entrenched patterns of behaviour towards aid donors with roots in the colonial era in the case of Solomon Islands see (Bennett 2002).

potential damage to catch rates, profitability and stewardship track record seem very real.

The VDS, when finally agreed and implemented at national level, will form a *de facto* allocation which will be immensely powerful as management tool both within and between FFA states, and as a basis for negotiation at the Commission. FFA staff have noted that the VDS is not in and of itself a sufficient measure, so a vessel limit and TAC would also be need to make up the required 'package' of measures.

Currently, PICs are not prepared for a balanced and well-constructed allocation debate based on the criteria outlined in the WCPF Convention. The progress made prior to 2000 by PICs in regional workshops has been lost, partly due to the pressure of time and resources necessary to negotiate administrative and other arrangements at PrepCon meetings and also due to limited capacity and the inevitable high turnover rate of staff within fisheries administrations.

Recommendation 11

That the PNA group, with the support of other FFA members, ensure effective implementation of the 'vessel days scheme' (VDS) fisheries management measure and support its integration into future allocation discussions at the WCPFC.

That PICs prepare national, sub-regional and regional allocation positions, using the criteria outlined in the Convention and recent bio-economic modelling outputs, in preparation for presentation and discussion at the WCPFC.

Perceptions that Regional Cooperation Impinges on National Sovereignty

After eight years of attending regional forums, Cook Islands diplomat Carl Hunter (pers. comm.) feels that Pacific Islands country delegations to regional organizations are very friendly and smooth, on the surface. The 'Pacific Way' means that PIC delegations tend not to openly disagree and hard not to offend each other while trying to build a consensus on issues as a way of making decisions. In reality, however, each PIC is very different (see Appendix 2), and the smooth surface of relations preserved by the Pacific Way does not mean PICs actually agree with each other (Hunter, pers. comm.).

Regional initiatives in the Pacific are sometimes stymied by the perception that the initiative in question may unreasonably impinge on the national interest of individual countries. One of the political realities working against regional cooperation is that regional development efforts have little cachet among actual constituencies, so there is little incentive for politicians to push regional initiatives. Local and domestic initiatives mean far more politically than regional initiatives with potential or indirect benefits (Hughes 2005; Fry 2005). This factor has been played out with recent regional trade liberalization negotiations marred by disputes over biscuits and kava between Fiji and Vanuatu, and canned corned beef between Fiji and Papua New Guinea.

Interviews and documents analysed for this report contain hopes that the WCPFC through fisheries management would enhance the development and resource management potentials of PICs as a whole, but at the same time there was also a pervasive sense that regional obligations may be in conflict with national interests. Sandra Tarte feels that among PICs there has been 'a perceived conflict between the

national interests of individual members and collective action undertaken by the group', a 'notable absence of mutual trust and confidence between members' despite many years of cooperation through the FFA, and a 'tendency to perceive each other as rivals or competitors rather than allies in a common cause' (Tarte 2004). The examples Tarte gave to illustrate this point include: PICs continuing to negotiate access fees on a bilateral rather than multilateral basis; PICs' reluctance to openly discuss the terms and conditions of distant water access agreements; some FFA members licensing foreign vessels in contravention of regional agreements such as the minimum terms and conditions for access; the PNA move to review management of the purse seine fishery without prior consultation with the rest of the FFA group; and squabbles over the location of the WCPFC Secretariat that nearly resulted in the PICs losing the opportunity to host the Secretariat.⁴⁸

The Forum Fisheries Committee at its 39th sitting decided that the FFA group position on the WCPFC was that the Commission should not be allowed to impinge on national sovereignty by determining national TACs or levels of effort. The group felt the Commission should only set a global TAC for the Convention Area as a whole, and allocate shares for the high seas areas of the Convention.

Interviews and documents used in this study contained various representations of fisheries cooperation as impinging on national sovereignty, which could have consequences for PICs working together in the WCPFC. The 'Objectives' section (2.4) of Papua New Guinea's National Tuna Management and Development Plan (Government of Papua New Guinea 1999) commits to meeting 'Papua New Guinea's regional and international obligations to the management and conservation of tuna resources, while holding Papua New Guinea's interests paramount'. Some government and industry interviewees also prioritised national interests over regional interests. In the words of an industry interviewee talking about regional management: 'Fiji needs to worry about Fiji'.

Some government interviewees argued along the lines that small island developing states need to get their domestic house in order and work out what they want/need, before they can effectively engage with regional bodies. Examples cited by interviewees of where PICs have followed their domestic will rather than followed the agreed group decision include some PICs holding out on using their established electronic vessel tracking systems that did not meet or were incompatible with the standards for a VMS system agreed regionally for FFA use.

Several interviewees mentioned Kiribati as a country that has in the past diverged from regionally agreed initiatives to pursue its perceived national interest. Interviewees usually cited the example of Kiribati licensing Spanish super seiners against the collective will of the rest of the FFA group. Kiribati's situation regarding national interest *vis á vis* regional interest is an interesting one. Fisheries are so important to Kiribati's economy that cuts affecting them will have more impact than in other countries. On the other hand they also have more to lose if a weak PIC position in the WCPFC means effective fisheries management is not achieved. The skipjack stocks targeted by most of the fleets licensed by Kiribati are not in biological danger but these fleets, as part of the equatorial zone fishery, are having an impact on yellowfin and bigeye stocks, with flow-on effects for longline fisheries in the region.

⁴⁸ For a discussion of how perceived conflicts with national interests have affected attempts at regional cooperation in other sectors see (Fry 2005).

The economic impact of substantial localised increases of fishing effort on skipjack is unclear. Kiribati's position therefore constitutes a complex balancing act between its economic interests maintaining long-term revenue streams from skipjack fisheries, and the interests of the Commission area as a whole. It is unrealistic to expect a country with so little else other than abundant tuna resources to easily agree to falls in revenue, if the benefit from its constraint are seen to be garnered by other states. Nevertheless, a compromise must be found within a reasonable timeframe.

Ideally, all PICs would combine sound regional fisheries management strategies with political realities in clear domestic positions for national, regional and Commission-based tuna management arrangements. Unfortunately, fishing pressure has reached a point where management measures are needed in the short-term, so there is limited time for PICs to fully sort themselves out domestically *before* they engage at the Commission. Acknowledging the complexity of the task, the only option seems to be to try to develop regional and domestic management systems simultaneously.

Strategies to help PICs balance regionalism with domestic interests:

For small island developing states sovereign rights issues may need to be understood differently than they are in larger economies. Regional interdependence may be seen, not an optional add-on to independent domestic governance, or as a threat to it, but as a tool to strengthen individual PICs' sovereign rights.

Adhering to the principle that measures should be acceptable to the majority of parties can protect against individual PICs being damaged by regional measures. Wherever possible, PICs' working together should be cooperative but not constraining for individual PICs.

Recommendation 12

While national positions will drive FFC and Commission-based decisions, effective cooperation is a necessary prerequisite to tuna management. The true biological and economic implications of non-cooperation, nationally and regionally, must be determined and 'knee-jerk' nationalist or short-term politically expedient decisions to dissent from FFA group cooperation in the WCPFC should be avoided.

3. Develop Mechanisms to Manage the PNA/non-PNA Divide

According to the Manager of Economics and Marketing in FFA Len Rodwell (pers. comm.), there are two main causes for division within the FFA group; differing levels of development and opportunities for development within the PIC group, and variation in fishery type.⁴⁹ The division between Parties to the Nauru Agreement (PNA) and non-parties roughly lines up with these two splits within the FFA group. The PNA group comprises the Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu. These countries have the richest tuna resources and heaviest levels of tuna fishing; around

⁴⁹ Around the equator between 10 degrees north and south the fishery is predominantly purse seine, targeting skipjack. Further south it is predominantly longline, catching mostly albacore. Longline fisheries targeting yellowfin and big eye moves across both regions, but *sashimi* values are higher in the colder waters further away from the equator.

65% of purse seine effort for skipjack in the Pacific Islands' region of the WCPO. On the whole they are also more reliant on tuna because, with the exception of Papua New Guinea, they have few other easily accessible economic resources, and none that are renewable. The PNA group tends to have lower per capita incomes and be less economically developed than the rest of the FFA group. The non-PNA FFA member countries are Cook Islands, Fiji, Niue, Samoa, Tonga, Tokelau and Vanuatu (and Australia and New Zealand). These countries are less reliant on tuna resources, have less tuna fishing occurring in their EEZs, and have several avenues for development other than tuna (including tourism and remittances from overseas populations). Because fisheries are less economically vital to the non-PNA group their governments are generally prepared to take more conservation-oriented decisions than the PNA governments.⁵⁰

Most interviewees saw the PNA/non-PNA divide as one of the factors most likely to disrupt FFA group cooperation. The PNA group has not yet taken a particular stance separate to the rest of the FFA group in the WCPFC, although there is a risk of this if non-PNA countries apply strong pressure to cut fishing in the equatorial zone because of the 2005 Scientific Committee assessment that current levels of fishing bigeye and yellowfin mortality constitute overfishing (WCPFC 2005). Strategies to preserve good relations between the PNA and non-PNA groups are an important part of working together to achieve positive outcomes for PICs in the WCPFC. For instance, non-PNA countries claim that the economic difficulties faced by their longline fleets due to falling CPUE is a result of expanding purse seine effort in the equatorial zone. While there are elements of truth in this, the PNA are reluctant to cut back on purse seine effort due to the potential impacts on access fees and domestic industries. Acknowledging such sources of friction and working through them in a transparent manner can only but build better relationships within the FFC group.

Recognizing the Divisions and Dealing with Them Appropriately

As detailed above, the divide between the PNA group and the non-PNA group is partly a 'natural' economic divide, one aspect of which is the relative abundance of tuna. In the past FFA and other multilateral initiatives such as the USA multilateral treaty have tended to ignore or gloss over the divide, which has in some senses exacerbated it. For example, the non-PNA group feel that the USA multilateral treaty bridges the divide by giving non-PNA countries some benefits from the treaty, even though USA vessels do not fish in their waters, under terms which would have been unachievable without the whole-of-FFA negotiating approach. The Treaty has however created some resentment on the part of the PNA group. PNA interviewees expressed some resentment about benefits from the fishing conducted in their waters going to other countries, and said that any future group distant water access agreements should not involve countries that do not receive distant water fleets.

Non-PNA countries expressed some dissatisfaction that the FFA, for which they contribute funding, spends most of its time working on PNA issues. This has recently been somewhat addressed by the PNA group funding a dedicated FFA staff member to coordinate work relating to them. Since the two groups have clearly different interests, it may be more effective to openly acknowledge these interests within FFA

⁵⁰ According to one non-PNA interviewee if his country delegation makes a conservation-minded stand that may damage the domestic industry, it is unlikely to negatively affect the career of the delegates. However, PNA officials have told him at meetings that if they vote for a decision that is seen to damage the tuna industry in their country they are liable to be sacked.

group processes so as to reduce the resentments that have arisen from not properly acknowledging the difference. The idea of creating an interest group for southern longline fisheries to match the PNA group, first attempted in the late 1990s, has been revisited and a South Pacific Albacore group has been established within FFA. Such a grouping could diminish the sense non-PNA delegations have of being the ‘left overs’ in the FFA group.

PNA Leadership in the FFA Group

The PNA group have the power to set the tone for the WCPFC and force the kind of fisheries management that will protect the resource and maximize the benefits for their countries. Will they have the vision and leadership skills to do this? Or will they let the fishing countries coopt them? (Gloerfelt-Tarp, pers. comm.).

Since the PNA group controls most of the fishing in the region and they make up just over half of the FFA group, it would make sense for the PNA countries to take strong leadership roles within the FFA group. Instead of being perceived as the leaders of the FFA group, however, the PNA group is often seen as being at odds with the rest of the group (Tarte, pers. comm.). Non-PNA delegation interviewees said they feel the PNA group shirks some of their responsibility in FFC meetings in various ways. First, some non-PNA delegates feel that the PNA governments see the PNA meeting as more important than the FFC meeting, so higher level officials come together for the PNA meeting then leave before the FFC meeting starts, leaving less senior staff to deal with the FFC as a formality. Another tendency noted by non-PNA delegates is that PNA delegates, perhaps for cultural reasons, ‘sit back’ in the meetings, rather than speaking out. Some non-PNA delegates said they always wait for a PNA delegate to speak first, because fisheries are more important to them, but often no PNA delegate speaks up, so the non-PNA delegates end up taking the floor and feeling like ‘loud mouths’.

For cooperation within the FFA and the WCPFC it is important for the PNA group to take more of a leadership role. The PNA group have direct power over the skipjack purse seine fishery, because a high proportion of the effort is occurs within their EEZs.⁵¹ As a group the PNA countries thus have the power to take unilateral action to force through effective management measures for the purse seine fishery and do not need the agreement of fishing states to push such measures through the WCPFC.

Recommendation 13

The PNA group to take more of a leadership role within FFA meetings by building strong positions on key issues, increasing the political level of delegates and through more active participation by delegates.

4. PICs to Lead Decision-making Processes in the WCPFC

The greatest threat to PICs is if the WCPFC cannot make timely sensible management decisions and have them implemented. (Rodwell, pers. comm.)

The relative success of regional initiatives, mostly related to MCS and sponsored by the FFA, are often cited as evidence that PICs have cooperated regionally regarding fisheries. However, as the Deputy Director of FFA Steve Dunn has pointed out , throughout the history of the FFA PICs have never yet had to make a ‘hard’ fisheries

⁵¹ PICs have less control over long lining, because a large percentage of it is conducted in the high seas.

management decision. For instance, the PNA group has cooperated well in establishing the Palau Agreement, but have yet to reduce effort to sustainable levels, particularly to address the growing concern over yellowfin and bigeye stocks. The real test of unity will be when members are faced with making cuts and some see themselves as losing more than others (Dunn, pers. comm).

The Scientific Committee of the WCPFC in August 2005 recommended that levels of fishing induced mortality of yellowfin and bigeye be reduced to below current (considered as 2001-2003) levels (Langley 2005). While the range of outputs from the stock assessment vary, it is clear that the requirements of the WCPF Convention will need to be met, which will mean addressing key source of fishing mortality for yellowfin and bigeye. While major impacts are occurring in the Philippines and Indonesian EEZs (especially to yellowfin), purse seine fisheries in the equatorial zone are also a source of significant mortality (WCPFC 2005). The WCPO is, however, also the largest skipjack fishery in the world and the cost to PICs of mitigating impacts of juvenile bigeye and yellowfin stocks in terms of possible cuts to purse seine effort will be substantial, and quite possibly out of proportion to the benefits gained in other fisheries. Similarly, any cuts to longline effort may disproportionately impact recovering albacore-based fisheries in PICs. In this respect, it is essential that PICs get on the 'front foot' and begin to build proposals for management strategies and measures that are built on options that can gain acceptance at from individual PIC governments.

PICs now need to make some hard decisions. Interviewees stressed that PICs' failure to agree and act in concert within the Commission to push through effective management will be 'deadly'. The incorporation of the VDS scheme in the second meeting of the Commission management measures and the caps on effort were evidence that the region has the ability and resolve to act in concert to achieve negotiating goals. The question remains as to what these long term goals are, and whether or not they will result in optimal outcomes for fish stocks and the PIC economies reliant on them.

5. Ensure the Legitimacy of Regional Policy Initiatives

Multilateral cooperation at the Commission can only succeed in as far as PICs engage with and drive the initiatives. Cooperative initiatives therefore need to be seen as useful and legitimate by PICs, and PICs need to 'own' the initiatives. Respected scholar of international relations in the Pacific, Greg Fry, has noted the political importance of regional initiatives being felt by Pacific Islanders to be Islander-led. This is directly related to Pacific Islanders seeing initiatives at both FFA and Commission levels as legitimate or not, and therefore the level of support they give such initiatives. He has pointed out that one of the main factors that has damaged the legitimacy of particular initiatives in the past was that Australia and/or New Zealand were perceived as 'heavy handed' in pushing those initiatives. This is partly because White dominated Australia and New Zealand are not really seen as belonging to the region by Pacific Islanders, and partly because political assertiveness by these countries is interpreted as neo-colonial (Fry 2005). Another factor that can affect commitment to regional organizations is the extent to which organizations are perceived as practical, pragmatic, and oriented to member countries needs; as opposed

to being perceived as bureaucratic playgrounds draining scarce government resources (Hughes 2005).

Sandra Tarte, who attended most of the negotiations leading up to the WCPFC and has studied regional fisheries politics extensively, feels that part of the success of FFA in generating cooperation has lain in FFA being seen as 'Islander-led'. Although the FFA staff is a mixture of nationalities, having the Islander Director of FFA take a leading role in initiatives such as the US multilateral treaty negotiations seems to have encouraged a sense of ownership of the initiatives. Tarte feels that when outside pressure from Australia, New Zealand or other countries not identified as Pacific Islands, has been brought to bear on fisheries issues there has been less willingness to collaborate (Tarte 2004). Pacific Islander interviewees said they felt FFA and SPC have been very useful pragmatic organizations that have met real needs for PICs. Thus far, therefore, regional fisheries cooperative initiatives have had high levels of legitimacy, which contributes to PICs' commitment to supporting them. It will be important to maintain this level of legitimacy with the WCPFC to help ensure cooperative efforts.

In order to ensure the legitimacy of regional cooperation in the WCPFC, ensure Islander ownership of initiatives and ensure cooperation remains pragmatic and focussed on real issues, rather than becoming mired in bureaucracy.

6. Strategically Manage FFA Group Relations with DWFNs

DWFNs are important to PICs as: i) sources of access fees, ii) sources of aid, iii) sources of foreign direct investment, iv) joint venture partners, and v) market places. They are potential adversaries to coastal PICs in the WCPFC, although it should be noted that both sides are interested in profitable tuna fisheries, so they need also to be regarded as partners in the WCPFC. One of the strategies to promote working together for the benefit of PICs in the WCPFC will be to find common ground with DWFNs and avoid the WCPFC being unnecessarily adversarial. Nevertheless, unity among the FFA group is a higher priority, and relations with DWFNs should be managed accordingly.

Potential areas where close relations between particular PICs and DWFNs may affect FFA group unity include member countries raising a Taiwanese perspective on issues discussed at the FFC. Histories of closeness between PICs and particular non Pacific Islander states might also split the allegiance of the PIC group. For example, some countries could align themselves with the USA, others with New Zealand, others with France. This kind of division has not yet been manifest in the FFA group but is a possibility. A more likely possibility is that aid donor WCPFC members might try to use their bilateral relationships as leverage in influencing PICs voting. Both Australia and Japan put heavy pressure on Solomon Islands' vote in the International Whaling Commission in 2005 in light of their substantial aid commitments (ABC 2005). Japan has a long history of generous fisheries aid relations with some PICs. This aid has already influenced the forms domestic fisheries development has taken in countries like Solomon Islands and Kiribati, and it is possible it might also influence their international fisheries stances.

Recommendation 14

Increase inter-sessional, informal dialogue with fishing states and increase the detailed analysis of relations with fishing states to understand their aspirations and likely 'bottom lines' at the Commission. Minimise unnecessarily adversarial approaches at the Commission.

Involve the Pacific Islands Forum in Managing Relations with DWFNs

Since tuna is important politics and economics for the Pacific region, it should be included more centrally in the core business of the Pacific Islands Forum. While there is a designated post in the Trade section dealing with fisheries issues, given the level of significance to the region and the importance of a regional approach support has been inadequate in the past. There are a number of ways this could be addressed.

Appoint a dedicated, suitably qualified and experienced staff member to establish improved connections between FFA and the Pacific Islands Forum Secretariat.

Raise the level of presentations to the Forum official's committee regarding fisheries issues, to enable important fisheries matters to get to Forum Leaders each year, so that they can be dealt with at the highest level of government. If the Prime Ministers make a decision about fisheries management the FFA group will be obliged to abide by the commitment.

Require Outsiders to Relate to the FFA Group as a Bloc

A sense of group identity emerges not only from within groups, but also from the way outsiders treat groups. The choice by DWFNs to treat FFA countries as a bloc or deal with them all bilaterally clearly has effects on PIC unity. Notwithstanding its divisive potential mentioned earlier, the USA multilateral treaty was cited by many interviewees as a unifying influence. The twice-yearly FFA group discussions with the USA, one for the treaty and one for 'broader cooperation', act as a sounding house for issues of mutual interest and contribute to a sense of group purpose.

Japan's insistence on bilateral relations (rather than multilateral) with PICs may be seen as an effort to introduce fragmentation within the FFA group, as well as a means of minimising access fees. Earlier attempts by the Japanese to fund only the participation of countries with which it has bilateral agreements may be interpreted as an attempt to drive a wedge into the FFA group along the lines of the aid relationship mentioned above. The 2005 offer from Japan to host regular multilateral discussions with the FFA group could be interpreted as a step in the direction of relating to the FFA group as a bloc. Japan has also offered to host the fourth Pacific Islands Leaders Meeting in Japan in May 2006, which along with their aid program has been seen as enhancing relations between the Forum members and Japan (Pacific Islands Forum Secretariat 2005).

Realistically, it is not possible to expect all fisheries issues to be dealt with on a multilateral basis. To engage thus requires certain drivers to be present, most notably the desire by both sides to negotiate on a multilateral basis, and this is a relatively rare occurrence. The level of difficulty in terms of pace of discussion in multilateral negotiations with PICs is also an issue. FFA members are holding multilateral discussions with several WCPFC members including Japan, the US and the EU. A problem with these discussions is that if this involves the DWFN seeking a specific

response on a certain issue, it is difficult to do so as FFA members have not been able to discuss the issue in advance of the meeting (Rodwell, pers. comm.).

If PICs were to put their collective 'foot down' on specific fisheries issues and require DWFNs to relate to them multilaterally their sense of regional unity may be strengthened.

7. Strengthen the Political Profile of Fisheries Issues in the Region

PICs ability to work together effectively to achieve positive outcomes for themselves within the WCPFC is affected by the political profile of regional fisheries issues. Sometimes PIC politicians are not sufficiently aware of or engaged in regional initiatives to follow through with harmonization at the domestic level (Tarte 2004). This problem is exacerbated by the fact that many PICs suffer from political instability, meaning frequent changes of minister and government. Increasing the political profile of regional cooperation in tuna, through the annual Pacific Islands Forum leaders meetings for example, may encourage PIC politicians to make themselves aware of the issues, so as to be able to develop appropriate policy.

Interviewees noted that FFC delegations sometimes do not include high enough ranked officials for the delegations to have a 'mandate' on particular decisions. It may be that sometimes this argument is used as a delaying tactic to enable delegations to avoid deciding on an issue that country not happy about, but the net effect of the lack of 'mandate' is that it impedes FFC's power to make group decisions. The 2004 decision to have ministerial input to FFC helps promote the political profile of tuna related issues, and through having a clear mandate ministers will be able to push through decisions that would otherwise stall. However, some delegations to FFC meetings in 2005 still did not include a minister or other official of high enough rank to have a clear mandate, so this remedy is not foolproof. Another potential problem is if FFA and delegates' briefs are poorly thought out or are ignored, resulting in politicised 'snap' decisions.

8. Use the FFA to Consolidate Cooperation

While FFA has no doubt had an overall positive effect on PIC cooperation in fisheries, the way FFA has dealt with member states has sometimes aggravated the national divisions within the FFA group. FFA should encourage the establishment of different policies about its reports and briefs so as to be more transparent and to facilitate the dissemination of information amongst PICs and, as appropriate, industry stakeholders. One strategy raised by an interviewee was for an FFA delegation to travel to each PIC before FFC meetings to canvass the issues with the PIC in question and help smooth the path to group consensus before the FFC meeting (Yeeting, pers. comm.). This strategy was more frequently employed by FFA in the past, under the Directorship of Philipp Muller.

9. Delegate Responsibilities Among the FFA Group

Regional cooperation involves practical difficulties, especially for small island states. One Pacific Islander interviewee noted that he had four international meetings he was supposed to attend in the following month, which left him no time to work on domestic management, so he was thinking of not attending some of the regional meetings. The 2005 WCPFC meeting clashed with the budget session of Parliament for Kiribati, so Kiribati's Permanent Secretary for fisheries issues was unable to attend the WCPFC. It is difficult enough to get domestic fisheries management right and fisheries management issues are even more complicated at the regional and international levels, so the task of regionally cooperative fisheries management for officials in small government departments is virtually impossibly demanding. One of the ways PICs could make the load more manageable would be to delegate responsibilities among themselves. At the moment all countries try to attend all meetings, some of which are only advisory. If PICs were to trust each other and FFA to coordinate necessary consultation and information dissemination, small teams of PIC delegates could work on particular issues. In this way not every PIC would have to be represented at each meeting.

PICs could 'share the load' of regional meetings. For this to happen working committees would be needed for particular issues, with members from governments particularly concerned with those issues. FFA would need to coordinate communications to ensure all PICs are adequately consulted, have input, and information is disseminated both ways effectively.

Appendices

1. Abbreviations and Jargon

Access Agreement	Distant water fishing vessels are members of fisheries associations that negotiate access to the waters of coastal states for fishing. Often these follow Head Agreements between the governments of the negotiating countries.
ACP	Africa Caribbean Pacific country, a category under the Cotonou Agreement
ADB	Asian Development Bank
Agent	Locally based businesses that provide contractual and other services for distant water fleets. Usually includes obtaining fishing licenses, may include handling transshipping, buying the catch, and procurement. May be legally responsible for fleet while it is in the country.
AusAID	Australian Government Agency for International Development
Automatic Location Communicator	A device approved by the FFA, which transmits data about the location and fishing activities of the vessel on which it is placed (as part of the VMS).
Bunkering	Supplying fuel from one vessel to another.
Competent Authority	Designation for a government department accredited to monitor food safety and quality in line with EU requirements, such that the products of that country may be exported to the EU.
Cotonou Agreement	Successor to the Lomé Agreement. It gives certain ACP countries tariff free access to EU markets.
CPUE	Catch per unit of effort. A productivity measure for fisheries. When CPUE declines this often means fish stocks have declined.
CROP	Council of Regional Organizations of the Pacific
CSPD-II	Canada-South Pacific Ocean Development Program funded by the Canadian International Development Agency (CIDA)
DWFN	Distant Water Fishing Nation. The term distant water fishing <i>nation</i> is not a good one because a nation is a subjective construct usually based on feelings of ethnic belonging and historical ties to particular territories. States are the administrative political and economic units associated with nations. So, strictly speaking the term should be distant water fishing <i>states</i> . This report, however, uses the term DWFN because it will be more familiar to readers than DWFS.
EEZ	Exclusive Economic Zone (200 nautical miles out from the coastline)
EPIRB	Electronic Position Indicating Radio Beacon (safety equipment for vessels in case they need to be rescued)
EU	European Union
FAD	Fish Aggregating Device, also called <i>payao</i> (Filipino)
FFA	Forum Fisheries Agency
FFC	Forum Fisheries Committee (governing body of the FFA)
FIAS	Foreign Investment Advisory Service
FOB	Free on Board
FOC	Flag of Convenience. When a country allows a fishing vessel owned by a company in other country to be registered in the first country for mutual reasons of convenience. It becomes a problem if the flat state is unwilling or unable to undertake flag state responsibilities, such as righting any wrongs done by the vessel under International Maritime Law.
FSM Arrangement	Reciprocal access agreement for of PNA Group countries, with priority accorded local and locally based fleets, signed in the Federated States of Micronesia.
GDP	Gross domestic product
GEF	Global Environment Facility, a funding scheme under the United Nations Development Programme
GRT	Gross registered tonnage, a measure of volume, being the total cubic content of the permanently enclosed spaces of a vessel, with some allowances or

Capturing Wealth From Tuna

	deductions for exempt spaces such as living quarters (1 gross register tonne = 100 cubic feet = 2.83 cubic metres)
gt	gross tonnes
HACCP	Hazard Analysis Critical Control Point, a system for assuring safety and hygiene in food production
Head Agreement	Agreements between governments of distant water states and coastal states for fisheries access. Access agreements often come under Head Agreements.
IMO	International Maritime Organisation
IUU	Illegal, unreported, unregulated. Refers to various kinds of illegitimate fishing.
<i>Katsuo bushi</i>	Smoke dried and cured skipjack used extensively as a stock base and flavouring in Japanese cuisine
Lomé Agreement	Trade agreement between the EU and certain former European colonies in Africa, the Caribbean and the Pacific (ACP) for tariff free access to EU markets. Was superseded by the Cotonou Agreement.
Longline	The predominant style of fishing for large sashimi tuna. A longline is set out behind the vessel with short lines hanging off it dangling hooks under the surface of the water. Large tuna (and sometimes other species) snap at and become caught on the hooks to be pulled aboard when the longline is reeled in.
MCS	Monitoring, Control and Surveillance of fishing activities for fisheries management.
MHLC	Multilateral High Level Conference, the series of meetings preceding the Preparatory Conferences (Prep Cons) that developed the Western and Central Pacific Fisheries Convention and Commission.
Monofilament line	A technological development that allowed greater efficiency and accuracy in longline fishing.
MSY	Maximum Sustainable Yield
Multilateral Treaty	At the time of writing still the only distant water fishing access agreement negotiated multilaterally with the Pacific Island Countries (FFA members) by the United States of America in 1988 (renewed for another 10 years in 2003)
NGO	Non-government organization
OFCF	Overseas Fisheries Cooperation Foundation, a Japanese quasi-government organization that conducts fisheries development assistance.
Palau Arrangement	An arrangement within the PNA group to limit the total number of purse seine vessels allowed to fish in the EEZs of their countries to 205. There is a set number for domestic and locally based foreign vessels. This system is likely to be superseded by the VDS.
PDF	Project Development Fund. A proportion of the funds from the US Multilateral Treaty that are set aside by FFA for member countries to apply for, for special projects. Often the projects are related to fisheries.
Pelagic	Belonging to the open ocean, rather than in shallow waters near the coast.
PIC	Pacific Island Country
PITIC	Pacific Islands Trade and Investment Commission
Pole-and-line	One of the main types of industrial tuna fishing, widely practiced especially by the Japanese fleet to fish for skipjack until the 1980s when the more efficient purse seining method gained ascendancy. At the time of writing the Solomon Islands had one of the few remaining pole-and-line fleets, along with Japan. Long flexible rods with fixed lines and barbless L-shaped hooks are dipped into schools of tuna feeding on the surface, the tuna bite at the hook, are swung up and over the shoulders of the fishers where they slip off the hook and land on the deck behind the fisher.
PNA	Parties to the Nauru Agreement. The group of countries in whose EEZs the majority of purse seine fishing is done. They formed a group soon after the establishment of the FFA to expedite purse seine related issues; Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu.
PNG	Papua New Guinea

Capturing Wealth From Tuna

PrepCon	The Preparatory Conferences that developed the Western and Central Pacific Fisheries Convention preceding the establishment of the WCPFC.
Purse Seine	The predominant style of fishing for skipjack since the 1980s. Dense schools of fish near the surface are encircled by the net, which is then pulled closed at the bottom, creating a bowl or purse shape in which the fish are trapped before being hauled on board.
Regional Register	Distant water fishing vessels operating in the Pacific are included on a regional register maintained by the FFA.
RFMO	Regional Fisheries Management Organization
RSW	Refrigerated sea water, a system for fish preservation on vessels.
SAP	Strategic action program (under the GEF)
SPC	Secretariat of the Pacific Community
STCW	Standards for the training and certification of watchkeepers
TAC	Total allowable catch
Transshipment	Moving a load of fish from one vessel to another, usually from a fishing vessel to a carrier vessel that will take it to the market destination.
Tuna coffin	Chilled sashimi tuna are packed in individual large cardboard boxes called tuna ‘coffins’ for air freight
Ultra low (ULT)	Ultra low technology freezes tuna to around -60°C , which means the flesh does not oxidize and turn brown, which means it can still be sold as <i>sashimi</i> (tuna frozen at higher temperatures cannot easily be sold as fresh fish).
UNCLOS	United Nations Law of the Sea
VDS	Vessel days scheme. The proposed measure for limiting effort in the region to replace the Palau Arrangement 205 vessel cap. PNA countries will be allocated a number of vessel days they can then allocate as they see fit. They may choose to auction them to the highest bidders. They may choose to allocate preferentially to domestic companies. The Palau Arrangement allocated vessels to fishing states, the VDS allocates effort units to coastal states.
VMS	Vessel monitoring system, used by Pacific Island states to monitor the position and activities of fishing vessels to manage their fisheries, maintained by the FFA.
WCPFC	The Western and Central Pacific Fisheries Commission, the regional fisheries management organization for the Pacific region, operating under the Western and Central Pacific Fisheries Convention.
WCPO	Western and Central Pacific Ocean

2. Similarities and Differences Between PICs

Table 5. Key Fisheries Indicators by Country

	Cook Islands	Fiji	Kiribati	Marshall Islands	Papua New Guinea	Solomon Islands
Active domestic fishing vessels						
Longline	33 (2004)	84 (2004)	2 (2003)	4 (1995)	50 (2004)	9 (2004)
Pole-and-line	0	1 (2004)	...	0	...	10 (2004)
Purse seine	0	0	1 (2004)	6 (2004)	37 (2004)	14 (2004)
Tuna catches, metric tonnes & %						
Longline	3,004 (2004)	19,617 (2004)	8 (2003)	23 (1995)	6,164 (2004)	1,174 (2004)
Albacore	1,630 (54%)	11,290 (58%)	0	0	1,640 (27%)	267 (23%)
Bigeye	343 (11%)	1,254 (6%)	1 (13%)	10 (43%)	396 (6%)	357 (30%)
Yellowfin	458 (15%)	4,164 (21%)	2 (25%)	12 (52%)	2,526 (41%)	538 (46%)
Other	573 (20%)	2,909 (15%)	5 (62%)	1 (5%)	1,602 (26%)	12 (1%)
Pole-and-line	...	475 (2001)	5 (1997)	...	9,300 (1985)	6,882 (2004)
Skipjack	...	431 (91%)	4 (80%)	...	8,370 (90%)	6,625 (96%)
Yellowfin	...	44 (9%)	1 (20%)	...	930 (10%)	257 (4%)
Purse seine	...	...	14,600 (2004)	46,672 (2004)	202,189 (2004)	16,094 (2004)
Skipjack	...	...	3,816 (83%)	42,078 (90%)	175,201 (87%)	6,817 (42%)
Yellowfin	...	...	644 / 2.64 (14%)	3,632 (8%)	23,166 (11%)	7,208 (45%)
Bigeye	...	...	140 (3%)	962 (2%)	3,749 (2%)	2,069 (13%)
Other	...	...	0	0	73 (0.03%)	0
Fisheries contribution to GDP, USD\$m	8.62 (11.3%)	18.62 (1.7%)	4.97 (12%)	7.23 (7.4%)	18.68 (0.6%)	...
Value of fisheries exports, USD\$m	2.91 (2002)	29.2 (2002)	1.48 (2002)	0.47 (2002)	48.1 (2002)	35.5 (1997)
Fisheries exports as a % of all exports	81.9	6.0	16.9	6.2	1.8	20.0
Estimated value of access fees, USD\$m	0.17 (1999)	0.21 (1999)	20.6 (1999)	4.98 (1999)	5.84 (1999)	0.27 (1999)
Access fees as a % of GDP, 1999	0.21	0.01	42.81	5.12	0.17	0.1

Source: Tuna Fisheries Yearbook (WCPFC 2004).

Capturing Wealth From Tuna

Table 6. Key Development Indicators by Country

	Cook Islands	Fiji	Kiribati	Marshall Islands	Papua New Guinea	Solomon Islands
Total population, 2004	20,300	847,000	89,700	61,200	5,836,000	521,000
Urban population (% of total)	70.2 (2003)	51.7 (2003)	47.4 (2003)	65.0 (2005)	13.2 (2003)	16.5 (2003)
Surface area—land (sq km)	236	18,274	726	181	462,840	28,896
Surface area—EEZ (sq km)	1,830,000	1,260,000	3,550,000	2,131,000	2,400,000	1,300,000
GDP per capita (US\$)	8,488 (2003)	3,385 (2003)	784 (2004)	1,957 (2003)	645 (2003)	760 (2001)
Structure of GDP (%)	(2003)	(2002)	(2004)	(2002)	(2002)	(1990)
Agriculture	15.7	15.9	9.7	10.4	33.1	45.5
Manufacturing	3.4	14.3	0.9	0.3	10.6	3.7
Mining	...	0.9	...	4.5	16.1	0.5
Construction	3.0	4.6	8.6	11.4	7.3	2.6
Trade	36.5	16.9	11.2	17.1	10.8	7.8
Transport, communications	14.5	15.0	4.5	5.1	4.6	4.7
Finance	8.5	12.7	0.9	15.6	3.0	13.8
Public administration	11.5	20.0	49.3	13.1	10.1	18.5
Aid, 2002 (% of GNI)	...	2	26	48	7	11
Adult literacy rate, 2000-2004 (%)	93	99	95	91	65	...
Life expectancy at birth, 2003 (years)	M: 68; F: 74	M: 66; F: 71	M: 62; F: 67	M: 60; F: 63	M: 59; F: 62	M: 69; F: 73
Infant mortality rate (per 1,000 live births)	18	16	49	53	69	19
Total fertility rate (births per woman)	3.2	2.9	4	5.4	4.0	4.4
Exports, by principal commodity (USD\$'000,000)	(2004) Pearls (2.28) Fish (2.08) Clothing (0.15) Fruits/vegs (0.09) Live fish (0.09)	(2004) Garments (156.0) Sugar (108.5) Gold (53.8) Fish (51.8) Textiles etc. (7.8) Molasses (6.0) Coconut oil (2.2)	(2002) Copra (0.42) Shark fins (0.19) Seaweed (0.08) Fish (0.01)	(2000) Diesel fuel (6.6) Copra (1.35) Coconut oil (1.11) Pet fish (0.45) Handicrafts (0.01)	(2004) Gold (707.7) Crude oil (417.3) Copper (396.5) Palm oil (112.7) Logs (109.9) Coffee (72.9) Cocoa (56.0)	(2004) Logs (63.8) Fish (18.0) Cocoa (5.50) Copra (3.48)

Notes: GPD = gross domestic product, the total domestic economy, GNI = gross national income, including exports (used to be called gross national product).

Sources: Key Indicators of Developing Asian and Pacific Countries (ADB 2005); The Contribution of Fisheries to the Economies of Pacific Island Countries (Gillett and Lightfoot 2002); Human Development Reports (UNDP 2004); Small Islands Big Stakes (UN 2004); World Development Indicators (World Bank 2005).

3. Background to the Project

This project grew out of Dr Kate Barclay's postdoctoral fellowship in the Asia Pacific School of Economics and Government (APSEG) in the Australian National University (ANU). The fellowship was on a scheme in Pacific Islands Studies funded by AusAID, so Dr Barclay entered into discussion with AusAID and fisheries officials in Australian federal government agencies about how to generate an outcome from the fellowship that could be used by fisheries policy makers in the region.

When decolonising PICs had great hopes of development from their tuna resources (Schurman 1998). In 2000 catch values for tuna in the Western and Central Pacific Ocean were estimated to be around USD\$2 billion, of which \$800-900 million was taken in the EEZs of PICs. After processing the value of this catch would have been substantially larger. Most of the catch was taken by distant water vessels paying fees of around USD\$60-70 million annually, and generating other economic benefits in PICs through transshipping activities. Increasing proportions of the catch have been taken by vessels based in PICs through domestication policies over the last decade; around USD\$300 million worth of the catch in 2003. Some of this value was added to through processing in country in several PICs (Clark 2005; Gillett and Lightfoot 2002; Gillett et al. 2001). PICs are concerned about their failure to capture more of the value of this resource, and aspire to make more from tuna in the future. In the 2004 Pacific Islands Forum Leaders Communiqué (Pacific Islands Forum Secretariat 2004) highlighted the economic importance of tuna resources for Pacific Islands Countries (PICs) and raised the political profile of regional cooperation in fisheries by requiring Ministerial oversight. The Pacific Islands Forum Fisheries Agency reworked its vision and mission as part of a new Strategic Plan with a mandate to focus more on fisheries development, as embodied in the vision: 'We will enjoy the highest levels of social and economic benefits for our people through the sustainable development of our fisheries resources' (FFA 2005).

2004 also saw the first meeting of the Western and Central Pacific Fisheries Commission (WCPFC), after seven years' formal negotiations, for the multilateral management of migratory fish stocks in the region – at this stage focussing on tuna. PICs' regional cooperation in fisheries, through organizations such as the Pacific Islands Forum Fisheries Agency (FFA, established 1979), has been more successful and unified than other attempts at regional cooperation. It is widely believed that PICs success in asserting their position among much larger states (China, the EU, Japan, the USA) throughout the negotiations for the formation of the WCPFC was due to unified negotiation as the FFA group, and that continuing to be able to assert their position relies on continued collaboration. In light of these political developments it was decided the project should focus on PICs' aspirations for their tuna resources, including domestic industry development, and prospects for continued PIC cooperation within the WCPFC. It was decided the report should cover six Pacific Islands Countries (PICs) representing a spread across the region—Papua New Guinea, Solomon Islands, Marshall Islands, Kiribati, Cook Islands, and Fiji. Short periods of fieldwork were conducted in each country involving interviews with stakeholders. In addition the report draws on the numerous previous reports written by experts on fisheries management and development on similar topics.

4. Individual Acknowledgements

Thanks to the following people for their support of this project through interviews, passing on reports, sending information by email, or passing on useful contacts.

Ailan Seafoods (PNG): Reinhard Mangels
Ailan Awareness (PNG): John Aini
Asian Development Bank: Thomas Gloerfelt-Tarp
Australian Council for International Agricultural Research: Barney Smith, Ken Menz
Australian Government: Glenn Hurry, Sue Erbacher, Mary Sertich, James Lee, Jacinta Innes, Deahne Turnbull, Hannah Birdsey
Australian National University: Maree Tait, Satish Chand, Chakriya Bowman, Mike Bourke, Hannah Parris
Barclay, Lesley
Bismark Barramundi (PNG): Ian Middleton
Blue Pacific (Cook Islands): Jack Cooper, Chris (Operations Manager)
Central Pacific Producers (Kiribati): Barerei Onorio, Arieria Tekaaata
Chiota, Judy
Clark, Les
Cook Islands Government: Carl Hunter, Ian Bertram, Peter Graham, Myra Moeka'a, Vaitoti Tupa, Pam Maru, Garth Broadhead, Mark Short
European Union Rural Coastal Fisheries Development Programme (PNG): Seán P. Marriott
Fiji Fish Marketing Group Limited: Grahame Southwick, Russell Dunham
Fiji Government: Apolosi Turaganivalu
Fish Bites Incorporated (FBI) (Cook Islands): Navy Epati
Fisheries Training Centre (Kiribati): Teorae Kabure
Forum Fisheries Agency: Nakada Masao, Transform Aqorau, Steve Dunn, Len Rodwell, Chris Reid, Ben Hall
Frabelle (PNG): Nestor Defensor, Augusto C. Natividad
Gillett, Preston and Associates: Bob Gillett, Garry Preston, David Burgess, Hugh Walton, Peter Watt
Hughes, Anthony V.
Ishizaki, Takuzo
Kennedy, John
Kinch, Jeff
Kingston, Keith
Kiribati Fisherman Services Company Limited: T. Nauan Bauro
Kiribati Government: David Yeeting, Raikaon Tumoia, Maruia Kamatie, Beero Tioti, Temwaang, Teea Tira, Terieta (Personal Secretary to the President)
Lalley, Barry
Land Holdings Limited: Trevor York
Latitude 8: Maurice Brownjohn
Lewis, Antony
Mamupio, David and Tina
Maps Tuna (PNG): Tet Merin, Lyanna Sete
Marshall Islands Government: Glen Joseph
Matira South Fishing Limited (Cook Islands) Frances Garnier
National Fisheries Development (Solomon Islands): Adrian Wickham
Neptune Fishery (PNG): Adrian Chow

Overseas Fishery Cooperation Foundation of Japan: Echigo Manabu
Pacific Fishing Company Limited (Pafco) (Fiji): Jean Claude Guenegan, Inoke Navuetaki, Joy Prakash Gupta, Ashok Raj
Papua New Guinea Government: Samol C. Kanawi, Noan Pakop, Julius Onkau, Norman Barnabas, Yaosa Kaikar, Clarence M. Hoot, John Adani, Terry Sibanganei (Madang Province), Roboam Paka, Julius Onkau, Emmanuel Tamba (New Ireland Province), Peter Wagi, Aquina Kango, Ludwig Kumoru, Sylvester Pokajam
Porter Group (Cook Islands): Glenn Armstrong
RD Tuna (PNG): Pete C. Celso, Danilo D. Zamudio
Sanko Bussan (PNG) Limited: Blaise Paru
Siaguru, Phillip
Solander (Fiji): Charles Hufflett, David Lucas
Solomon Islands Development Trust: John Roughan
Solomon Islands Government: Tione Bugotu, Rudolph Dorah, Derek Aihari, Sylvester Diake, Peter Ramohia, Edwin Oreihaka, Pauline Beseto
Soltai Fishing and Processing Limited (Solomon Islands): Milton Sibisopere, Asery Kukui, Mr Nakamura, Alfredo D. Sevillejo, Godfrey Manebosa, John Pina
Secretariat for the Pacific Community: Aliti Vunisea, John Hampton, Patrick Ledohey, Lindsay Chapman, Colin Millar, Youngmi Choi, Tim Lawson
South Pacific Regional Environment Programme: F. Vitolio Lui
South Seas Tuna (PNG): Ian Boatwood
Stone, Robert
Sullivan, Nancy
Tarawa Fishermen's Cooperative Society Limited (Kiribati): Maerere Baiteke, Bateriki Barea
The Nature Conservancy (Solomon Islands): William T Atu
Tiller, Simon
Tosa Bussan (Fiji): Nakano Toru
University of the South Pacific: Sandra Tarte, Vina Ram-Bidesi
University of Papua New Guinea: Wilson C. Go, Kirpal Singh, Augustine Mungkaje, Lance Hill, Ross Hines
van Santen, Gert
Worldfish Centre: Johann Bell, Chris Ramofafia
World Wildlife Fund (WWF): Stephen Kido Dalipanda, Liz Wilson, Luanne Losi

Personal Communications Details

- Aini, John. 2005. Trainer, Ailan Awareness NGO and Data Management Specialist, PNG National Fisheries Authority Coastal Fisheries Management and Development Project (ADB Project). Interview, 26 May. Kavieng, Papua New Guinea.
- Bauro, Nauan. 2005. General Manager, Kiribati Fisherman Services Company Limited (KFS). Interview 13 October. Bairiki, Tarawa, Kiribati.
- Bell, Johann. 2005. Principal Scientist, Natural Resources Management, WorldFish Centre. Personal communications, 26-28 July. Honiara.
- Celso, Pete C. 2005. Managing Director, RD Tuna Cannery Limited. Interview, 17 May. Vidar, Madang, Papua New Guinea.
- Defensor, Nestor. 2005. Resident Director, Frabelle (PNG). Interview, 12 May. Lae, Papua New Guinea.
- Dunn, Steve. 2005. Deputy Director, Forum Fisheries Agency (FFA). Interview, 12 July. Honiara, Solomon Islands.
- Gillett, Robert. 2005, 2006. Personal correspondence (email) 25 December (05), 25 May (06).
- Gloerfelt-Tarp, Thomas. 2005. Senior Natural Resources Specialist, Pacific Operations Division, Asian Development Bank. Interview, 28 September. Suva, Fiji.
- Hunter, Carl. 2005. Director, Pacific Affairs, Ministry of Foreign Affairs and Immigration. Interview 22-23 September. Avarua, Cook Islands.
- King, Mike. 2005. Coastal fisheries management consultant. Personal communication, 16 June.
- Kingston, Keith. 2005. Lae businessman and recreational game fisherman. Personal communication, 15 May. Lae, Papua New Guinea.
- Nakamura. 2005. Manager, Smoking Department, Soltai Fishing and Processing. Interview, Soltai office, 22 July. Noro, Solomon Islands.
- Onorio, Barerei. 2005. General Manager, Central Pacific Producers Limited (CPP). Interview, 12 October. Betio, Tarawa, Kiribati.
- Preston, Garry. 2005. Fisheries management consultant, Gillett Preston and Associates. Personal communication 17 December.
- Ramohia, Peter. 2005. Research Officer, Fisheries Department. Interview, 15 July. Honiara, Solomon Islands.
- Rodwell, Len. 2005. Manager, Economics and Marketing, Forum Fisheries Agency (FFA). Interview, 11 July. Honiara, Solomon Islands.
- Southwick, Grahame. 2005a. Owner, Fiji Fish Marketing Group Limited. Interview, 27 September. Lami, Fiji.
- Stone, Robert. 2005. Owner of small 'gourmet' fish processing factory, former owner of a skipjack fishing company. Interview, 16 September. Pacific Harbour, Fiji.
- Tamba, Emmanuel. 2005. Fisheries Extension Officer, New Ireland Provincial Government. Interview, 26 May. Kavieng, Papua New Guinea.
- Tarte, Sandra. 2005. Senior Lecturer, Department of History and Politics, University of the South Pacific. Interview, 28 September. Suva, Fiji.
- Tumoa, Raikon. 2005. Senior Fisheries Officer, Kiribati Ministry of Fisheries and Marine Resources Development. Interview, 14 October. Bairiki, Tarawa, Kiribati.
- Turaganivalu, Apolosi. 2005. Director, Management Services Unit, Fiji Ministry of Fisheries and Forests. Interview, 29 September. Suva, Fiji.

- Watt, Peter. 2005. Consultant on community based resource management project in Samoa in the early 2000s. Interview, 26 May. Kavieng, Papua New Guinea.
- Yeeting, David. 2005. Permanent Secretary, Ministry of Fisheries and Marine Resources Development. Interview 17 October. Bairiki, Tarawa, Kiribati

References

- ABC. 2005. *The Whale Wars* [Current affairs television piece, broadcast 18 July]. Australian Broadcasting Corporation (ABC) 2005 [cited 14 December 2005]. Available from <http://www.abc.net.au/4corners/content/2005/s1413252.htm>.
- ADB. 1997. *The Pacific's Tuna: The Challenge of Investing in Growth, Pacific Studies Series*. Manila: Asian Development Bank (ADB), Office of Pacific Operations.
- . 1998. Report and Recommendations of the President to the Board of Directors on a Proposed Loan to Papua New Guinea for the Fisheries Development Project. Manila: Asian Development Bank (ADB).
- . 2003. On or Beyond the Horizon: A Discussion Paper on Options for Improving Economic Outcomes from the Western and Central Pacific Tuna Fishery. ADB TA 6128-REG 226, Technical Assistance for Alternative Negotiating Arrangements to Increase Fisheries Revenues in the Pacific. Manila: Asian Development Bank (ADB).
- . 2005. *Key Indicators of Developing Asian and Pacific Countries* [Online publication]. Asian Development Bank (ADB) 2005 [cited 13 December 2005]. Available from http://www.adb.org/Documents/Books/Key_Indicators/default.asp.
- Anderson, Katherine. 2002. Tuna Politics in Oceania: The Effectiveness of Collective Diplomacy. PhD Thesis, Department of International Relations, Research School of Pacific and Asian Studies, Australian National University, Canberra.
- Balint, Ruth. 2005. *Mare Nullius* and the Making of a White Ocean Policy. Paper read at Fresh and Salt: Water, Borders and Commons in Australia and Asia, at University of Technology Sydney, 8-10 May.
- Barclay, Kate. 2000. Solomon Taiyo Ltd—Tuna Dreams Realized? *Pacific Economic Bulletin* 15 (1):34-47.
- . 2001. Foreign Bodies in Tinned Tuna: Modernism, Identity Relations and Economic Practice in a Japanese Joint Venture in the Solomon Islands, PhD thesis, Humanities and Social Sciences, University of Technology Sydney, Sydney.
- . 2004. Mixing Up: Social Contact and Modernization in a Japanese Joint Venture in the Solomon Islands. *Critical Asian Studies* 36 (4):507-540.
- . 2005. Tuna Dreams Revisited: Economic Development Contributions from a Tuna Fishing and Processing Enterprise in Solomon Islands. *Pacific Economic Bulletin* 20 (3):78-93.
- Benet Monico, Ariadna. 2003. Madang Lagoon Water Quality Monitoring. Madang, Papua New Guinea: World Wild Fund for Nature (WWF) South Pacific Programme.
- Bennett, Judith. 2002. Roots of Conflict in Solomon Islands. Though Much is Taken, Much Abides: Legacies of Tradition and Colonialism. Discussion Paper 2002/5. Canberra: State Society and Governance in Melanesia, Research School of Pacific and Asian Studies, Australian National University.
- Bowman, Chakriya. 2005. Business Development in Papua New Guinea. Opportunities and Impediments to Private Sector Investment and Development. Study for the Australian Agency for International Development (AusAID). Canberra: Asia Pacific School of Economics and Government, the Australian National University.

- Cartwright, Ian. 2004. Report on Regional NGO Participation in Regional Arrangements for the Management and Conservation of Oceanic Fish Stocks. Launceston, Australia: Thalassa Consulting.
- Cartwright, Ian, and Anna Willock. 1999. Oceania's Birthright: The Role of Rights-Based Management in Tuna Fishery of the Western and Central Pacific. Paper read at FishRights 99, at Perth, Australia 11-19 November.
- Chand, Satish. 2005. Labour Mobility for Sustainable Livelihoods in Pacific Island States. *Pacific Economic Bulletin* 20 (3):63-76.
- Chapman, Lindsay. 2002. Development Options and Constraints Including Training Needs and Infrastructure Requirements within the Tuna Fishing Industry and Support Services in Fiji. Field Report No. 15. Noumea, New Caledonia: Secretariat of the Pacific Community.
- . 2003. Development Options and Constraints Including Training Needs and Infrastructure Requirements within the Tuna Fishing Industry and Support Services on Tarawa and Christmas Islands, Republic of Kiribati. Field Report No. 19. Noumea, New Caledonia: Secretariat of the Pacific Community (SPC).
- . 2004. Development Options and Constraints Including Training Needs and Infrastructure Requirements Within the Tuna Fishing Industry and Support Services in the Republic of the Marshall Islands. Field Report No. 23. Noumea, New Caledonia: Secretariat of the Pacific Community.
- . 2004. Nearshore Domestic Fisheries Development in Pacific Islands Countries and Territories. Information Paper for 4th Heads of Fisheries Meeting. Noumea: Secretariat of the Pacific Community.
- Clark, Les. 2002. Transformation and Rights-Based Fisheries Management Regimes: Application to the Western and Central Pacific Ocean. Working Paper 4, Forum Fisheries Agency Rights-Based Management Workshop. 22-24 June, Nadi, Fiji.
- . 2005. First Draft for AusAID Pacific 2020—Fisheries Issues Input Paper.
- Emberson-Bain, 'Atu (ed). 1994. *Sustainable Development or Malignant Growth?: Perspectives of Pacific Island Women*. Suva, Fiji: Marama Publications.
- Eminent Persons' Group. 2004. Pacific Cooperation. Voices of the Region. The Eminent Persons' Group Review of the Pacific Islands Forum.
- FFA. 2002. Report of Rights-Based Management Workshop. 22-24 June, Nadi, Fiji. Honiara: Forum Fisheries Agency (FFA).
- . 2005. FFA Strategic Plan 2005-2020. Honiara, Solomon Islands: Pacific Islands Forum Fisheries Agency (FFA).
- FIAS. 2005. *Foreign Investment Advisory Service* [Homepage]. World Bank Group 2005 [cited 7 December 2005]. Available from <http://www.ifc.org/ifcext/fias.nsf/content/home>.
- Friends of Kananam. 2005. *The Kananam Community Say 'NO' to RD Tuna!* [Website] c.2003 [cited 17 November 2005]. Available from <http://lorikeet.and.com.au/RD/rdtuna.html>.
- Fry, Greg. 2005. 'Pooled Regional Governance' in the Island Pacific? Lessons from History. *Pacific Economic Bulletin* 20 (3):111-119.
- Gillett Preston and Associates. 2000. A Financial and Economic Review of the PNG Tuna Fishery. Technical Document No. 2. Fisheries Development Project ADB Loan No: 1656-PNG. Port Moresby: Papua New Guinea National Fisheries Authority.

- Gillett, Robert. 1999. *A Comparative Study of Coastal Resource Management in the Pacific Island Region*: World Bank.
- . 2003. *Domestic Tuna Industry Development in the Pacific Islands. The Current Situation and Considerations for Future Development Assistance*. FFA Report 03/01. Honiara: Forum Fisheries Agency.
- . 2005. *Tuna for Tomorrow? Some of the Science Behind an Important Fishery in the Pacific Islands*. In *RETA 6128: Alternative Negotiating Arrangements to Increase Fisheries Revenues in the Pacific*. Manila: Asian Development Bank (ADB).
- Gillett, Robert, and Chris Lightfoot. 2002. *Contribution of Fisheries to the Economies of Pacific Island Countries, Pacific Studies Series*. Manila: Asian Development Bank.
- Gillett, Robert, Mike McCoy, Len Rodwell, and Josie Tamate. 2001. *Tuna. A Key Economic Resource in the Pacific Islands*. Manila: Asian Development Bank and Forum Fisheries Agency.
- Gomez, B, ed. 2005. *PNG's Robust Tuna Industry*. In *Papua New Guinea Yearbook*. Port Moresby: Yong Shan Fook.
- Government of Papua New Guinea. 1999. *The National Tuna Fishery Management Plan (Fisheries Management Act 1998)*.
- . 2004. *Revised Draft Tuna Fishery Management Plan (changes up to 26/06/2004)*. Port Moresby, PNG.
- Government of Solomon Islands. 2005. *National Fisheries Workshop, Solomon Islands National and Provincial Fisheries Departments, at King Solomon Hotel, Honiara, Solomon Islands, 25 July—3 August*.
- Greenpeace. c.2005. *Development Without Destruction. Towards Sustainable Pacific Fisheries (booklet)*. Suva, Fiji: The Oceans Campaign Greenpeace Australia Pacific (greenpeace@connect.com.fj).
- Grynberg, Roman. 1998. 'Rules of Origin' Issues in Pacific Island Development. *Development Issues 8* (National Centre for Development Studies, Australian National University).
- Grynberg, Roman (ed). 2003. *Fisheries Issues in WTO and ACP-EU Trade Negotiations, Commonwealth Economic Paper Series*. London: Economic Affairs Division, Commonwealth Secretariat.
- Grynberg, Roman, Michael Hyndman, and Sacha Silva. 2005. *Towards a New Pacific Regionalism. A Report to the Pacific Islands Forum Secretariat, Pacific Studies Series*. Manila: Asian Development Bank and Commonwealth Secretariat.
- Hampton, J, A Langley, S Harley, P Kleiber, Y Takeuchi, and M Ichinokawa. 2005. *Estimates of sustainable catch and effort levels for target species and the impacts on stocks of potential management measures*. 1st Meeting of the Scientific Committee of the Western and Central Pacific Fisheries Commission, WCPFC-SC1 SA WP-10, 8-19 August. Noumea, New Caledonia.
- Hampton, John, Tim Lawson, and Peter Williams. 1996. *Interaction between small-scale fisheries in Kiribati and the industrial purse seine fishery in the western and central Pacific Ocean*. In *Status of Interactions of Pacific tuna fisheries in 1995*, edited by R. Shomura, J. Majkowski and R. Harman. Rome: Food and Agriculture Organization (FAO).
- Hand, Anthony J. 1999. *A Review of Fisheries Taxation and Licensing in Solomon Islands*. Manila: Asian Development Bank.

- Hughes, Anthony. 2005. Strengthening Regional Management. A Review of the Architecture for Regional Cooperation in the Pacific. Report to the Pacific Islands Forum.
- Hughes, Anthony, and Odin Thaanum. 1995. Costly Connections: A Performance Appraisal of Solomon Taiyo Limited. Forum Fisheries Agency Report No. 95/54. Honiara: Investment Corporation of Solomon Islands.
- Islands Business. 2005. Solomon Islands: Audit Revelations Disclose US\$53m Losses. *Islands Business*, 20.
- Kinch, Jeff, Mark Baine, Augustine Mungkaje, Casper Dako, Teddy Bagi, and Micah Aranka. 2005. Moving Towards Management: An Analysis of the Socio-economic Conditions and Catch Data of the European Union's Rural Coastal Fisheries Development Programme's Fisher Groups, Madang Province, Papua New Guinea. Port Moresby: Motupure Island Research Centre, University of Papua New Guinea.
- Krampe, Paul. 2006. Rising fuel prices and its impact on the tuna industry. Tuna 2006—9th Infotech World Tuna Trade Conference, 27 May. Bangkok.
- Lal, Padma, and Rashmi Rita. 2005. Potential Impacts of EU Sugar Reform on the Fiji Sugar Industry. *Pacific Economic Bulletin* 20 (3):18-42.
- Langley, Adam. 2004. Marshall Islands National Tuna Fishery Status Report No. 5. Noumea: Oceanic Fisheries Programme, Secretariat of the Pacific Community (SPC).
- . 2005. Presentation on status of tuna stocks in the Western and Central Pacific. Paper read at Meeting between the Fiji Ministry of Fisheries and Forests and Tuna Associations, 28 September, at Fiji Nurses Association Conference Room, McGregor Road, Suva.
- Larmour, Peter, and Nick Wolanin, eds. 2001. *Corruption and Anti-Corruption*. Canberra: Asia Pacific Press, Australian National University.
- Lehodey, Patrick, Feh Chai, and John Hampton. 2003. Modelling Climate-Related Variability of Tuna Populations From a Coupled Ocean-Biochemical-Populations Dynamics Model. *Fisheries Oceanography* 12 (4/5):483-494.
- Lewis, Anthony. 2004. A Review of Current Access Arrangements in Pacific Developing Member Countries (PDMCs). ADB Project TA 6128-REG: Alternative Negotiating Arrangements to Increase Fisheries Revenues in the Pacific: Asian Development Bank (ADB).
- Lewis, Antony. 2005. Fisheries—A Key Economic Sector at the Crossroads: A Review of Recent Developments in the Fisheries Sector of PNG, its Current Status and Prospects for the Future. Paper read at Institute for National Affairs (INA), Papua New Guinea.
- Mani, Luke. 1994. An Assessment of Fish Cannery Effluent Discharge on Pollution Status of the Noro Sea Front, Western Province. Honiara: Solomon Islands College of Higher Education.
- McCoy, M. A., and R. D. Gillett. 2005. Tuna Longlining by China in the Pacific Islands: A Description and Considerations for Increasing Benefits to FFA Member Countries. Honiara: Forum Fisheries Agency.
- Owen, Anthony D. 2001. The Relationship Between the World Price for Skipjack and Yellowfin Tuna Raw Material for Canning and Supply from the WCPO and FFA Member Countries EEZs. FFA Report 01/32. Honiara, Solomon Islands: Forum Fisheries Agency (FFA).

- Pacific Islands Forum. 2005. *A Pacific Plan for Strengthening Regional Cooperation and Integration (Final Draft)*. Pacific Islands Forum Secretariat 2005 [cited 25 November 2005]. Available from <http://www.sidsnet.org/pacific/forumsec/>.
- Pacific Islands Forum Secretariat. 2005. *Forum Leaders' Communique, Thirty-Fifth Pacific Islands Forum, Apia, Samoa, 5-7 August 2004* [cited 24 November 2005]. Available from <http://www.sidsnet.org/pacific/forumsec/>.
- . 2004. Gender Issues in the Pacific Tuna Industry. Background Reports to National Tuna Management and Development Plans. Pacific Examples, Vol. 2. Suva, Fiji: Pacific Islands Forum Secretariat, Canada-South Pacific Ocean Development (C-SPOD), Secretariat of the Pacific Community (SPC).
- . 2005. *Forum Leaders Communique, Thirty-Sixth Pacific Islands Forum, Madang, Papua New Guinea, 25-27 October 2005* [cited 23 November 2005]. Available from <http://www.sidsnet.org/pacific/forumsec/>.
- Peebles, Dave. 2005. *Pacific Regional Order*. Canberra, Australia: Asia Pacific Press.
- Petersen, Elizabeth. 2002. Economic Policy, Institutions, and Fisheries Development in the Pacific. *Marine Policy* 26:315-324.
- . 2002. Institutional Structures of Fishery Management: The Fortuna in the South Pacific. In *Resources Management in Asia Pacific Developing Countries*, edited by R. Garnaut. Canberra: Asia Pacific Press.
- PITIC. 2005. *Pacific Islands Trade and Investment Commission (Australia) Homepage 2002* [cited 27 October 2005]. Available from <http://www.pitic.org.au/index.htm>.
- Pitts, Maxine. 2002. *Crime, Corruption and Capacity in Papua New Guinea*. Canberra: Asia Pacific Press, Australian National University.
- Post-Courier. 2005. Condom in Tinned Fish Probed. *Post-Courier*, 31 May, 2.
- Ram-Bidesi, Vina. 2004. Report of the Sixth Session of the Preparatory Conference for the Establishment of the Commission on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean, 19-23 April, Bali, Indonesia. Suva: Marine Studies Programme, University of the South Pacific.
- Ram-Bidesi, Vina, and Martin Tsamenyi. 2004. Implications of the tuna management regime for domestic industry development in the Pacific Island States. *Marine Policy* 28:383-392.
- Reid, Christopher. 2005. Presentation to Solomon Islands National Fisheries Workshop, 25 July—3 August, King Solomon Hotel. Honiara.
- Reid, Christopher, Michel Bertignac, and John Hampton. 2006. Further development of, and analysis using, the Western and Central Pacific Bioeconomic Tuna Model (WCPBTM). ACIAR project, Maximizing the Economic Benefits to Pacific Islands Nations from Management of Migratory Tuna Stocks, Technical Paper No. 2. http://www.business.latrobe.edu.au/public/staffhp/jkennedy/ACIARTechPapers_files/aciarTP2Further%20DevelopmentsWCPOBTM.pdf Review of Reviewed Item.
- Rodwell, Len. 2005. Manager, Economics and Marketing, Forum Fisheries Agency (FFA). Interview, 11 July. Honiara, Solomon Islands.
- Sasabe, Mari. 1993. *A Woman's Story: Japan's Economic Involvement in the Pacific*. Suva: Pacific Conference of Churches.
- Schurman, Rachel. 1998. Tuna Dreams: Resource Nationalism and the Pacific Islands' Tuna Industry. *Development and Change* 29:107-136.

- Solomon Star. 2004. Fishermen Monitored for HIV/AIDS. *Solomon Star*, 12 November.
- South Pacific Forum Secretariat. 2000. Gender Issues in the Tuna Industry. Background Reports to National Tuna Management and Development Plans. Pacific Examples, Vol. 1. Suva, Fiji: South Pacific Forum Secretariat, Canada-South Pacific Ocean Development (C-SPOD), Forum Fisheries Agency (FFA), Secretariat of the Pacific Community (SPC).
- SPC. 2004. Report of the Scientific Committee. Working Paper WCPFC/Comm.2/22. Noumea, New Caledonia: Secretariat of the Pacific Community (SPC).
- . 2005. *Tuna, Fisheries and Climate Variability* [Website]. Secretariat of the Pacific Community (SPC) Oceanic Fisheries Programme c.2005a [cited 29 November 2005]. Available from <http://www.spc.int/oceanfish/Html/TEB/Env&Mod/index.htm>.
- Sullivan, Nancy, Thomas Warr, Joseph Rainbubu, Jennifer Kunoko, Francis Akauna, Moses Angasa, and Yunus Wenda. 2003. Tinpis Maror: A Social Impact Study of Proposed RD Tuna Cannery at Vidar Wharf, Madang. Madang, Papua New Guinea: Nancy Sullivan and Associates.
- Tai, Baeau. 2005. *High Freight Costs Hurt PNG Tuna Exports* [Newspaper article]. *The National* 2004 [cited 21 October 2005]. Available from www.thenational.com.pg.
- Tamate, Josie. 2002. Air Freighting Tuna Products: Challenges and Opportunities for Pacific Island Fresh Tuna Exporters. FFA Report 02/26. Honiara, Solomon Islands: Forum Fisheries Agency (FFA).
- Tarte, Sandra. 2002. A Duty to Cooperate: Building a Regional Regime for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific. In *Ocean Yearbook*, edited by E. M. Borgese, A. Chircop and M. L. McConnell. Chicago: University of Chicago Press.
- . 2003. Report of the Fifth Session of the Preparatory Conference for the Establishment of the Commission on the Conservation and management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. Rarotonga, Cook Islands.
- . 2003. Report on the Fourth Session of the Preparatory Conference of the Establishment of the Commission on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean. Nadi, Fiji.
- . 2004. Managing Tuna Fisheries in the Pacific: A Regional Success Story? Paper read at 39th Foreign Policy School, 25-28 June, at University of Otago, New Zealand.
- The National. 2005. Commentary: EU Should Finance Fish Harvesting Capacities (from Peter Donigi, lawyer and diplomat, former Papua New Guinea Permanent Representative to the United Nations). *The National*, 23 August.
- . 2005. Tuna Cold War. *The National*, 17 June.
- UN. 2005. *Small Islands Big Stakes. Small Island Developing States and Territories* [PDF file]. United Nations 2004 [cited 13 December 2005]. Available from <http://www.un.org/smallislands2005/indicators.pdf>.
- UNDP. *United Nations Development Programme (UNDP) Human Development Reports 2004* [cited 17 June 2005]. Available from <http://hdr.undp.org/statistics/>.
- van Santen, Gert. 2005. Economic Tuna Industry Indicators: Proposals for a Simple Annual System to Monitor Key Parameters of the Tuna Fishery and its Impact

- on FFA Members. Sydney and Honiara: World Bank and Forum Fisheries Agency.
- van Santen, Gert, and Philipp Muller. 2000. Working Apart or Together: An Analysis of Selected Benefits and Costs of a Common Approach to Management of the Tuna Resources in Exclusive Economic Zones of Pacific Island Countries. Honiara, Solomon Islands: World Bank.
- Wallis, Ian. 1999. Noro Fish Processing Facility Waste Water Treatment and Effluent Disposal. Geneva: World Health Organization.
- WCPFC. 2005. *Western and Central Pacific Fisheries Commission Tuna Fishery Yearbook* [Report]. Western and Central Pacific Fisheries Commission (WCPFC) 2004 [cited 13 December 2005]. Available from http://www.spc.int/oceanfish/Docs/Statistics/WCPFC_Yearbook_2004.pdf.
- . 2005. Report of the First Regular Session of the Scientific Committee of the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean, 8-19 August. Noumea, New Caledonia: Western and Central Pacific Fisheries Commission (WCPFC).
- Williams, Peter, and Christopher Reid. 2005. Overview of Tuna Fisheries in the Western and Central Pacific Ocean, Including Economic Conditions. Working Paper WCPFC-SC1. Noumea, New Caledonia: Western and Central Pacific Fisheries Commission.
- World Bank. 2005. *World Development Indicators 2005* [Online publication]. World Bank 2005 [cited 13 December 2005]. Available from <http://web.worldbank.org/WBSITE/EXTERNAL/DATASTATISTICS/0,,menuPK:232599~pagePK:64133170~piPK:64133498~theSitePK:239419,00.html>.
- WWF. 2005. *Europeans Prefer Responsibly Sourced Seafood* [Press release]. World Wild Fund for Nature (WWF) 2005 [cited 14 December 2005]. Available from http://panda.org/news_facts/newsroom/index.cfm?uNewsID=53680.