Tuna Supply Chains and Regulatory Frameworks in Two Pacific Island Countries

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GILLETT, PRESTON AND ASSOCIATES INC.
## SUMMARY OF MAJOR FINDINGS

| Tuna purse seining in Papua New Guinea | • Largest purse seine catch among all PICs  
| | • Conducted by a mix of domestic and foreign vessels |
| 
| Papua New Guinea fleet structure and productivity | • 234 purse seine vessels licensed in 2012, 90 percent in 50-80 meter length class  
| | • Total 2012 purse seine catch in PNG waters 518,349 tons, of which 9 percent by PNG flag, 22 percent by locally-based foreign flag, 69 percent by distant water vessels  
| | • Total reported purse seine catch in PNG waters has decreased in each of the past three years |
| 
| Commercial entities involved in fishing activities | • Two categories: PNG-registered, foreign owned, 9 companies  
| | • Foreign with licensed vessels under bilateral agreements, 9 companies or associations, excluding US tuna treaty |
| 
| Key features of fishing operations | • For vessels associated with processing in PNG, some catch sold locally, significant amounts exported, some processed locally  
| | • Extensive use of anchored FADs  
| | • Transshipment common for domestic vessels  
| | • Supply patterns differ among 3 top producers |
| 
| Processing of skipjack caught and landed in PNG | • Estimated less than one-third of total catch landed in PNG for processing  
| | • 5 canning or loining facilities, 3 owned by Philippine firms, one by Taiwan, one Malaysia  
| | • Processors invest to gain access to resources and for preferential access to EU market  
| | • Significant challenges to operating processing facilities in PNG: labor, logistics, PNG government failure to follow through on promised infrastructure |
| 
| Post-production supply chain arrangements | • Some canned tuna marketed locally  
| | • Nearly all loins and cans exported go to the EU  
| | • Cans exclusively private label  
| | • Loin export volume to EU has climbed steadily since 2008 but still only about 8.6 percent of EU imports  
| | • Export of canned tuna has also increased except slight drop in 2013 to 18,800 tons or about 4.5 percent total EU imports  
| | • Volume of exports of whole frozen tuna not well understood  
| | • The erosion of trade preferences granted PNG by the EU are of concern, as in particular the Philippines recent duty-free access to the EU represents a threat to divert PNG catch to lower-cost production sites in the Philippines |
| 
| National regulatory frameworks | • NFA a non-commercial statutory body; controls its own income stream from access fees  
| | • In addition to tuna NFA responsible for management of all export fisheries and National Fisheries College  
| | • NFA is Competent Authority for both sanitary and IUU |
| **Albacore tuna production in Fiji** | • Fiji is a major longline transshipping and servicing hub; 63 percent of longline target tuna landed in PICs in 2010 unloaded in Suva/Levuka  
• Albacore processing in Levuka at government-owned PAFCO underpins the Fiji longline industry |
| **Fleet structure and productivity** | • Fiji flag fleet includes some vessels prohibited from fishing in Fiji archipelagic waters, some excluded completely from all Fiji waters.  
• Relatively small number of domestic vessels with access to all Fiji waters (14)  
• Other categories with varying degrees of access or no access to Fiji waters (94)  
• Majority of Fiji fleet (64 out of 113) are greater than 31 meters in length  
• Total tuna catch in 2012 12,782 tons, of which albacore 68 percent, yellowfin 21 percent and bigeye 11 percent |
| **Key features of longline albacore fishing operations** | • Most albacore for loining at PAFCO  
• Most supply to PAFCO by Chinese vessels; not clear if Fiji or foreign flag  
• Albacore fishery also catches yellowfin and bigeye which are exported if quality standards met  
• Seasonality in fishing by local fleet, with second and third quarters producing highest catches  
• Some bycatch exported along with yellowfin and bigeye |
| **Processing of albacore landed in Fiji** | • Loining at PAFCO done under contract to Bumble Bee  
• Maximum daily capacity around 120 tons per day (input)  
• Current production about 80 tons per day (input)  
• Bumble Bee involved in plant management, production oversight and raw material sourcing |
| **Production supply chain arrangements—fresh** | • Six processing facilities and seven major companies involved in processing and export in Suva of primarily yellowfin and bigeye, and some high value bycatch  
• Wide body jets that serve tourist industry important in providing air freight capacity to major markets  
• PAFCO crucial to supplies since yellowfin/bigeye come from albacore-target fishery  
• Suva-based processors export primarily to the US, some to Japan, New Zealand, and Australia |
| Production supply chain arrangements—loins | - Albacore catch by local fleet insufficient for PAFCO processing requirements; PAFCO needs 25,000 tons of albacore per year  
- Average volume of albacore loins to US 2008—2013 was 10,823 tons with landed value in US of $57.7 million |
| National regulatory frameworks | - Updated fisheries legislation adopted December, 2012 through Offshore Fisheries Management Decree  
- Degree is comprehensive coverage of many facets of fisheries regulation including legal aspects.  
- Decree envisages that most important fisheries to be managed under fisheries management plans  
- To date no such plan adopted for tuna fisheries |
| Companies in the Solomon Islands tuna industry | - One processing plant at Noro, Western Province  
- One smaller receiving and packing plant for fresh, longline-caught tuna in Honiara |
| Companies involved in processing tuna landed in Solomon Islands | - SolTuna is sole producer of cans and loins at plant at Noro  
- Majority owned by Tri Marine International  
- SolTuna production 110 tons per day in 2014, up from 60 tons per day in 2011. Mostly light meat (skipjack and yellowfin) loins. Some cans for domestic market.  
- Loins: 6,000 tons exported in 2013, target of 9,000 in 2014 |
| Companies involved in tuna fishing in Solomon Islands | - Government licensing policy requires landing catch in Solomons to qualify for access  
- NFD: 5 purse seiners, wholly owned by Tri Marine, fish primarily in Solomons archipelagic waters  
- South Seas Investments, Ltd. Taiwanese company operates small packing plant for longline-caught yellowfin and bigeye that are exported by air overseas.  
- Western Solomons Fishing Venture, Ltd: joint venture between Philippine based company and Western Solomons province. One purse seiner, no onshore facilities.  
- Global Fishing Investments: Taiwanese company that purchases bycatch from longliners and has plans to build shore facilities |
| Purse seine transshipment in Solomon Islands | - Approximately 20 percent of total 1276 purse seine transshipments by DWFN vessels took place in Honiara in 2010  
- Highly seasonal operations with peak period Nov-Feb  
- Extensive trade in brine frozen bycatch and small or damaged target tuna in Honiara from transshipping vessels provides cheap source of protein to Honiara residents |
| Regional conservation and management frameworks | - Western and Central Pacific Fishery Convention  
- US Multilateral Tuna Treaty  
- FFA Harmonized Minimum Terms and Conditions of Access  
- Niue Treaty on Cooperation in Fisheries Surveillance and Law Enforcement  
- Wellington Convention on Driftnets |
| **Sub-regional fisheries conservation and management** | • Nauru Agreement  
• Palau Arrangement, Vessel Day Scheme  
• FSM Arrangement |
| **Trade frameworks in major tuna markets** | • US trade policy geared to protect domestic canners, of which there are only two  
• US trade arrangements liberal for imported whole tuna, tuna loins; high tariffs on tuna canned in oil  
• US food safety requirements also relatively easy to comply with, but changes are coming with implementation of new food safety legislation  
• EU trade frameworks more complex and restrictive than US  
• EU tariffs on imported processed tuna and tuna products in 4-tier structure based on country status in the system; changes implemented in 2014 now do not guarantee long-term preferential access in some categories  
• EU food safety requirements stringent and linked to country establishment and maintenance of a Competent Authority to certify requirements have been met  
• EU regulations to combat IUU since 2010 add another layer of qualifications on exports. Also requires a Competent Authority and proof of traceability |
| **Sustainability frameworks and eco-labeling** | • Case study of PNA free-school skipjack tuna, certified by Marine Stewardship Council, December, 2011  
• Specific requirements for certification in chain of custody must be met  
• PNA has trained captains, crews, observers in chain of custody requirements and documentation  
• For various reasons only one trial shipment completed in 2013, but potential remains large |
| **Conclusions** | • Technology advances in the longline fishery relating to catch storage onboard has changed operational and marketing patterns in the southern albacore fishery.  
• Current responses favorable to PICs in regulatory frameworks hindered by inability of affected PICs to agree on a sub-regional management framework  
• Over capacity is the single most important technology and market-driven change in the purse seine fishery  
• WCPFC uses the PNA vessel day scheme and other restrictions to limit effort but not capacity.  
• Some PICs complicit in purse seine capacity increase connected to aspirations for greater participation and benefits from the fishery  
• Further challenges to regulatory frameworks and sustainability include:  
  o availability and management of data  
  o surveillance and enforcement cost effectiveness  
  o Observers  
  o Joint ventures and pseudo joint ventures  
  o Regional solidarity |
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4 REGIONAL CONSERVATION AND MANAGEMENT FRAMEWORKS

3 REGIONAL FISHERIES CONSERVATION AND MANAGEMENT FRAMEWORKS

2 TRADE FRAMEWORKS IN MAJOR TUNA MARKETS

1 TRADE FRAMEWORKS IN MAJOR TUNA MARKETS
### ABBREVIATIONS AND ACRONYMS

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Full Form</th>
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<tr>
<td>ALC</td>
<td>Automatic Location Communicator</td>
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<tr>
<td>CA</td>
<td>Competent Authority</td>
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<td>CCM</td>
<td>Members, Cooperating non-members and Participating Territories</td>
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<td>DWFN</td>
<td>Distant Water Fishing Nation</td>
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<td>DWFV</td>
<td>Distant Water Fishing Vessel</td>
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<td>EBA</td>
<td>Everything But Arms</td>
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<tr>
<td>FAD</td>
<td>Fish Aggregating Device</td>
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<td>FDA</td>
<td>Food and Drug Administration</td>
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<td>FFA</td>
<td>Forum Fisheries Agency</td>
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<td>FTA</td>
<td>Free Trade Agreement</td>
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<td>FTE</td>
<td>Full Time Employment</td>
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<td>GSP</td>
<td>Generalized System of Preferences</td>
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<td>HACCP</td>
<td>Hazard Analysis Critical Control Point</td>
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<td>HMS</td>
<td>Highly Migratory Species</td>
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<tr>
<td>IEPA</td>
<td>Interim Economic Partnership Agreement</td>
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<td>ISSF</td>
<td>International Seafood Sustainability Foundation</td>
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<td>IUU</td>
<td>Illegal, Unreported, Unregulated</td>
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<td>km</td>
<td>kilometer</td>
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<tr>
<td>LDC</td>
<td>Least Developed Country</td>
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<td>MCS</td>
<td>Monitoring, Control and Surveillance</td>
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<td>MFN</td>
<td>Most Favored Nation</td>
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<td>MSC</td>
<td>Marine Stewardship Council</td>
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<td>NFA</td>
<td>National Fisheries Authority</td>
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<td>NMFS</td>
<td>National Marine Fisheries Service</td>
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<td>NOAA</td>
<td>National Oceanographic and Atmospheric Administration</td>
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<td>NTR</td>
<td>Normal Trade Relations</td>
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<td>OFP</td>
<td>Oceanic Fisheries Programme</td>
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<td>PIC</td>
<td>Pacific Island Country</td>
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<td>PNA</td>
<td>Parties to the Nauru Agreement</td>
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<td>PNAO</td>
<td>Parties to the Nauru Agreement office</td>
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<td>PNG</td>
<td>Papua New Guinea</td>
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<td>RoO</td>
<td>Rules of Origin</td>
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<td>SIDS</td>
<td>Small Island Developing States</td>
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<td>SPC</td>
<td>Secretariat of the Pacific Community</td>
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<td>SSTC</td>
<td>South Seas Tuna Corporation</td>
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<tr>
<td>TAE</td>
<td>Total Allowable Effort</td>
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<td>TMI</td>
<td>Tri Marine International</td>
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<tr>
<td>ULT</td>
<td>Ultra Low Temperature</td>
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<td>US</td>
<td>United States</td>
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<td>VDS</td>
<td>Vessel Day Scheme</td>
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<td>VMS</td>
<td>Vessel Monitoring System</td>
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<td>WCPFC</td>
<td>Western and Central Pacific Fisheries Commission</td>
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<td>WCPO</td>
<td>Western and Central Pacific Ocean</td>
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<td>WTO</td>
<td>World Trade Organization</td>
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<td>WWF-SP</td>
<td>Worldwide Fund for Nature-South Pacific</td>
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INTRODUCTION

The tuna fisheries of the Western and Central Pacific Ocean (WCPO) have experienced steady linear growth in annual total catches for nearly 50 years, with large catch increases occurring during the last two decades, due primarily to expanded purse seine fishing capacity. Along with increased catches, the global tuna industry and in particular the processing sector has gone through many changes. There has been an increase in processing capacity in the western Pacific as well as Southeast and East Asia. Mergers or acquisitions have produced some large, vertically integrated companies engaged in fishing, trading, and processing on a global scale. Regionally, some companies previously engaged only in fishing have expanded into processing in the Pacific islands, notably in Papua New Guinea.

The longline sector has also undergone somewhat of a transformation in the last 10 or so years. Longline markets have expanded and products have become more diverse. While not experiencing increases in catches as dramatic as those by purse seiners, some longline fleets have grown and become more efficient, with resultant increases in fishing capacity.

As a result of these developments, the ongoing sustainable use of two key species, yellowfin and bigeye, is in jeopardy due to excessive fishing pressure. The availability of tuna is increasingly approaching a period of scarcity in which governments and industries alike will have to reappraise their approaches to extracting value from the available resources. The questions confronting WCPO tuna industry participants from all sectors including governments and civil society are whether they and existing regional and sub-regional regulatory frameworks are up to the task of ensuring sustainable use of the region’s tuna resources.

As a non-governmental organization engaged with the WCPO tuna fishery and its management, WWF—South Pacific (WWF-SP) commissioned this study to improve its understanding and knowledge base of the tuna industry in certain Pacific Island countries (PICs). The information contained in this report is intended to assist WWF-SP to focus on participants in tuna supply chains in order to better identify areas for effective intervention.

Study Objectives

The objectives of the study are to:

- Identify key features of the activities of the tuna purse seine industry in Papua New Guinea (PNG) and albacore longline industry in Fiji including fishing activities, domestic processing and export;
- Identify the major domestic-based participants in the export-oriented tuna fisheries of Solomon Islands and provide background on their activities;
- Identify national, sub-regional, and regional regulatory frameworks in place and the information that is reported in the regulation and control of the harvest, transport, production and export of skipjack from PNG and albacore from Fiji;
- Discuss possible future trends, opportunities and challenges in supply chain sustainability within the context of existing industry practices and the regulatory environment;
- Discuss the possible response(s) of regulatory frameworks to the introduction of new technologies identified in the study.
**Scope**

The study covers the producing countries of Papua New Guinea and Fiji in two separate sections. The two countries are representative of regulatory frameworks and trade flows in the PICs and as such aspects of the supply chains described could have application to other PICs. The focus in PNG is on skipjack landed by purse seiners and processed in the country; in Fiji the report covers tuna landed in Fiji by albacore-targeting longliners. Since important determinants of product flow and supply chain development in the tuna industry are trade preferences granted by importing countries, this aspect of the industry is discussed as well as sanitary and health requirements of key importing countries applicable to tuna and tuna products.

**Methodology**

The research for the report presented here was carried out primarily as a desk study, utilizing various published and unpublished sources as well as the author’s knowledge of the WCPO tuna industry. Attendance at the Infofish Tuna Trade Conference in Bangkok, May 21-23, 2014, provided an opportunity to interview some industry participants to gain further insights into the subjects addressed in the report.

**Organization of the Report**

The report first details purse seine skipjack tuna production in Papua New Guinea, including fleet structure and productivity, a description of the commercial entities involved, the key features of fishing operations and processing, post-production supply chain arrangements, and national regulatory frameworks. A similar review and explanation is then provided for albacore tuna production in Fiji. A separate section describes the companies involved in the Solomon Islands tuna industry, one that involves purse seining for skipjack as well as albacore longlining.

Frameworks aimed at regional and sub-regional conservation and management are described, as well as trade frameworks in the major tuna markets of the USA and the European Union. A further section provides a case study of a sustainability framework and eco-labeling.

The study’s conclusions cover trends in fish production and products, and the potential for increased PIC access to major markets through existing supply chains. Two fishery management problems currently confronting tuna purse seine and longline fisheries are described along with the possible responses of regulatory frameworks. A final section describes some further challenges to regulatory frameworks aimed at promoting sustainability in the fisheries examined in the study.

**Limitations of the study:**

The desk study nature of research undertaken did not allow site visits to key landing sites or processing centers. It has been the author’s experience that a lack of opportunities for one-on-one contacts with industry participants and government officials at those locations can limit the opportunities to obtain sensitive or confidential information. In spite of this limitation, some information was obtained from industry sources who are not identified to protect confidentiality.

**Terminology Used in the Report**

The term PIC(s) is used in the report to refer to the Pacific island countries that are members of the Pacific Islands Forum Fisheries Agency. Currency amounts in the report are expressed in US dollars unless otherwise specified, and fish quantities expressed in tons are metric tons.
**Intended Audience**

This study has been undertaken on behalf of WWF South Pacific and is understood to be an internal document for use within WWF. It is not intended for distribution outside that organization or its members. The opinions expressed in the report are those of the author.
1 PURSE SEINE TUNA PRODUCTION IN PAPUA NEW GUINEA

1.1 FLEET STRUCTURE AND PRODUCTIVITY

The tuna purse seine fishery in PNG is conducted by a mix of domestic and foreign vessels that target skipjack tuna with a secondary catch of yellowfin and bigeye. For management reporting purposes PNG defines the domestic sector as comprising PNG flag vessels and PNG chartered vessels. The latter are described as “locally-based foreign” vessels and are licensed with the intention of supporting processing facilities onshore in PNG. It is believed that the PNG flag vessels and some chartered vessels operate primarily in PNG waters, often in association with anchored fish aggregating devices (FADs). They enjoy access to the fish-rich archipelagic waters, an area closed to foreign vessels that operate under access arrangements.

A significant number of seiners operating in PNG are categorized as foreign or distant water vessels. Three sub-sets of this category are (1) vessels licensed to fish under the Federated States of Micronesia Arrangement, (2) vessels licensed under bilateral arrangements, and (3) vessels licensed under the US tuna treaty.

PNG’s annual report to the Western and Central Pacific Fisheries Commission (WCPFC) Scientific Committee in 2013 indicated that a total of 237 purse seiners operated in PNG waters during 2012. Of that number, 13 were flagged in PNG, 38 were foreign flag and chartered by PNG registered firms, and the remaining 186 were said to be distant water foreign vessels operating under various bilateral and the two multi-lateral access arrangements referenced above.

The purse seine vessels engaged in the PNG tuna fishery vary in size, with domestic PNG flag vessels being the smallest. Since size can affect fishing capacity, it is useful to identify the number of vessels active in the fishery by size class. General vessel characteristics tend to place vessels in one of three categories: less than 50 meters length, 50 to 80 meters, and over 80 meters (Table 1 below).

A significant (but undetermined here) portion of the purse seine catch in PNG is transferred from purse seiners to fish carriers that then deliver to shore facilities in PNG or directly overseas. In this manner, purse seine vessels are able to receive supplies from carrier vessels and stay at sea for long periods. Some of these purse seiners operate in conjunction with “ranger” or “scout” boats that maintain and check FADs for the presence of fish. These operations contribute to increasing cost of operations in the FAD fishery for some fleets.

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<tr>
<th>CATEGORY</th>
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<tr>
<td></td>
<td>&lt;50</td>
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<tr>
<td>Domestic, PNG flag</td>
<td>2</td>
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<tr>
<td>Locally-based, Foreign Flag</td>
<td>4</td>
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<tr>
<td>Foreign, Distant Water</td>
<td>1</td>
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<tr>
<td>TOTAL</td>
<td>7</td>
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Data Sources: NFA, WCPFC Register, and author’s knowledge

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1 Usu et al. (2013)
2 The number of vessels shown in Usu et al. may have included a few licensed but inactive vessels.
3 As defined in FAO (2004): The amount of fish (or fishing effort) that can be produced over a period of time (e.g. a year or a fishing season) by a vessel or a fleet if fully utilized and for a given resource condition.
The 2012 total purse seine catch within PNG waters (territorial sea, archipelagic waters and Exclusive Economic Zone) was reported to be 518,349 tons\(^4\), of which 45,973 tons (8.8 percent) was taken by PNG flag vessels\(^5\). In comparison, the locally-based foreign flag (PNG chartered) vessels caught 114,533 tons in PNG waters, or 59 percent of their total catch of 193,124 tons. Foreign distant water vessels fishing under bilateral or multilateral arrangements caught the largest amount, 357,843 tons. The contribution of catch from each of the three segments is shown in Figure 1.

**Figure 1  Catch in PNG Waters by Foreign Distant Water, Foreign Locally-based, and PNG Purse Seiners, 2012**

Data Source: NFA

The total reported purse seine catch in PNG waters has decreased in the past three years: from 699,454 tons in 2010, to 621,025 tons in 2011, and 518,349 tons in 2012.

FFA places the estimated import value of the total WCPO 2012 purse seine catch at just over $4 billion. The value of the 2012 purse seine catch in PNG waters was estimated by FFA at $1.195 billion or about 30 percent of the total value of the WCPO purse seine catch. This was more than double the value in the zone of the next-closest Pacific Island Country (PIC), Kiribati, and 36 percent of the 2012 purse seine catch in the zones of all FFA member countries\(^6\).

It is these kinds of figures coupled with certain access or trade concessions that have attracted foreign investors in the tuna industry and distant water fishing vessels to Papua New Guinea.

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\(^4\) Reported as skipjack, yellowfin, bigeye and other in Usu et al (2013).

\(^5\) The PNG report to the WCPFC Scientific Committee (Usu, 2013) cites this as a 71.51 percent increase over the 2011 domestic PNG flag catch of 26,869 tons and attributes this to more PNG flag vessels. With the increase of only 3 PNG-flag vessels from 2011 to 2012, contributions to the higher catch in 2012 might also have been the result of greater vessel activity (e.g. no drydocking) more complete reporting, higher CPUE, or a combination of the three.

\(^6\) FFA unpublished data that uses Thailand import prices as a basis for calculation of value against reported catch in the zone.
1.2 COMMERCIAL ENTITIES INVOLVED IN FISHING ACTIVITIES

Commercial entities involved in PNG tuna fishing activities fall into two basic categories:

- PNG-registered companies that are foreign owned, and
- Foreign companies that have vessels licensed to fish in PNG waters under bilateral access agreements

Both categories are dominated by firms from the Philippines that provide vessels, much of the crew, and technical expertise. Philippine companies have been active in PNG fisheries for over two decades, with RD Tuna Processors being the first to build and operate a tuna cannery in the country in the mid-1990s. Philippine tuna fishing and processing firms are based either in Manila or in the southern Mindanao city of General Santos, a city with over 500,000 residents that has become the main tuna fishing and processing hub in the Philippines.

Philippine interest in PNG’s tuna fishery is driven by the latter’s abundant resources, proximity to processing centers in the Philippines, and the now-depleted tuna resources of the Moro Gulf, historically a major tuna fishing ground for Philippine fleets.

1.2.1 PNG Domestic and Locally-Based Foreign Companies Active in Fishing

The companies shown in Table 2 are linked in one way or another to shore-based processing in PNG, irrespective of the flag of vessel. PNG policy requires a state agreement to govern the conditions for investment in onshore processing, and many of these vessels are required to land some or all of the fish caught in PNG waters for domestic processing in PNG. Of the companies listed, several are components of vertically-integrated operations that include processing and in some cases trading. Two Philippine companies, Frabelle and RD, have processing facilities in PNG as well as their home countries. In addition, Frabelle has acquired one processing facility in Indonesia and its own ship repair facility in Manila. FCF (Taiwan) is a large tuna trading firm, while Fair Well Fishery is a Taiwanese fishing company with longline as well as purse seine vessels that operate in PNG and elsewhere.
### Table 2 Summary of Number of Vessels Associated with Papua New Guinea Registered Companies and Locally-Based Foreign Companies

<table>
<thead>
<tr>
<th>COMPANY GRANTED LICENSES</th>
<th>PARENT COMPANY AND NATIONALITY LINKAGE</th>
<th>PARENT COMPANY RELATIONSHIP TO VESSELS</th>
<th>NUMBER OF PURSE SEINERS/FLAG</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frabelle (PNG) Ltd</td>
<td>Frabelle, Philippines</td>
<td>owner</td>
<td>11/PNG</td>
</tr>
<tr>
<td>Frabelle Fishing Corporation</td>
<td>Frabelle, Philippines</td>
<td>owner</td>
<td>4/Philippines</td>
</tr>
<tr>
<td>Pacific Blue Sea Fishing</td>
<td>Philippines</td>
<td>owner</td>
<td>1/PNG</td>
</tr>
<tr>
<td>Dologen Ltd</td>
<td>PNG</td>
<td>(operates in conjunction with Frabelle)</td>
<td>1/PNG</td>
</tr>
<tr>
<td>Rell &amp; Renn Fishing (PNG) Ltd</td>
<td>Philippines</td>
<td>owner</td>
<td>1/PNG</td>
</tr>
<tr>
<td>RD Fishing PNG Ltd</td>
<td>RD, Philippines</td>
<td>owner</td>
<td>15/Philippines</td>
</tr>
<tr>
<td>South Seas Tuna Corporation Ltd (SSTC)</td>
<td>FCF, Taiwan</td>
<td>Agent for Taiwanese owners</td>
<td>14/Vanuatu</td>
</tr>
<tr>
<td>Fair Well Fishery (PNG) Ltd</td>
<td>Fair Well Fishery Co. Ltd, Taiwan</td>
<td>owner</td>
<td>5/Vanuatu</td>
</tr>
<tr>
<td>Majestic Seafoods Corporation</td>
<td>Thai Union, Thailand; Century Canning Corp., and Frabelle, Philippines,</td>
<td>Believed to be Frabelle</td>
<td>1/Philippines; 3 licenses not yet filled</td>
</tr>
</tbody>
</table>

Data Sources: WCPFC Register of Vessels, ISSF Purse Seine Database, author’s knowledge

It should be noted that fleets operated by the domestic-based companies RD and Frabelle are known to contain a large number of older vessels. These vessels tend to experience more breakdowns and should be considered as having less fishing capacity as vessels operated by Fair Well and South Seas Tuna, most of which are newer Taiwan-built vessels.

Irrespective of the companies concerned, all or almost all purse seine vessels operating in PNG as either domestic or locally-based foreign are foreign owned. The one distinction is that companies such as RD Fishing PNG Ltd charter their vessels from the parent company outside PNG, while domestic vessels such as Frabelle (PNG) are operated by a company with a nominal majority shareholding that is PNG based. In both the Philippine cases of Frabelle and RD, the vessels operate within vertically-integrated companies with processing capacity inside and outside of PNG. Depending upon business conditions, such a situation can provide an incentive to export rather than land the catch in PNG.
1.2.2 Access Arrangements with Foreign Entities

As with its Pacific island country neighbors, PNG also licenses foreign purse seine vessels through bilateral and multilateral access arrangements. In PNG these arrangements are undertaken with individual companies and fishery associations. PNG also participates in the US Multilateral Treaty along with other Forum Fisheries Agency (FFA) members. The list of parties to these arrangements is shown below in Table 3 with an estimate of the number of vessels covered. Up to an additional 40 vessels are allowed to fish under the US Multilateral treaty.

Table 3 Foreign Entities with Bilateral Access Arrangements with PNG, 2012/2013

<table>
<thead>
<tr>
<th>ENTITY/HOME BASE</th>
<th>NATIONALITY</th>
<th>ESTIMATED NUMBER OF VESSELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frabelle Fishing Corporation, Manila</td>
<td>Philippines</td>
<td>10</td>
</tr>
<tr>
<td>Luminar Fishing Corporation, General Santos</td>
<td>Philippines</td>
<td>4</td>
</tr>
<tr>
<td>RBL Fishing Corporation, Manila</td>
<td>Philippines</td>
<td>3</td>
</tr>
<tr>
<td>Trans-Pacific Journey Fishing Corporation, Manila</td>
<td>Philippines</td>
<td>7</td>
</tr>
<tr>
<td>China Fisheries Association, Beijing</td>
<td>China</td>
<td>11</td>
</tr>
<tr>
<td>Fong Seong Fishery Group, Kaohsiung</td>
<td>Taiwan</td>
<td>4</td>
</tr>
<tr>
<td>Japan Far Seas Purse Seine Fishery Association, Tokyo</td>
<td>Japan</td>
<td>36</td>
</tr>
<tr>
<td>Korean Deep Sea Fisheries Association, Seoul</td>
<td>Korea</td>
<td>27</td>
</tr>
<tr>
<td>Taiwan Deep Sea Tuna Boatowners and Exporters Assn., Kaohsiung</td>
<td>Taiwan</td>
<td>30</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td>132</td>
</tr>
</tbody>
</table>

Data Source: NFA

1.3 KEY FEATURES OF FISHING OPERATIONS

Figure 2 below describes the key features of typical purse seine fishing and processing operations undertaken by domestic and locally-based foreign purse seine vessels in PNG. 

---

7 Adapted from McCoy (2013); the stages outlined in purple indicate activities undertaken primarily by women.
Figure 2 Key Features of Typical Purse Seine Fishing and Processing Operations in PNG

- Target tuna captured during purse seining
  - Escape prior to brailing
  - Brailed onboard
    - Retained for crew
    - Sent down chutes to fish wells
      - Placed in wells for freezing and storage
        - Transferred to refrigerated carriers at sea
          - Sent to Philippines
            - Processed for domestic sale
              - Sold locally to general public
              - Sold locally to institutional caterers
                - Cooked, frozen loins
          - Unloaded in port
            - Sent to cold store
              - Processed into cans or cooked, frozen loins
                - Domestic markets
                - Exported frozen
                  - Frames, skin, etc.
                  - Fish meal
            - Sent to Philippines
              - Processed for domestic sale
                - Sold locally to institutional caterers
                  - Domestic markets
                  - Export frozen
            - Sent to cold store
              - Processed into cans or cooked, frozen loins
                - Domestic markets
                - Exported frozen
                  - Frames, skin, etc.
                  - Fish meal
          - Sold locally to general public
            - Cooked, frozen loins
            - Domestic markets
          - Badly damaged
            - Fish meal
            - Canned tuna
            - Domestic markets
            - Export frozen
              - Frames, skin, etc.
              - Fish meal
            - Export Markets
1.3.1 Use of FADs by Domestic Vessels

Fishing activities by domestic and locally-based foreign purse seiners rely heavily on the extensive deployment of anchored FADs. Anchored FADs are licensed by NFA and registered to individual fishing companies. Most are located in the archipelagic waters of the Bismarck Sea, with a small number deployed in the Solomon Sea immediately south of New Britain\(^8\) (Figure 3).

![FIGURE 3](image) Positions of Licensed Anchored FADs in PNG Waters, 2007

Source: NFA information cited in Nicol et al.(2009)

1.3.2 Purse Seine Transshipment by Domestic Vessels

PNG flag and PNG locally-based domestic vessels often undertake transshipment from fishing vessels to reefer carriers. Often performed in designated ports, these transshipments are undertaken in compliance with conditions set out in WCPFC Conservation and Management Measure (CMM) 2009-06. There is an exemption for domestic group seine operations where the catching vessel’s capacity is under 600 mt\(^9\). These vessels can transship at sea for direct landing to port. There is also no restriction for domestic vessels to transship fish in archipelagic and/or territorial waters.

1.3.3 Supply Patterns for Landing of Catch in PNG for Processing

Of the three major operating companies listed in Table 2 above, RD, Frabelle, and SSTC, it is believed that SSTC processing operations receive the least amount from the vessels licensed under their arrangement with PNG. This is primarily because those vessels do not qualify for EU

\(^8\) Nicol et al. (2009)

\(^9\) The group seine exemption goes back at least 20 years or more to a time when this mode of operation was predominant and a group consisted of a catcher boat with no fish hold, and numerous carrier vessels (usually converted Japanese pole-and-line vessels) as well as other support craft termed “scout boats” and “ranger boats”. 
access, being mostly Vanuatu flag. Vanuatu does not have a Competent Authority for fish sanitary purposes approved by the EU and thus Vanuatu registered vessels are ineligible to supply raw material for processing destined to the EU. Ironically, while licenses were given to SSTC for the purpose of supplying its processing operations, it receives the bulk of its raw material supply from other vessels that do qualify under EU conditions, including some locally-based Philippine-flag vessels.

Other companies do better than SSTC; however it is estimated that overall less than one-third of the catch by domestic and locally-based foreign vessels is landed in PNG for processing\(^\text{10}\). Some of the catch is transshipped at sea and taken to foreign countries for processing, and some is landed but exported by container or carrier. The lack of supply to domestic processors is recognized as a major problem, because most processing facilities operate well below maximum levels. This supports the contention that the primary interest of foreign investors in processing facilities is access to PNG’s tuna resources, not the profit potentials of processing itself.

**FIGURE 4  Containers in PNG Being Loaded for Overseas Shipment**

1.3.4  Bycatch and Undersize Target Tuna Catch

A management measure adopted in 2009 by the Western and Central Pacific Fisheries Commission requires all purse seine vessels to retain onboard all skipjack, yellowfin and bigeye caught during fishing operations\(^\text{11}\). The retention measure was instituted to encourage the development of technologies and fishing strategies designed to avoid the capture of small tunas, primarily bigeye and yellowfin for which there are sustainability concerns, particularly for the former. One of the bases of the measure is the understanding that small sizes of all tuna species are less valuable, but take up storage space onboard; hence retention is used as a sort of penalty for their capture.

\(^{10}\text{Pers. communication, independent researcher familiar with PNG.}\)

\(^{11}\text{Certain exemptions apply, but for the most part “full catch retention” is part of the regulatory regime in CMM 2009-2.}\)
In PNG, there are factors that do not make the full retention requirement a disincentive as intended. Several Philippine companies operating vessels in the PNG fishery have ties to Philippine processing plants where lower labor and other processing costs make utilization of smaller fish more feasible.

The retention of bycatch on the other hand is subject to a variety of conditions at the time fish are brailed onboard the vessel. These include:

- regulatory controls in force
- volume of bycatch present in a particular set
- available storage for target species
- methods of brailing and storage
- needs of observers onboard to access catch for scientific purposes
- policies on retention of edible bycatch enforced by the captain

It is generally accepted that fishing sets associated with FADs catch more non-target species than sets on unassociated or “free school” sets. Research by the Secretariat of the Pacific Community’s Oceanic Fisheries Program (OFP) using data from 2000—2010 shows that “the combined non-tuna species average catch rates (in kg/set) were over fifteen times greater in FAD sets than free-school sets”. On average 265 kg of non-tuna species were caught in each FAD set, compared to 17 kg in free school sets\(^\text{12}\).

Figure 5 provides an example of the product flow of bycatch from Philippine vessels in the locally-based PNG fishery\(^\text{13}\). It can be seen that there are multiple uses for bycatch after harvesting, and as a result it is believed that there are few discards of many desirable and edible species caught by this segment of the PNG purse seine fishery.

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\(^{12}\) Pilling et al. (in press).

\(^{13}\) Based on McCoy (2013); the stages outlined in purple indicate activities undertaken primarily by women.
FIGURE 5 Example of Bycatch Product Flow in PNG

Bycatch captured during purse seining

Escape prior to brailing

Brailed onboard with target species

Retained by crew for processing onboard

Retained by crew for food onboard

Sent down chutes to fish wells

Discarded from deck back to the sea

Placed in wells with target species for freezing and storage

Transfer to refrigerated carriers with target species

Sale in Philippines

To cold store for future use

Processed for domestic sale

Sold to institutional caterers and general public

Delivered onshore shore with target

Purchased dockside or ex-cold store by roadside market vendors

Cooked by vendors

Sold to general public at roadside markets
1.4 PROCESSING OF SKIPJACK CAUGHT AND LANDED IN PNG

Papua New Guinea embarked on a policy of providing employment through domestic processing capacity in the mid-1990s. Several proposals were received from Philippine, US, and Spanish companies or consortia. Additional interest was expressed as the tuna purse seine fishery grew, particularly during the last decade. The following section describes existing processing activities in PNG.

Several other potential investments are said to be under discussion, but are not considered here in any detail. One potential investment that deserves mention is the creation of a Pacific Marine Industrial Zone (PMIZ) in rural Madang, a project put forward by the companies RD (Philippines) and Fair Well (Taiwan). Implementation of this project has been slow, due to problems encountered in the process of creating the PMIZ. A former third partner, international tuna trading and vessel owner Tri-Marine, pulled out of the consortium in 2013 and the future of the PMIZ is unknown.

1.4.1 Commercial Entities Involved in Domestic Processing and Exporting

Three processing centers have been developed since the mid-1990s that now host a total of five processing facilities. These locations, Wewak, Lae, and Madang, have been chosen for a variety of logistical, political, and practical reasons. The capital, Port Moresby, has not been mentioned seriously as a processing site, most likely because of its distance to PNG’s purse seine fishing grounds relative to the other sites.

There are currently five operational fish processing plants in the country, with a sixth under construction. That facility, to be called Nambawan Tuna Processing, is being built in Lae as a joint undertaking by FCF of Taiwan and TPJ, Trans-Pacific Journey, of the Philippines. As of May, 2014 the facility was said by NFA officials to be 20 percent complete. The five existing processing facilities are:

- RD Tuna Processors in Madang, established in 1997
- Frabelle Corporation in Lae, established in 2006
- South Seas Tuna Corporation (SSTC) in Wewak, established in 2003
- IFC in Lae, establishment date unknown, that has the capacity to process tuna but reportedly does very little owing to supply problems.
- Majestic Seafoods in Lae, established in 2013

The ownership, maximum and current processing capacities of these facilities are shown in Table 4. The number of employees (full time employment, or FTE) is sometimes a difficult figure to pin down, with processors obviously trying to show the greatest amount of benefit to the local economy. Most available estimates pre-date the commencement of operation by the Majestic facility in Lae. An estimate of ~1,200 jobs at Majestic added to an estimate made in 2012 of 5,770 means there are about 7,000 FTE jobs in the PNG tuna processing sector.

14 Blomeyer and Sanz (2012)
Table 4: Ownership and Tuna Processing Capacities of Existing Facilities in Papua New Guinea

<table>
<thead>
<tr>
<th>Ownership (Country)</th>
<th>Maximum Capacity (mt per day)</th>
<th>Current Capacity mt/day; mt/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD Tuna Processors</td>
<td>200</td>
<td>120 (2011) 25,000—30,000</td>
</tr>
<tr>
<td>Frabelle Corp.</td>
<td>100-120</td>
<td>70—80 (2011) ~20,000</td>
</tr>
<tr>
<td>SSTC</td>
<td>200</td>
<td>70—80 (2011) ~20,000</td>
</tr>
<tr>
<td>IFC</td>
<td>40</td>
<td>3 (2012) ~750</td>
</tr>
<tr>
<td>Majestic Seafoods</td>
<td>120 with target of 250</td>
<td>120 (2014) 30,000</td>
</tr>
</tbody>
</table>

Sources: Hamilton, et al. (2011), Havice and Reed, 2012, author’s knowledge

The production of these facilities is divided into canned tuna and loins (cooked and frozen). The former are marketed domestically as well as exported. In the past, much of the exported canned tuna from RD went to the US, often in larger institutional size cans. Likewise, SSTC counted the US as its primary market for light meat cooked and frozen loins, primarily supplied to Bumble Bee. Today however, with EU trade concessions in place almost all exported processed tuna is destined for the EU. Table 5 shows the major products produced by each of the processors. All canned tuna is light meat (i.e. primarily skipjack but could be some yellowfin as well).
Table 5 Products and Markets of Tuna Processors in Papua New Guinea

<table>
<thead>
<tr>
<th>Products</th>
<th>Export Markets for Processed Products</th>
<th>Local/Regional Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>RD Tuna Processors</td>
<td>70% canned tuna to EU (Germany, UK, Netherlands, Denmark, others); private label; Chunks/solid/flakes in oil/brine Cooked loins: EU (Spain, Italy), mostly yellowfin</td>
<td>30% canned tuna production sold mostly in PNG, some to Vanuatu, Solomon Islands. Own label, various grades including red meat</td>
</tr>
<tr>
<td>Frabelle Corp.</td>
<td>80% canned tuna production to EU (Germany, UK, Netherlands, others); private label; Chunks/solid/flakes in oil/brine Cooked loins: EU (Spain, Italy) mostly YF</td>
<td>20% canned tuna production sold in PNG Own label; canned in oil, fancy packs, red meat</td>
</tr>
<tr>
<td>SSTC</td>
<td>98% of cooked loins to EU (Spain), Thailand. Small volume to US (Bumble Bee)</td>
<td>No local sales</td>
</tr>
<tr>
<td>IFC</td>
<td>N.A.</td>
<td>N.A. but believed to be very small</td>
</tr>
<tr>
<td>Majestic Seafoods</td>
<td>All exported to EU</td>
<td>N.A.</td>
</tr>
</tbody>
</table>

Sources: Pers. communications, multiple industry representatives, May, 2014, author’s knowledge

1.4.2 Key Features of Processing, Export

As has been stated several times in this report it is clear that the major objectives of processors are access to resources and access to mostly EU markets. For some, their primary objective at the outset was to not lose money on domestic processing, while profiting from such other mechanisms as onward access license sale, raw material volumes for export to their own home country processing facilities, tuna trading, and transfer pricing of some commodities. Access to the EU market has changed this somewhat, however it is still the case that some domestic processors sometimes find themselves without raw material, a situation brought about for the most part by their own actions.

The attribution of costs for canned tuna production can vary depending on many factors. Generally, rule-of-thumb formulae attribute about 60 percent to raw material (i.e. fish costs), cans, cartons, labels 24 percent, labor only 6 to 8 percent, and other costs 9 percent. When fish prices are low, other costs are relatively higher and PIC countries can quickly lose their ability to compete.15

15 M. Brownjohn, Infoshop Tuna Trade Conference, Bangkok, Thailand, May 21-23, 2014
Tuna processing challenges in PNG are formidable, and conversations with representatives of the companies concerned result in no shortage of reasons why processing is difficult in PNG. One representative of a Thai processor stated that it does not take much for the benefits in the PICs to be erased by the high production costs. The judgments are for the most part comparative, citing lower operating costs in places such as the Philippines and Thailand which enjoy greater economies of scale, existing industrial infrastructure, and a more efficient labor force. As a result, the litany of hurdles in PNG tuna processing include:

- Labor inefficiency and resultant high cost
- Labor unavailability, including chronic absenteeism
- Logistical hurdles: high shipping costs, insufficient wharf space, particularly in Lae and Wewak,
- Lack of follow-through by the PNG government on infrastructure promises (electrical power, wharves)

### 1.5 POST-PRODUCTION SUPPLY CHAIN ARRANGEMENTS

#### 1.5.1 Local Sales

The two major marketers in PNG of PNG-processed canned tuna are RD and Frabelle. RD does its own domestic marketing of canned tuna, utilizing company warehouses in Lae and Port Moresby. Most marketing is limited to coastal areas, where distributors serve smaller outlets. RD has recently done some test marketing in the PNG Highlands and was surprised at the positive response. They intend on doing more marketing of canned tuna in that area.

Frabelle on the other hand, uses the local PNG company Seeto Kui (Holdings) Ltd to market its tuna in PNG. Seeto Kui is a wholesaler and distributor with a head office in Lae and branch offices in Port Moresby. The company deals in trade store goods, general merchandise, and supermarket lines.

#### 1.5.2 Export Markets for Processed Tuna

As shown in Table 5 above, exports of processed tuna are almost exclusively to the EU. The impetus for this export is PNG’s duty free access to the EU market for loins and cans, and a derogation of Rules of Origin (RoO) as part of their Interim Economic Partnership Agreement (IEPA).

There was and continues to be an outcry from Spain and others about the terms of EU market access afforded PNG. In practice, their arguments have for the most part been shown to be spurious, as this access has not flooded the EU market for either loins or cans as predicted.

EU imports of tuna loins by PNG have climbed steadily since 2008 as shown in Table 6 below. Overall, although imports from PNG are the second highest next to Ecuador, they still remain a relatively small percentage of overall EU loin imports at about 8.6 percent for 2013.

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16 Conversation with Thai industry representative, May 22, 2014
17 [www.seetokui.com.pg](http://www.seetokui.com.pg)
18 See Hamilton, et al. (2011) for a complete discussion of this situation and its impact on PNG tuna processing.
Table 6  EU Imports of Tuna Loins by Major Supplying Country, in 1,000mt

<table>
<thead>
<tr>
<th>Country</th>
<th>Tariff Basis</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecuador</td>
<td>GSP+</td>
<td>36.0</td>
<td>43.9</td>
<td>37.2</td>
<td>36.5</td>
<td>34.2</td>
<td>35.8</td>
</tr>
<tr>
<td>PNG</td>
<td>IEPA</td>
<td>0.6</td>
<td>1.8</td>
<td>2.5</td>
<td>5.6</td>
<td>8.2</td>
<td>9.8</td>
</tr>
<tr>
<td>Thailand</td>
<td>GSP and loin quota</td>
<td>7.3</td>
<td>16.9</td>
<td>12.2</td>
<td>16.4</td>
<td>7.9</td>
<td>9.1</td>
</tr>
<tr>
<td>Mauritius</td>
<td>IEPA</td>
<td>10.8</td>
<td>11.7</td>
<td>12.6</td>
<td>11.7</td>
<td>11.7</td>
<td>7.7</td>
</tr>
<tr>
<td>El Salvador</td>
<td>GSP+</td>
<td>12.4</td>
<td>13.1</td>
<td>7.6</td>
<td>5.8</td>
<td>6.2</td>
<td>7.3</td>
</tr>
<tr>
<td>Guatemala</td>
<td>GSP+</td>
<td>1.5</td>
<td>5.7</td>
<td>8.7</td>
<td>7.2</td>
<td>9.1</td>
<td>7.1</td>
</tr>
<tr>
<td>China</td>
<td>GSP and loin quota</td>
<td>2.1</td>
<td>4.5</td>
<td>5.4</td>
<td>6.5</td>
<td>4.1</td>
<td>6.8</td>
</tr>
<tr>
<td>Indonesia</td>
<td>GSP and loin quota</td>
<td>0.0</td>
<td>0.1</td>
<td>0.1</td>
<td>1.4</td>
<td>3.1</td>
<td>4.3</td>
</tr>
<tr>
<td>Spain</td>
<td>zero</td>
<td>1.5</td>
<td>0.7</td>
<td>0.9</td>
<td>1.7</td>
<td>2.0</td>
<td>4.1</td>
</tr>
<tr>
<td>Solomon Is</td>
<td>EBA</td>
<td>2.2</td>
<td>2.2</td>
<td>1.9</td>
<td>4.3</td>
<td>4.5</td>
<td>4.0</td>
</tr>
<tr>
<td>Philippines</td>
<td>GSP and loin quota</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.1</td>
<td>0.2</td>
<td>3.4</td>
</tr>
<tr>
<td>Ghana</td>
<td>Market regulation access</td>
<td>2.9</td>
<td>3.4</td>
<td>2.7</td>
<td>2.8</td>
<td>3.2</td>
<td>2.2</td>
</tr>
<tr>
<td>Kenya</td>
<td>Market regulation access</td>
<td>4.8</td>
<td>3.2</td>
<td>3.7</td>
<td>4.2</td>
<td>4.3</td>
<td>2.0</td>
</tr>
<tr>
<td>Others</td>
<td></td>
<td>14.6</td>
<td>13.4</td>
<td>14.7</td>
<td>10.5</td>
<td>8.2</td>
<td>10.1</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>96.6</td>
<td>120.7</td>
<td>110.1</td>
<td>114.9</td>
<td>107.0</td>
<td>113.7</td>
</tr>
</tbody>
</table>

Data source: Tri-Marine, using GLOBEFISH, using Eurostat Data

EU imports of canned tuna tell an even more compelling story of a lack of PNG’s impact on the EU market. Table 7 shows PNG’s ranking along with all other canned tuna imports. In 2013 imports from PNG were just 4.5 percent of overall canned tuna imports.

Two important EU trade developments in July, 2014 may affect the level of PNG’s exports to the EU. The Philippines has reportedly been granted duty free access for its canned tuna products, and Ecuador has retained a measure of preferential access by re-joining Colombia and Peru in a joint arrangement. The Philippine arrangement should be of greatest concern to PNG, as it erodes the trade preferences currently enjoyed by PNG in the EU market and could act as a magnet for the catch of Philippine flag vessels operating in PNG to be diverted to the Philippines.

EU confirms trade agreement with Ecuador. [www.atuna.com](http://www.atuna.com), July 18, 2014 and Phil: EU to grant zero duty on tuna, [www.atuna.com](http://www.atuna.com), July 21, 2014
### Table 7  EU Imports of Canned Tuna by Major Supplying Country, in 1,000mt

<table>
<thead>
<tr>
<th></th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
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<tbody>
<tr>
<td>Ecuador</td>
<td>93.6</td>
<td>63.7</td>
<td>62.2</td>
<td>71.5</td>
<td>73.7</td>
<td>84.1</td>
</tr>
<tr>
<td>Thailand</td>
<td>66.3</td>
<td>64.4</td>
<td>68.9</td>
<td>76.2</td>
<td>47.4</td>
<td>61.4</td>
</tr>
<tr>
<td>Seychelles</td>
<td>42.8</td>
<td>42.3</td>
<td>41.0</td>
<td>43.5</td>
<td>43.7</td>
<td>51.4</td>
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<tr>
<td>Mauritius</td>
<td>37.9</td>
<td>35.4</td>
<td>44.2</td>
<td>43.9</td>
<td>46.9</td>
<td>50.5</td>
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<tr>
<td>Côte d’Ivoire</td>
<td>37.7</td>
<td>31.5</td>
<td>26.3</td>
<td>25.7</td>
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<td>33.5</td>
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<tr>
<td>Philippines</td>
<td>54.6</td>
<td>54.1</td>
<td>45.5</td>
<td>35.7</td>
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<td>Ghana</td>
<td>29.4</td>
<td>26.5</td>
<td>27.4</td>
<td>25.9</td>
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<td>21.4</td>
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<tr>
<td>PNG</td>
<td>8.7</td>
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<td>15.9</td>
<td>15.6</td>
<td>19.6</td>
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<td>Vietnam</td>
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<td>8.5</td>
<td>9.4</td>
<td>13.2</td>
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<td>Colombia</td>
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<td>Madagascar</td>
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<td>6.8</td>
<td>9.7</td>
<td>8.0</td>
<td>7.7</td>
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<td>El Salvador</td>
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<td>2.8</td>
<td>3.1</td>
<td>3.1</td>
<td>3.7</td>
</tr>
<tr>
<td>Senegal</td>
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<td>1.7</td>
<td>0.8</td>
<td>0.5</td>
<td>0.1</td>
<td>1.7</td>
</tr>
<tr>
<td>Turkey</td>
<td>0.1</td>
<td>0.2</td>
<td>0.3</td>
<td>0.0</td>
<td>0.1</td>
<td>0.3</td>
</tr>
<tr>
<td>Others</td>
<td>14.9</td>
<td>8.5</td>
<td>7.8</td>
<td>9.8</td>
<td>7.9</td>
<td>12.1</td>
</tr>
<tr>
<td>Total</td>
<td>433.2</td>
<td>384.2</td>
<td>377.8</td>
<td>396.3</td>
<td>378.5</td>
<td>415.2</td>
</tr>
</tbody>
</table>

Data source: Tri-Marine, from GLOBEFISH, using Eurostat Data

1.5.3 Tuna Trading and Export of Whole Round Frozen Tuna by PNG-Based Firms

As has been noted, quantities of whole, frozen tuna are sent back to the Philippines by domestic and locally-based foreign vessels operating in PNG. Little is known about the details of this trade, other than much of it is likely destined for processing facilities owned by the Philippine PNG-based companies concerned.

Much of the tuna trading and export of whole round tuna that takes place in PNG is not well known to those outside of the industry and NFA. NFA has a catch documentation scheme in place, and even though it is focused on compliance with EU conditions, PNG is still facing serious criticism and challenges from the European Commission. In June, 2014 the Commission published a report accusing PNG of having a vague and inefficient way of controlling IUU fishing and issued “yellow cards” to both PNG and the Philippines²⁰.

It has been pointed out that trade compliance is a necessary component of the supply chain process²¹. Prior to 2010 and the introduction of the EU’s requirements linked to combating IUU fishing, trade compliance was sometimes viewed simply as an added cost and generator of additional paperwork. PNG is now faced with defending itself and protecting an important

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²¹ Blaha (undated)
market. Although no trade sanctions were imposed in this recent episode, both countries have been given a period of time to respond and the issue was still unresolved as of July, 2014.

1.6 NATIONAL REGULATORY FRAMEWORKS

The National Fisheries Authority (NFA) is a non-commercial statutory authority established and operating under the Fisheries Management Act 1998 and related regulations. It is headed by a Managing Director who is responsible to the Board of Directors. In addition to tuna, NFA is responsible for management of all export fisheries in PNG, as well as the National Fisheries College located in Kavieng, New Ireland province. NFA’s relatively small tuna management section of just a few people is backed up by licensing, statistics, and compliance sections within NFA. Scientific and technical support is provided by the Oceanic Fisheries Program (OFP) at SPC.

Some important points to note about the activities of NFA are that:

- In addition to being responsible for management of fisheries resources, NFA shares developmental responsibilities with other PNG statutory authorities (such as the Investment Promotion Authority) and government departments.
- NFA’s revenue stream is independent of government allocation and heavily dependent on fishing access fees and other fees.
- In recent years, increases in revenue to NFA have allowed it to provide financial support to provincial fisheries departments.
- NFA’s financial resources have enabled it to engage specialists and carry out technical and scientific projects on an as-needed basis.
- NFA is the only PIC fisheries management and development agency that is also an EU-recognized Competent Authority for both sanitary (health) and IUU functions.
- The number of vessel licenses is set by the NFA Board. The Board must also approve licenses given to all categories of tuna fishing vessels in PNG.

1.6.1 General Tuna Management and Development Policies

The tuna fishery is guided by the National Tuna Fishery Management Plan which establishes an overall management structure and an application framework for all tuna fisheries. This framework includes license limits and a total allowable catch, and restrictions on fishing gear and their use. The total allowable catch is currently set at 700,000 tons, well above the total catch in recent years (Section 1.1).

NFA is in the process of revising the National Tuna Fishery Management Plan. A confidential review of NFA’s management and development policies was commissioned in 2013 by NFA and followed up with further review and comment from stakeholders in May, 2014. As of that month, a timetable for adoption and implementation of the revisions to the policy had not been set.

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22 For more detailed information on the organization, administration, and functions of NFA, see www.fisheries.gov.pg.
23 Usu et al. (2013)
A separate FAD management plan has been in place since 2002\textsuperscript{24}. The plan:

- Limits anchored FAD placement to companies with substantive onshore investment
- Requires the application to NFA for deployment of FADS
- Prohibits foreign licensed vessels from setting and fishing on FADs in archipelagic waters.

It has been a general NFA policy that companies desiring to fish in PNG waters are required to make onshore investment. In individual cases, this access is granted along with concessionary access fees. In some cases companies attempt to invest as little as possible to comply with the policy. For example, some years back Fair Well set up a net repair facility on Manus Island to show onshore investment linked to its licenses. The facility is now closed.

As noted above, some vessels are granted EEZ access (not archipelagic waters) without investment pursuant to access agreements.

In addition to concessionary access fees, vessels directly associated with onshore processing are exempt from some fees that are assessed other vessels on a cost recovery basis.

\subsection*{1.6.2 PNG and the Federated States of Micronesia Arrangement}

The Federated States of Micronesia Arrangement enables a sub-regional license at a reduced cost for vessels sponsored by PNA countries. The access fees are distributed to the PNA countries on the basis of catch in their zones, however the “home party”, i.e. the PNA country sponsoring the vessel’s inclusion in the scheme, is not eligible to receive a portion of the distribution. For obvious reasons the scheme has an attraction to domestic and foreign vessel operators alike. This aspect of the agreement apparently does not bother NFA, since their revenue from other licensing sources is substantial.

As of May, 2014 there were 67 purse seine vessels with licenses granted under the FSMA. PNG is considered the “home party” (i.e. sponsor) of 36 of the vessels (54 percent) of which only 9 are PNG flag. Figure 6 depicts the number of vessels and flags of those sponsored by PNG for FSMA licenses. Note that all Vanuatu-flagged vessels are beneficially owned\textsuperscript{25} by Taiwanese firms.

\footnotesize
\begin{itemize}
\item \textsuperscript{24} NFA (2002) The National Fish Aggregating Device Management Policy, A Management Policy for the Deployment and Use of Anchored Fish Aggregating Devices in the Papua New Guinea Purse Seine Tuna Fishery
\item \textsuperscript{25}A situation where benefits of ownership accrue to a person or corporation even though the title is legally held by someone else.
\end{itemize}
Since the introduction of the Vessel Day Scheme (discussed further in Section 5.2 below) vessels licensed under the arrangement have been granted an aggregate number of fishing days which results in an “Olympic” style fishery of first come-first served.

1.6.3 Reporting Requirements and Data Collection

Catch Reporting (Logsheets)

Catch reporting (logsheets) by purse seiners is done on standard forms developed by OFP. Data are entered onto NFA’s database before being forwarded to SPC.

Transshipment Reporting

All transshipping vessels must provide 48-hour transshipment notices giving the port and estimated tonnages to be transshipped. NFA has delegated transshipment monitoring of in-port transshipment to the provincial fisheries departments where such transshipment takes place. Provincial officers are sometimes, but not always, former observers employed at NFA. Information collected prior to commencement of transshipment in port includes:

- Detailed fish well plan showing stowage of fish onboard
- Voyage memorandum showing previous ports visited
- General information relating to the vessel’s particulars and amount of fish onboard

In general in-port transshipment monitoring is done to:

- Enforce immigration regulations
- Ensure compliance with port requirements
- Prevent pollution in harbors, including oil pollution, discharge of used brine, and dumping of discards
- Prevent unauthorized persons from boarding the vessels engaged in transshipment

Officers physically remain onboard the purse seine vessel during transshipment operations in port. Aside from a physical presence relating to the tasks above, transshipment monitoring by officers primarily consists of collecting the relevant documents for forwarding to NFA in Port Moresby.

Vessels transshipping to refrigerated fish carriers complete a report to NFA and submit it along with a copy of the mate's receipt, which is an estimate of the amount of fish transferred and accepted by the fish carrier. These reports are periodically sent by the provincial fisheries offices to NFA headquarters in Port Moresby where they are collected and files maintained.

In theory, each country where transshipping takes place should utilize the SPC Regional Unloading Form that is generic and can be applied to unloading to a carrier, another fishing vessel, or a cold store. Very few PICs in the region conform to this request, which makes it more difficult to analyze unloading, including transshipments, for management purposes. It is not clear the degree to which PNG voluntarily complies with this request from SPC.

Where authorized, transshipment at sea by domestic and locally-based foreign vessels is allowed to be undertaken only when an observer is present. Volumes, locations, and the vessels involved are all recorded and sent to NFA. Aside from observer reports, the transshipment data from these and in port operations by domestic and locally-based foreign vessels is done by the companies involved. This enables more complete and accurate data to be submitted, but compliance is said to be “less than 100 percent”.

NFA has a Catch Documentation Section that collects and forwards data important for compliance with EU requirements for exports discussed further in Section 6.2 of this report. It also provides the various processing and other certificates necessary.

**Processing Reporting**

Processing certificates are issued by NFA as the Competent Authority for EU fish sanitary purposes (see Section 6.3.2 below). Traceability procedures are done according to domestic requirements. These have been recently called into question by the EU (see Section 1.5.2). The European Commission’s DG MARE (the Directorate that looks after fisheries affairs) claims that the traceability of products coming out of PNG’s processing plants cannot be guaranteed by NFA. NFA disputes this and has entered into discussions with DG MARE on resolving the issue.

**Export Reporting**

Export permits from NFA are required for all fishery products exported from PNG. As is standard procedure in many countries, permits must be accompanied by an invoice and must state volumes, destination, and declared export value, among other items.

**Onboard Observers**

26 McCoy (2012)
27 Pers. communication, NFA official
Observers are a crucial part of fishing activity data collection. In PNG they are well-trained for their job and collect data on numerous standardized. In addition to catch data (including bycatch and discards), information is collected on the vessel, its crew, gear configuration, fishing gear used, and details of fishing operations. In addition to collecting scientific samples and recording the catch, they are encouraged to report any other items or incidents of special interest that may occur during the trip.

Observers are de-briefed at the conclusion of their assignment. Data collected is forwarded to the SPC, with original observer reports archived at NFA.
2 ALBACORE TUNA PRODUCTION IN FIJI

The albacore-targeting longline fishery is the backbone of the tuna industry in Fiji. The port of Suva is an entrepôt and transshipment port for fresh and frozen longline product, as well as rare transshipments of purse seine-caught tuna. Processing and/or packing of longline-caught fresh and frozen tuna takes place in Suva. The processing of albacore loins is undertaken at the government-owned Pacific Fisheries Company (PAFCO) in Levuka.

2.1 FLEET STRUCTURE AND PRODUCTIVITY

As of late 2013 Fiji hosted up to 193 foreign-flagged and 97 Fiji-flagged vessels that were either based in Fiji or called at Fiji ports for unloading and/or servicing. Not all Fiji-flagged vessels are licensed to fish in the Fiji EEZ (65 out of 97 vessels in 2013) but all are considered based in the country.28

The categorization of longline vessels in Fiji can be confusing. In 2013 it was reported that the fleet consisted of:

- 14 domestic vessels, 100 percent Fiji citizen owned, with access to archipelagic waters
- 40 vessels allowed to operate within the EEZ but not in archipelagic waters
- 11 bareboat charter vessels, also allowed to fish within the EEZ
- 43 distant water vessels that are Fiji registered with authorization to fish only outside national waters, i.e. high seas and EEZs of other PICs if so permitted.29

In addition to the above categories, up to 193 foreign flag vessels use Suva for re-supply and/or transshipment and which fish in other PIC EEZs or high seas areas.

2.1.1 Longline Fleet Description

Vessels are categorized by length in Fiji’s annual submissions to the WCPFC Scientific Committee. Table 8 below categorizes authorized vessels by length. It can be seen that the number of vessels in the longest length category has shown the greatest increase during the period.

<table>
<thead>
<tr>
<th>Length (meters)</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;21</td>
<td>7</td>
<td>7</td>
<td>8</td>
<td>11</td>
</tr>
<tr>
<td>21—30</td>
<td>43</td>
<td>43</td>
<td>42</td>
<td>38</td>
</tr>
<tr>
<td>&gt;31</td>
<td>43</td>
<td>42</td>
<td>71</td>
<td>64</td>
</tr>
<tr>
<td>TOTAL</td>
<td>92</td>
<td>92</td>
<td>121</td>
<td>113</td>
</tr>
</tbody>
</table>

Source: Offshore Fisheries Division (2013)

28 Offshore Fisheries Division (2013). It is noted that the total number of vessels reported do not match those for 2012 in the longline fleet structure table reproduced as Table 8 above.
29 Offshore Fisheries Division et al. (undated).
2.1.2 Tuna Catch by the Fiji National Longline Fleet

The total tuna catch by the Fiji flagged longline fleet in 2012 (Figure 7) was estimated at 14,978 tons, of which albacore comprised 10,202 tons (68 percent), bigeye 1,588 tons (11 percent), and yellowfin 3,188 tons (21 percent).

The 2012 catch is a reduction from the 2011 catch of 16,307 tons. Preliminary data show a further reduction to 12,782 tons in 2013.

![FIGURE 7  Fiji-Flagged Longline Fleet Total Tuna Catch, 2012](image)

The FFA data also show the fleet’s albacore catch in 2012 in Fiji national waters was 7,593 tons, just over half its total tuna catch. The fleet’s catch of albacore in Fiji national waters was 55 percent of the total catch, yellowfin about 50 percent, and bigeye just 27 percent.

Overall trends in the albacore longline fishery in the southern part of the Pacific islands region are a declining catch with more vessels and lower CPUE. In addition to Fiji’s domestic fleet and those of Samoa, Tonga, and Vanuatu, distant water longline fleets from Taiwan, Japan, Korea, and China also participate in the fishery. Longline catch rates began declining in 2009, coinciding with an increase in fishing effort that began in 2008. Currently, the albacore resource does not appear to be threatened, meaning that stocks are not in an overfished state and no over-fishing is occurring. The situation has resulted, however, in major economic problems for Fiji’s fleet.

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30 FFA, from SPC unpublished data.
2.2 KEY FEATURES OF LONGLINE ALBACORE FISHING OPERATIONS

Operationally, longline vessels operating from Fiji freeze the majority of their albacore catch for the loining/canning market. Some vessels retain yellowfin, bigeye and some albacore as fresh, either in ice or in refrigerated seawater with better grades exported and lower grades often sold locally.

During the last decade, Taiwanese longliners fishing outside of Fiji (including those flagged in Vanuatu) comprised the bulk of foreign vessels delivering to the PAFCO cannery in Levuka. The Taiwanese fleet underwent a gradual transformation, with vessels becoming larger and more efficient. Refrigeration systems were enhanced so that the secondary tuna catch (bigeye and yellowfin) could be frozen onboard for sashimi markets.

At first refrigeration systems were increased to -35°C to access a certain sashimi market segment in Japan. Later systems were enhanced or newer vessels built with systems installed that enabled freezing and holding at -60°C. It is believed that Taiwanese vessels accessing Fiji's port facilities are now all equipped with -60°C freezing capability.

The changes to the Taiwanese fleet enable it greater autonomy at sea and reduces the need to return to port to market the fresh portion of their catch. The changes also enable vessels to unload in other ports and to transship all or a portion of their catch at sea where feasible.

With the reduction of Taiwanese longliners delivering to PAFCO, Chinese vessels became the major suppliers to the PAFCO cannery. They, too, have seen the economic benefits of low temperature freezing and holding onboard. It is now estimated that about half of the Chinese fleet possesses freezing and holding capabilities of -35°C, with about half able to freeze and hold a portion of the catch at -60°C.

In the last two years the expansion of a large Chinese longline fleet in the South Pacific albacore fishery has often been blamed for the economic problems for many vessels in the Fiji domestic fleet. The increase in the Chinese fleet and its production (believed to be subsidized) has meant depressed albacore prices linked to increased supply (but reduced CPUE) and an inability of the domestic fleet to compete. The government of Fiji is introducing actions designed to remove some of the problems the local fleet is experiencing, including a reduction in the number of licenses and an increase in the bunker fuel levy for foreign vessels.

The impact of these actions on the frozen albacore supply to PAFCO is unknown; however, an industry representative indicated they are not expected to inhibit or reduce the frozen albacore supply to PAFCO.

Although albacore for canning is the target species of the fleet, the catch of yellowfin and bigeye and other associated species are economically important, particularly for the Fiji domestic fleet. Direct flight connections in wide-body jets serving Fiji’s tourism industry provide the means to access markets in the US (Los Angeles and beyond), Australia, New Zealand and Japan, with direct flights to all except Japan.

As pointed out in Section 2.1.3, a little over half the Fiji fleet’s catch came from Fiji waters. Thus, at least some vessels fish in international waters and/or require access to neighboring zones. Most likely, the larger vessels shown in Table 8 are the ones fishing in these other areas.

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31 It also enhanced profitability by reduced instances of high-grading, the discarding of less valuable or lower quality portions of the catch due to capacity limitations.
32 Campling and Havice (2014)
33 Pers. communication, industry representative, May 23, 2014
It is clear that the albacore catch of the local fleet (Section 2.1.3) is insufficient to supply the raw material needs of PAFCO. This enables a market to exist for the non-Fiji fleet. The extent to which they supply PAFCO is not clear, but given PAFCO’s current stated loining capacity it could be in the range of 30 to 40 percent or more of PAFCO’s raw material needs.

2.2.1 Fishing Seasonality

According to the Fiji Offshore Fisheries Division’s 2013 annual report to the WCPFC Scientific Committee, the second and third quarters (April to September) account for the highest catches by the Fiji longline fleet. The seasonal catch for albacore was highest in the third quarter and lowest in the first quarter. The highest yellowfin and bigeye catches are typically during the second quarter, corresponding to the period with the highest sea surface temperature, and lowest during the fourth quarter.

2.2.2 Longline Unloading in Fiji

The US is the main destination for fresh headed and gutted yellowfin landed in Suva by the locally-based fleet. In 2013 Fiji exported 717 tons of fresh yellowfin to the US\textsuperscript{34}, about one-third of all fresh yellowfin imported into the US that year\textsuperscript{35}.

Other longline vessels also take advantage of Fiji’s central location, large container port and good shipping connections to export all or a portion of their catch. Most frozen longline bycatch, particularly marlins and others, are unloaded and sent by refrigerated container to markets in Taiwan and China.

Fiji is the major site for unloading\textsuperscript{36} of longline tuna amongst all FFA member countries and American Samoa. The estimated longline catch of target tuna unloaded in PICs in 2010 was about 63,000 tons, with an additional 7,447 unloaded in American Samoa from vessels that provided logsheets to SPC. Of the total 70,439 tons unloaded, about 44,000 tons or 63 percent were unloaded in Fiji (Figure 8)\textsuperscript{37}.

\textsuperscript{34} US foreign trade statistics
\textsuperscript{35} US import statistics
\textsuperscript{36} Unloading could be for processing or direct export.
\textsuperscript{37} Data is derived from logsheets and the declared return port at the end of a trip and is assumed to represent unloading. Fiji includes both Levuka and Suva; however it is not possible to determine for certain in which port unloading took place, since vessels might arrive at Levuka first, or go to Suva first and then transit to Levuka for unloading.
2.2.3 Transshipping

Transshipment at sea by domestic vessels in the fishery is driven by the size of vessel and type(s) of catch preservation system employed. Albacore are targeted primarily for cannery purposes, with the best quality catch of other tunas in the final sets retained as fresh (either on ice or refrigerated seawater (RSW). The fresh component is transferred to a carrier or a fishing vessel acting as a carrier for return to the port where the vessels are based. This fresh component of the catch is predominantly yellowfin and bigeye, although albacore and other species can be transshipped as well. The practice is known to exist in a few other PICs as well as in Fiji.

The Fiji Fisheries Department has authorized at sea transshipment for three companies whose vessels fish predominantly in the Fiji EEZ. Each company operates one or more vessels to collect the fresh portion of the catch from multiple company longliners for return to Suva on a regular basis, and to provide provisions and bait during transshipment operations. This consolidation and transshipment practice was allowed by the Fiji Fisheries Department after several representations were made by the participants from the local industry showing the crucial importance of this mode of transshipment to their operations' financial viability.

The fresh portion of the non-albacore tuna catch is a major component of vessel income, and there are serious consequences to vessel profitability when this catch cannot be landed in as fresh a condition as possible. The three companies say they target landing the catch in Suva

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McCoy (2012)
Solander, Sea Quest, and Golden Ocean.
usually within 5 to 7 days after capture. Only vessels eligible to fish in the Fiji EEZ are able to be considered for operation in this manner.

### 2.2.4 Use of Bycatch/Undersize Target Tuna Catch

Albacore landed at PAFCO are segregated by size, with the quantities of smaller fish reduced in price depending on their proportion in the catch. Undersized frozen yellowfin can also be sold for canning purposes. Smaller frozen bigeye is not preferred for canning and attracts a price similar to skipjack.

It is believed that much of the non-tuna frozen longline bycatch landed in Fiji is containerized and exported. Markets are primarily in Taiwan and China where demand and prices are consistent. For example, depending on quality, in 2013 frozen at-sea marlin was quoted at $2,000 to $3,000 per ton C&F Kaohsiung. Figure 9 shows bycatch being unloaded into a container for shipment overseas.

**FIGURE 9 Loading of Bycatch into a Container for Shipment Overseas**

*Author’s photo*

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40 Pers. communication, Taiwan fish buyer, May 13, 2013
2.3 PROCESSING OF TUNA LANDED IN FIJI

2.3.1 Commercial Entities Involved in Tuna Processing in Suva

There are six processing facilities and seven major companies operating in Suva that utilize the production from longline vessels offloading at the wharves that handle these vessels. Some processors specialize in frozen product that is transshipped by container, but also handle fresh product. Others handle primarily fresh yellowfin, bigeye and some albacore that is packed and sent to markets in the USA, Japan, New Zealand, and Australia. Some better quality longline bycatch (mahimahi, marlin, opah, swordfish, wahoo, etc) is also sent to the USA, Australia, and New Zealand by some processors.

All processors also have access to product from their own fleets that are owned, chartered or otherwise associated with the enterprise. Table 9 provides some operational information on the activities of these companies. Good air connections and the use of wide-body aircraft as a result of the country’s tourism industry facilitate the trade in fresh tuna from Fiji to Los Angeles, New Zealand, Australia and Japan.
Table 9  Suva Tuna Processors and Exporters

<table>
<thead>
<tr>
<th>Company</th>
<th>Business Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hangton Pacific Co. Ltd</td>
<td>• Established 1998&lt;br&gt;• Owners affiliated with or have connections to China&lt;br&gt;• Boats fish outside Fiji; have some of their own (Chinese)&lt;br&gt;• Sends some albacore, loins to the US</td>
</tr>
<tr>
<td>Tri-Pacific Marine Ltd</td>
<td>• Company registered in Fiji in 2004&lt;br&gt;• Owner is Fiji businessman with other business interests&lt;br&gt;• Processes MSC loins for Solander Fisheries&lt;br&gt;• Handles mostly fresh for export produced by vessels associated with Seafresh Fiji.</td>
</tr>
<tr>
<td>Sea Quest</td>
<td>• Current owner started 2006&lt;br&gt;• New Zealand and Korean connections&lt;br&gt;• Currently planning expansion at new site</td>
</tr>
<tr>
<td>Seafresh Fiji, Ltd</td>
<td>• Establishment date not available, but believed to be around 2004—2005&lt;br&gt;• Subsidiary of China National Fisheries Corporation (CNFC), a very large Chinese state-owned enterprise&lt;br&gt;• Handle marketing in-house, but packing done through Tri-Pacific&lt;br&gt;• Cannery-grade albacore sent by container, either to PAFCO or exported</td>
</tr>
<tr>
<td>Fiji Fish Marketing Group</td>
<td>• Established 1979 according to its website&lt;br&gt;• Handles fresh tuna, no frozen tuna.&lt;br&gt;• Exports tuna to US, New Zealand, Japan</td>
</tr>
<tr>
<td>Solander (Pacific) Ltd</td>
<td>• Began operations as a Fiji company in 1988&lt;br&gt;• Associated with parent company in NZ&lt;br&gt;• Exports fresh to US, Japan, NZ&lt;br&gt;• Exports some MSC-certified products</td>
</tr>
<tr>
<td>Golden Ocean Fish Ltd.</td>
<td>• Began operating in 2000&lt;br&gt;• Some investment by Shanghai Fisheries General Corp., a large Chinese state-owned enterprise&lt;br&gt;• Handles fresh, frozen tuna products and bycatch species&lt;br&gt;• 2013 inaugurated shore base in Tarawa and export of frozen longline tuna</td>
</tr>
</tbody>
</table>

2.3.2  Key Features Facilitating the Processing Fresh/Frozen for Export

The foremost feature contributing to Fiji’s ability to export fresh/frozen tuna is the existence of the PAFCO processing plant. Without PAFCO (or something similar), vessels would have no local market for the major portion of their catch. Fiji’s geographic position relative to Melanesia’s albacore fishing grounds and the industrial services available enable Suva to host a sizeable fleet. Services provided to transient vessels add to providing economies of scale that benefit the locally-based fleet.

It is not enough to be situated in the midst of or near to a fishing ground. Products must be able to reach markets in an economical manner. The second major feature is the Fiji tourism industry
that is served by wide-body jets from major population centers in Australia, New Zealand, USA and elsewhere. Although the current generation of wide-body passenger jets carry less cargo than the Boeing 747s of the past, they are still much better than the smaller jets (such as the ubiquitous Boeing 737) that have insufficient cargo carrying capacity to effectively meet Fiji’s fish export needs. Direct air routes from Fiji to major markets are an important (but not the only) determinant of marketing fresh tuna. For example, the withdrawal of Fiji Airways from the Japan market diminished the opportunities for exporters to access that market.

There are no import duties in the US placed on unprocessed fish, fresh or frozen. This is in contrast with Japan for example, which imposes an import tax of 5 percent if the fish is not caught on a Japanese-flag vessel.

In addition to air services, the large population base on Viti Levu ensures good shipping links from major overseas suppliers and results in export shipping opportunities to those markets. A large capacity container yard in Suva for the shipment of frozen target catch and bycatch adds to the attractiveness of Suva for export.

Two marketing decisions taken by Fiji processors have further assisted the industry: The first was to not become involved in the processing of longline fish with carbon monoxide. This has assisted Fiji’s tuna exports in retaining a good reputation and market share overseas. The second decision was to seek certification from the Marine Stewardship Council (MSC). Although not all fishing companies and processors participate in the MSC process and certification, those who do have reported beneficial results in expanding markets for value-added products that otherwise would have been sold to the cannery.41

2.3.3 PAFCO

Levuka on Ovalau Island is the site of Fiji’s only major tuna canning/loining facility: government-owned Pacific Fishing Company, PAFCO. The facility, constructed in 1976 as a joint venture between a Japanese partner and the Fiji government, was later taken over by the Fiji government on the exit of the partner. The government continues to operate the facility for societal as well as financial reasons.

PAFCO has operated since 1999 as a loining plant under contract to US-based Bumble Bee Seafoods. Maximum daily processing capacity is 120 tons per day; however a PAFCO official recently put current production at around 80 tons per day.42 Figure 10 shows albacore unloaded at the PAFCO dock, with the loining/canning plant beyond and cold store to the right. Frozen, cooked albacore loins are shipped by container to the Bumble Bee tuna canning plant in Santa Fe Springs, California. Some canning is done by PAFCO for the local market, but very little or none is exported.43

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41 Pers. communication, MSC representative, May 22, 2014
42 Vula, M. Fisheries sector tuna processing forecast up, Fiji Sun online, April 26, 2014
43 Pers. communication, PAFCO General Manager to R. Gillett, Suva, May 14, 2014
Bumble Bee is more than a purchaser of albacore loins produced by PAFCO. They are heavily involved in plant management, production oversight and raw material sourcing. The latter activity is facilitated by the Taiwanese trading company FCF that also maintains an office in Levuka to assist longline vessels delivering directly to the facility.

Bumble Bee produces or distributes numerous seafood products other than tuna, and describes itself as “North America’s largest branded shelf-stable seafood company.” In the last ten years it has been owned by several private equity firms, the latest being Lion Capital LLP beginning in 2010. Recent news reports have indicated that Lion Capital, which paid $980 million for the company in 2010, is preparing to put it up for sale for as much as $1.5 billion.

Bumble Bee’s current objectives with respect to PAFCO are simple: to secure a sufficient supply of raw material for canning by their operation in the US. Other sources for albacore loins used by the firm include Colombia, Mauritius, China and Thailand. The latter two countries are often used due to the ease of shipping to the US, particularly from China.

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44 Pers. communication, industry representative May 23, 2014
45 www.bumblebee.com
2.3.4 Key Features Facilitating the Processing of Frozen, Cooked Loins for Export

As with the fresh/frozen component of the industry, Fiji’s location relative to known albacore fishing grounds and the shipping links to major markets are important. Conditions of access to markets are also important in enabling Fiji to compete with other producers. The US tariff on cooked loins is low, $0.011 per kilogram.

The partnership with Bumble Bee is an important component of PAFCO’s success but at the same time a limiting one. On the one hand, Bumble Bee provides the technical expertise and market for PAFCO’s activities. It also sets a specific role for PAFCO that fits its corporate needs and does not envision expansion greatly beyond current loin production.

There are reasons for Bumble Bee’s reticence in considering large scale expansion or moving into canning. The production of loins requires far less water and power than does canning, and Levuka’s location offers no particular advantage. Bumble Bee does not see an opportunity to achieve greater economies of scale at PAFCO, and the Fiji government has no plans to move the facility from Levuka, seeing a continuing need to provide social and economic benefits to the Fijian population in areas outside of the capital, Suva.

Challenges to PAFCO include the limited space available for expansion, particularly for added cold storage. Bumble Bee says it does not intend to invest in a processing facility elsewhere in the country, and there is insufficient willing capital in the country for Fiji to do it alone.

As for attracting a different processor to invest, Fiji itself does not possess the fishery resources that have attracted tuna processors elsewhere: to Papua New Guinea and Solomon Islands for example. Under current circumstances, the PAFCO-Bumble Bee arrangement suits both parties. A major threat may develop from the impending increase in canning production in American Samoa with the opening of the Tri-Marine cannery, or the nascent development of loining next door in Samoa.

2.4 POST—PRODUCTION SUPPLY CHAIN ARRANGEMENTS

2.4.1 Local Sales

Some of the longline bycatch and undersized target tuna catch from the domestic fleet are sold locally in Suva. No data have been found that would quantify wholesale volumes or values of these products. One Fiji exporter/wholesaler that handles fresh tuna indicated that in total his local sales (to the general public as well as restaurants and institutions) was not a major part of his business and amounted to less than 5 percent of volume and less in value annually.

A further indication of the level of local use of offshore fisheries production can be found in a report that included detailing the benefits of fisheries to Fiji. In that report, local industry sources were cited as saying that in 2009 about 12.5 percent of the production from Fiji’s locally-based offshore fisheries was marketed domestically in the greater Suva area.

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47 Pers. communication, industry representative, May 23, 2014. Ironically, there have been recent news reports of Bumble Bee’s intention to erect a loining plant on the wharf in Apia, Samoa; and although documents agreeing to the concept have been signed by the Samoan government and Bumble Bee in June, 2014, the plans have met a degree of opposition in Samoa and it remains to be seen if the project will materialize.


49 Gillett (2009)
One of the sources for both estimates, 5 percent (2014) and 12.5 percent (2009), is the same, raising the real possibility that export of this portions of the catch has become more attractive than selling locally. For example, one overseas market that has developed in recent years that may be taking greater amounts of longline bycatch is the “grilling grade” market in the US that utilizes frozen mahimahi, lower grade tuna, wahoo and other species.

### 2.4.2 Export Markets, Volumes and Values for Fresh/Frozen Tuna

Exporters in Suva consider the Japanese market best for top grade fresh bigeye and occasionally top grade yellowfin. They usually access the Japanese auction system, which depends to a large degree on knowledge of current supply levels to obtain the best price. Bigeye is always sent to Tokyo, while Osaka and other cities in the Kansai region prefer yellowfin.

The largest market for fresh yellowfin is in the US. This is usually for “grade 2” fish, not the top grade. Most fresh tuna exported from Fiji to the US goes to Los Angeles, although smaller quantities are also sent to a distributor in Honolulu depending on air freight availability. Some fresh albacore is also sent to the US, and one exporter noted the albacore market is increasing, with quantities up to 1,200 kg per week sent by air\(^\text{50}\).

Table 10 provides the average volumes and values of Fiji tuna exports to the US during the period 2008--2013. Exports of albacore loins are discussed in the following section.

### Table 10  Average Volumes and Values of Fiji Tuna Exports to the US, 2008—2013

<table>
<thead>
<tr>
<th>Product Category</th>
<th>Volume (metric tons)</th>
<th>Value (USD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole round</td>
<td>1,506</td>
<td>5,875,203</td>
</tr>
<tr>
<td>Fresh and frozen, value added</td>
<td>430</td>
<td>2,420,383</td>
</tr>
</tbody>
</table>

Source: NMFS database

Different product forms are required by the different markets for fresh tuna. Head on, gilled and gutted fish are required by the Japanese market, while headed and gutted is the most common form sent to the US. The markets for frozen longline-caught tuna unloaded in Fiji are primarily Japan for sashimi-grade and Thailand for cannery grade. The values and volumes exported to these markets are shown in Table 11 below.

One Taiwanese company with relatively small fresh longline export operations in Solomon Islands and Vanuatu, Yuh Yow Fisheries, also maintains an office in Fiji. Its vessels and one or two carrier vessels return their frozen catch to Fiji where the albacore is either sold to PAFCO or containerized and sold overseas. Frozen bycatch is also containerized and exported to Taiwan or other markets. Fiji is preferred over Solomons and Vanuatu for these activities because of the services available to its vessels as well as the superior shipping connections to Asia and elsewhere.

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\(^{50}\) Pers. communication, industry representative May 23, 2014.
There are significant product flows for other than albacore loins, particularly for frozen tuna. The average values and volumes to markets accessed during the period 2008—2013 are shown in Table 11 below. The available data do not enable differentiation between products within the categories presented. Nevertheless, it can be surmised that Japan is the destination for sashimi grade fresh and frozen (ULT). It is also likely that the frozen category to Thailand would be albacore and perhaps some cannery grade yellowfin.

Table 11  Average Volume and Value of Exports to Non-US Markets, 2008—2013

<table>
<thead>
<tr>
<th>Category</th>
<th>Volume (mt)</th>
<th>Value (USD)</th>
<th>Destinations by Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh</td>
<td>802</td>
<td>$7,673,678</td>
<td>Japan – 83%</td>
</tr>
<tr>
<td>YFT/BET/ALB</td>
<td></td>
<td></td>
<td>New Zealand – 11%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Australia – 5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Others – 1 percent</td>
</tr>
<tr>
<td>Frozen</td>
<td>6,430</td>
<td>19,503,833</td>
<td>Japan – 59%</td>
</tr>
<tr>
<td>YFT/BET/ALB</td>
<td></td>
<td></td>
<td>Thailand – 22%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Korea – 12%</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Others – 7%</td>
</tr>
</tbody>
</table>

Data Source: Comtrade

2.4.3  PAFCO/Bumble Bee Exports and Supply Chain Arrangements

About half of PAFCO’s raw material needs are supplied directly by Chinese vessels to the PAFCO plant in Levuka, and the other half comes via container transshipped from Suva (or elsewhere when necessary).

The average volume of tuna loins exported to the US during the period 2008—2013 was 10,823 tons with a value of $57,758,226\textsuperscript{51}. This volume is about 30 percent of the average total US imports during that period of around 36,000mt\textsuperscript{52}. In 2013 this percentage dropped to around 28 percent owing to an increased volume of imported loins into the US from other countries.

The loin market is expanding: with the exception of one year, US imports of cooked albacore loins have increased each year since 2010. In April, 2014 PAFCO announced that processing of tuna (input volume) at the Levuka facility is forecast to increase to around 25,000 tons annually\textsuperscript{53}. Meeting this target will keep PAFCO in a position to continue supplying roughly one-third of the past average of US albacore loin imports cited above\textsuperscript{54}.

In 2012 the Fiji-flag longline fleet caught 10,202 tons, and it is clear that the production of the domestic albacore fleet is insufficient to provide all of PAFCO’s raw material needs. Furthermore the domestic fleet’s catch levels are dropping. The company must thus rely on the catch of transient or other vessels to supply the balance required by the plant, or import raw material from elsewhere.

\textsuperscript{51} NMFS Database
\textsuperscript{52} Calculated from US canned tuna industry updates, http://www.nmfs.noaa.gov/pr/dolphinsafe/cannery_receipts.html
\textsuperscript{53} Vula, M. Tuna Processing at PAFCO Forecast Up, Fiji Sun, April 26, 2014.
\textsuperscript{54} A conversion factor from loins to whole round weight is 2.25.
In sourcing raw material for processing PAFCO (actually Bumble Bee) must balance attracting raw material requirements with its processing and downstream needs and costs, and attempt to obtain raw material at the lowest possible prices. Bangkok is the price-setter in the WCPO tuna canning industry with fluctuations according to supply and demand. Factoring in costs to ship containerized frozen tuna from Suva to Bangkok of around $250 per ton, it can be expected that the price offered by PAFCO for spot purchases is likely a fluctuating one. It is likely there are raw material supply contracts in place between PAFCO and key suppliers, however information on these is not known.

Two of Bumble Bee’s strategic partnerships in the industry bear mentioning. One is Bumble Bee’s investment in Bangkok-based Sea Value. In 2011 Sea Value was the world’s second-largest canned tuna producer with production capacity of 850 tons per day, all private label (i.e. produced to customer specifications). The investment includes a supply arrangement for Bumble Bee to obtain canned tuna and frozen tuna loins. The companies were also said to be collaborating in developing processing technology and new product opportunities.\footnote{“Bumble Bee Foods to Invest in Thai Tuna Processor, Sea Value..” PR Newswire, July 6, 2014 \url{http://www.thefreeli brary.com}}

The second is a recent arrangement between Bumble Bee and Thai-owned Chicken of the Sea (COS), which owns the only other tuna cannery on the US mainland in Georgia. The arrangement provides for co-processing by the two companies. In order to lessen transport costs Bumble Bee produces canned tuna in California for COS, and COS produces canned tuna in Georgia for Bumble Bee.\footnote{Pers. communication, industry representative, May 24, 2014}

The handling of export shipments from Fiji to California and elsewhere is done for PAFCO/Bumble Bee by Marine Chartering Company of San Francisco. Shipping logistics and timely transport of finished products are important to profitability. In the past, distributors and retailers operated warehouses to store large amounts of shelf-stable products. This is no longer the case, and producers must carefully schedule production and delivery to minimize storage costs while at the same time fulfilling supply contracts.

\section*{2.5 NATIONAL REGULATORY FRAMEWORKS}

In January, 2013 Fiji adopted updated fisheries legislation through the Offshore Fisheries Management Decree of December 11, 2012. The 43-page decree covers broad fishery management subjects including:

- fisheries conservation, management and development
- Licenses and authorizations
- Monitoring, control, surveillance and enforcement
- Port measures, transshipment and other services

The Decree also addresses the legal aspects of:

- Jurisdiction and evidence
- Offshore fisheries fixed penalty notice
- Sale, release and forfeiture of retained property
The Decree envisages “that the most important fisheries will be managed through fisheries management plans”. To date such plan(s) have not been adopted.

The Offshore Fisheries Division’s activities are backed up by the Oceanic Fisheries Program of SPC. Considering the size of the tuna fishery and its importance to exports and local employment, the manpower and technical expertise available to the Offshore Fisheries Division, including its observer program, appear limited.

2.5.1 General Tuna Management and Development Policies

Fiji has a draft Tuna Development and Management Plan, 2014—2018, but it has not been officially adopted. The current draft indicates the longline fishery will be managed under clearly defined limits, including a cap on the number of vessels, a total allowable catch (TAC) across all target species, and a specific TAC for South Pacific albacore.

Fiji participates in discussions with other PICs under the auspices of the Sub-Committee on South Pacific Tuna and Billfish Fisheries of FFA to devise a scheme that would enable the adoption of zone-based catch limits and better manage the South Pacific albacore longline fishery. Such a management regime is seen to be in the best interests of Fiji and other FFA countries concerned.

2.5.2 Licensing

The 2013 Decree established revised licensing systems and conditions for allocating, refusing or suspending licenses.

2.5.3 Reporting Requirements

The Fisheries Department has noted to WCPFC that:

Fiji’s current licensing and high seas authorizations requires all vessels to comply with relevant WCPFC CMMs. All Fiji flagged long line vessels are required to report all catches on all trips under Fiji’s national laws. All Fiji fishing vessels are required under Fiji’s licensing and high seas authorizations to implement all relevant CMMs.

Transshipment

Fiji’s Offshore Fisheries Division has reported 100 percent observer coverage on carrier vessels undertaking in-zone transshipment on behalf of domestic longliners. Transshipment trips originate and end in Suva and are relatively short, on the order of 4 to 5 days in duration. Transshipment forms are used to record the transferred catch, and observers also file a narrative trip report that complements the data collected. Carriers are not charged any fees, but the local fishing companies undertaking transshipment reimburse all observer costs to the government.

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57 Offshore Fisheries Division and FFA (undated).
58 Offshore Fisheries Division (2013)
59 McCoy, M.A. (2012)
Export

The authorization and collection of information on all exports from the country is the responsibility of the Fiji Revenue and Customs Authority\(^{60}\).

The Fiji Health Department is the recognized Competent Authority for issuing certificates of compliance with EU sanitary and phytosanitary regulations.

2.5.4 Observers and Port Sampling

The Fisheries Department’s observer program is charged with monitoring fishing activities onboard, reconciling catch log sheets with data collected by observers, and observing and recording at-sea transshipment by domestic longliners. Particular attention during fishing activities is paid to interactions with sea turtles or marine mammals. Observers also collect scientific samples such as otoliths for SPC.

Most observer placement is done on Fiji-licensed longliners, however a few trips are taken on purse seine vessels licensed under the US tuna treaty. Since 2007 the number of observer placements (i.e. trips taken) has never reached the target set by the Fisheries Department. In the most recent year reported, 2012, 64 trips were taken out of a target of 80. The reason given for the shortfall was a lack of manpower\(^{61}\).

Port sampling is performed on a small percentage of longline trips at the unloading site. Data is collated and sent to SPC for analysis. During the five years since 2007 the port sampling program has covered from 4—12 percent of total unloading\(^{62}\).

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\(^{60}\) Some details of the manner in which exports are handled by Customs are provided at [www.frca.org.fj](http://www.frca.org.fj), but there are no specific references to fish or fish products.

\(^{61}\) Ministry of Fisheries & Forests (undated).

\(^{62}\) Ibid.
3 COMPANIES IN THE SOLOMON ISLANDS TUNA INDUSTRY

3.1 COMPANIES INVOLVED IN PROCESSING TUNA LANDED IN SOLOMON ISLANDS

There is one industrial tuna processing plant in Solomon Islands: SolTuna located in Noro, Western Province. A much smaller receiving and packing plant for fresh longline-caught tuna is operated by a Taiwan-based company in Honiara.

3.1.1 SolTuna Processing of Purse Seine-Caught Tuna

The Noro processing plant now known as SolTuna was initially established in 1989 by Solomon Taiyo as an expansion of a pole and line fishing base that had existed in Noro since 1976. The facility has experienced changes of ownership, declines in operations and other problems over the years. The impacts of civil unrest, financial problems, a tsunami, and raw material constraints have all been felt.

A restructuring of the ownership and injection of capital by the tuna trading company Tri Marine International (TMI) resulted in the formation of what is known today as SolTuna. Ownership of the company is divided among an affiliate of Tri Marine, Tri-Oceanic Overseas Holdings (51 percent), Solomon Islands National Provident Fund (31.4 percent), the Investment Corporation of Solomon Islands Ltd (9.3 percent), and the Provincial Executive of Western Province (7.8 percent).

The plant has slowly increased daily production (throughput) from 60 tons/day in 2011 to the present 110 tons/day in 2014. The company is pursuing a capital expansion program that is expected to raise production to 150 tons/day.

The plant is supplied its light meat raw material (skipjack and yellowfin) by the fleet operated by National Fisheries Development (NFD). NFD is a wholly-owned subsidiary of the Tri Marine Group of companies and currently has a fleet of 5 purse seine vessels and 3 pole-and-line vessels with a combined production of around 26,000-27,000 tons per annum.

SolTuna’s cooked loin production is expected to grow from the 6,000 ton/year experienced in 2013 to 9,000 tons in 2014. Loins are exported primarily to Italy (73 percent by volume in 2012) and Spain (11 percent). The company sometimes experiences raw material shortages due to poor catches by the NFD vessels. SolTuna has thus recently begun producing albacore loins for the US market to enable the plant to continue operating during those supply shortages. Source of supply is to come from 30 longline licenses granted to SolTuna from the Solomon Islands Ministry of Fisheries and Marine Resources.

Of note is that the generators operated by SolTuna provide the entire Noro town area with electricity, as an earlier power plant was destroyed by the 2007 tsunami.

Soltuna produces some canned tuna for the domestic market in Solomons as well as small quantities that are exported to neighboring countries. It is worth noting that as a Least Developed Country (LDC), Solomon Islands currently has duty-free access to the EU for a wide variety of fish products, including canned tuna under the Generalized System of Preferences.

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63 Comtrade data
(GSP) and Everything But Arms (EBA) arrangements. In spite of these perceived advantages, Solomon Islands does not export canned tuna to the EU. Solomon Islands also qualifies for Least Developed Country (LDC) status for the US market, opening up that market to cans as well. As with the EU, this opportunity has not been taken up. This lack of production of significant quantities of canned tuna, including that for export highlights the fact that it is the major shareholder’s global business strategy that determines levels and kinds of production.

TMI recognizes that the US canned tuna market is a very difficult and competitive one, with discounted prices that make it difficult to compete with major processors in Thailand and elsewhere. Although they may or may not see large profits from SolTuna’s operation, the fact that TMI owns the major supplier, NFD, and trades globally on their own account provides them opportunities for profit only available to such a vertically integrated company.

SolTuna cooked loin exports to the US were just 1,292 tons with a value of $6,908,126 in 2013 and practically zero in the preceding 5 years. In comparison, exports to the EU averaged about 4,200 tons (unstated value) during 2012—2013, or a little less than half of that exported to the EU from PNG during the same period.

SolTuna or its affiliate NFD have acquired 30 longline licenses in order to diversify its raw material supply to include albacore, as earlier noted. This takes advantage of Solomons’ longline licensing policy introduced in 2012 that requires longline vessels licensed in Solomon Islands to unload in Solomon Islands and thus promote local value-addition. Such licenses are offered to the domestic-based companies rather than vessel operators. SolTuna and NFD have the benefit of Tri Marine’s Taiwan office that is in touch with vessel owners there and can perform a recruiting and vetting function for eligible vessels.

SolTuna is to embark on a $27 million capital expansion program that will upgrade and expand processing facilities. The project is partially funded by a $10 million loan from the World Bank’s International Finance Corporation (IFC). This portion will fund repair and expansion of the existing Noro wharf that was damaged in the 2007 tsunami. It will also expand worker housing, build a wastewater treatment plant, expand cold storage facilities and construct a fuel storage site.

3.1.2 Tri Marine International

Tri Marine International is a US-based, vertically integrated tuna company with purse seine and pole-and-line vessels, international tuna trading, and processing arms. TMI supplies some of the largest canners in the world and has offices in North America, Latin America, Asia, and Europe.

In addition to NFD, TMI also owns a number of purse seiners licensed to fish in the PICs under the US tuna treaty. It has been developing a new cannery at the site of the old Chicken of the Sea cannery in American Samoa, and is also setting up facilities to handle value-added longline-caught tuna at that location.

In October, 2013 TMI announced that Bolton Group International of Italy acquired a minority stake in the company (reported to be 40 percent), resulting in a larger, integrated company.

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64 As of July these were issued to 29 foreign-flag longliners from Taiwan, China, and Fiji; http://license.ffa.int/SOL/Vessel_License_From_XML.html
65 IFC (2013).
66 Corporate and operational information available at www.trimarinegroup.com
Bolton is one of the largest branded tuna companies in Europe, and proceeds from the purchase are reported to enable Tri Marine to pursue its strategic growth initiatives. Tri Marine sources albacore, bigeye and yellowfin from longline vessels operating in Solomon Islands EEZ under Chinese, Taiwanese and Fiji flags. The operation makes use of the yellowfin and bigeye tuna catch component of longliners delivering albacore to SolTuna for processing.

A new activity receiving longline-caught bigeye and yellowfin is also now operational at the Noro base. Presently, the operation is handling primarily ULT bigeye and yellowfin and exporting it gilled and gutted and sometimes headed, gilled and gutted to the US, Japan and South East Asia by container (Figure 11). A value-added plant is under construction and aims to handle 40mt/day at full capacity.

![Figure 11 Taiwanese Longliner Unloading ULT Tuna into Containers at Noro for Export](image)

A crucial component for the success of all operations in Noro is sea transportation, and attracting transportation requires volume. In 2012 SolTuna was successful in getting Maersk Shipping Lines, a global shipping line that provides and carries ULT and conventional freezer shipping containers, to include Noro on their regular run from its Malaysia hub through PNG and Fiji. Direct shipping also enables SolTuna to access canning supplies such as cans, cartons, and oil from sources in Southeast Asia. As production increases, Tri Marine and SolTuna can attract more frequent shipping, as well as potentially discounted rates.

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3.2 COMPANIES INVOLVED IN TUNA FISHING IN SOLOMON ISLANDS

3.2.1 National Fisheries Developments, Ltd.
National Fisheries Developments (NFD) began as a joint venture in 1977 between the Solomon Islands government (75 percent) and the Japanese joint venture, Solomon Taiyo (25 percent). The company initially owned a pole-and-line fleet beginning in the late 1970s. NFD attempted to participate in purse seining during the 1980s but was not successful financially. It was later taken over by Tri Marine and provided with the vessels, technology, and know-how that have made it a successful operation. Its five purse seine vessels are sized for the Solomon Islands domestic fishery and are smaller than the “super seiners” that TMI owns and operates under the US treaty. The NFD vessels are around 350—450 tons capacity; the fleet catches around 25,000 tons annually. Figure 12 shows one such vessel, Solomon Jade.

NFD’s purse seiners operate primarily within Solomon Islands archipelagic waters, fishing on anchored FADs. NFD initially operated just one pole-and-line vessel with the objective of opening up markets for pole-and-line fish in Europe. According to one NFD official, buyers demanded greater volume, and this spurred NFD to activate two additional vessels in 201368.

3.2.2 Southern Seas Investment, Ltd
Southern Seas Investment, Ltd, (SSI) services longliners from Taiwan and China at their facility in Honiara, packing and shipping fresh yellowfin and bigeye to Japanese and other markets via Australia on a dedicated air freight carrier. The facility was built by the company in compliance with the Solomon Island 2012 licensing policy that requires licensed longline vessels to unload

68 Pers. Communication, A. Wickham, NFD.
in Solomon Islands\textsuperscript{69}. In 2013, its first year, the facility exported approximately 248mt of yellowfin and 68mt of bigeye to Japan with a combined trade value of US$ 2,711,879.\textsuperscript{70}

The parent company of SSI is Yuh Yow of Kaohsiung, Taiwan. That company has a history of tuna longline fishing and owns and operates a large fleet of longliners in the Indian and Pacific Oceans, as well as tuna purse seiners in the WCPO. Their main operating base in the South Pacific is Suva, and they also have an operation in Port Vila, Vanuatu similar to the one in Honiara.

The Honiara facility is constrained by the limited space at its current location. It is doubtful if it will be able to expand to any great extent without moving. There are also disadvantages in moving, because at present they are able to utilize their own wharf in the very crowded Point Cruz harbor area of Honiara.

As with similar facilities elsewhere, the best quality fish unloaded in Honiara are exported to Japan. This is done via Australia by chartered aircraft, with lower quality for the Australian market and the best grade sent to Japan after transfer to wide-bodied jet aircraft,

Cannery grade catch and bycatch (marlin, wahoo, etc) are retained onboard the vessels and either transshipped to Fiji by the company’s carrier vessel that occasionally calls in Honiara, or are taken back to Fiji for re-export to Taiwan.

In 2013 Fiji-based Chinese longliners indicated a desire to fish in Solomons and were willing to deliver to the SSI facility. The company involved, Solong Seafood Development, Ltd., is a subsidiary or sister-company of Seafresh Fiji, which is a wholly-owned subsidiary of China’s China National Fisheries Corporation. Solong utilizes licenses obtained by SSI and has placed a resident representative in Honiara that operates from the SSI office.

SSI is listed as the license holder for about 50 Taiwanese, Chinese, and Vanuatu-flag longliners that are authorized to fish in Solomon Islands\textsuperscript{71}. It is obvious that the production of all these vessels could not be handled by the existing SSI facility. It is also likely that not all vessels fish all of the time in Solomon Islands. Most are based in or utilize Fiji for unloading, and at least some might have access to Fiji and/or Vanuatu waters.

\subsection*{3.2.3 Western Solomons Fishing Venture Ltd.}

Western Solomons Fishing Venture LTD is a purse seine fishing operation based in Noro, Western Province. The company is a joint venture between the Damalerio Fishing Company from General Santos, Philippines as primary investor (80 percent), and Western Solomons Provincial Government (20 percent)\textsuperscript{72}. Damalerio had operated the PT Samudera Sentosa tuna plant in Bitung, Indonesia but is no longer involved in that operation. Processing onshore is planned in Noro, but no activity had commenced as of last year.

The company currently has one purse seiner listed on the FFA list of Solomon Islands-licensed vessels. The vessel, a former Japanese purse seiner, is shown as having access to the EEZ, archipelagic and territorial waters of Solomon Islands and was transshipping its catch in Honiara in 2013.

\begin{flushleft}
\textsuperscript{69} Hamilton, Havice, and Campling (2012) \\
\textsuperscript{70} Comtrade Data \\
\textsuperscript{71} FFA on-line license database, accessed at http://license.ffa.int/SOL/Vessel-License_From_XML.html \\
\textsuperscript{72} Solomon Times, Dec. 7 2010
\end{flushleft}
3.2.4 Global Fishing Investments, Ltd

Global Fishing Investments, Ltd. is a Kaohsiung, Taiwan-based company that has operated an in-port transshipment operation that purchases bycatch from Taiwanese albacore longliners operating in or near Solomon Islands. The company provides a carrier, a converted longliner with approximately 250—300 tons capacity that periodically takes the transshipped bycatch (and it is believed frozen shark fin) to Kaohsiung. During the period 2009—2011 an annual average of about 1500 tons was transshipped by this company to Taiwan from the port of Noro.

Global has operated in Solomons for at least 10 or more years, acting as a fishing license procurement agent for Taiwanese longliners as well as the activity noted above. Under past Solomon Islands licensing regulations Global acted as the charterer for foreign-flag vessels wishing to fish in Solomon Islands. The new longline access policy removed this activity from Global’s business and granted them access to a certain number of licenses associated with landing catch in Solomon Islands. Global has been searching for a shore-base site, ostensibly to provide processing capacity but more likely to also enhance future requests for fishing licenses. As of May, 2013 they had been unable to identify or obtain a suitable site in or near Noro.

3.2.5 Other Companies Involved in Tuna Fisheries Support Services

Mako Fisheries, Ltd. is a local company owned by a Honiara businessman of Korean descent. Mako is a subsidiary of the KOSOL Group of Companies that has various investments in and around Honiara. The company operates a shipping agency that handles Korean and other purse seiners transshipping in Honiara. It is estimated that in 2013 Mako acted as agent for about 80 percent of purse seiners transshipping in Honiara. The company also occasionally recruits Solomon Islanders as crew on Korean seiners when vessels are short-handed.

3.3 TUNA PURSE SEINE TRANSSHIPMENT IN SOLOMON ISLANDS

Purse seine transshipment in Honiara is highly seasonal, peaking during the period November-February. In 2010 Honiara hosted approximately 20 percent of the recorded 1276 purse seine transshipments that occurred in the 5 major PIC transshipment ports.

In theory, the Ministry of Fisheries and Marine Resources (MFMR) is to monitor all transshipments that take place in Honiara or Noro. This is sometimes not possible due to manpower limitations during periods of heavy transshipment. One of the main reasons for such monitoring is to collect documentation from each operation that ensures the collection of the correct amount of the Solomon Islands transshipment levy of US$2 per ton.

The trade in brine frozen bycatch and small or damaged target tuna sourced from transshipping purse seiners in Honiara is a significant and inexpensive source of protein for Honiara residents. An estimated 500 tons of fish per annum in these categories are unloaded and sold mainly at the Honiara Central Market.\(^73\) (Figure 13).

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\(^73\) McCoy M.A. (2013)
There are up to 50 or more sellers, nearly all women, who are engaged in the trade. Along with their assistants as well as others who travel to the vessels at anchor to obtain the bycatch (Figure 13), it is estimated that 150—200 people are engaged in the activity. In addition to bycatch sourced from transshipping vessels in Honiara (Figure 14), additional amounts are brought to Honiara by the sellers from Noro where it is collected from the NFD purse seiners unloading there.

**Figure 14 Purchasing Bycatch and Small Tuna from a Transshipping Purse Seiner in Honiara**
4 REGIONAL CONSERVATION AND MANAGEMENT FRAMEWORKS

4.1. WESTERN AND CENTRAL PACIFIC FISHERY CONVENTION

The Convention for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean (the Convention) puts in place a framework for management at the regional level. The WCPF Commission (the Commission) is now the central decision-making body for the management of tuna fishing in the WCPO.

In negotiating the Convention, FFA members sought to develop a regional fisheries management organization (RFMO) that enabled strong management measures to be put in place and not suffer from the structural and operational weaknesses that have been a hallmark of some other RFMOs.

The creation and finalization of the Convention was given significant impetus by the conclusion of the 1995 United Nations Fish Stocks Agreement. PICs in particular were warned by their scientific advisors (SPC) that it would be futile to try and manage WCPO tuna stocks without covering their entire range, including high seas areas and the EEZs of some DWFNs such as Japan.

The PICs had no real organized response to these claims even though it was clear that certain important fisheries such as the WCPO tuna purse seine fishery could not exist outside of the sovereign coastal state EEZs in the region. The result is a governance and decision-making process that includes the DWFNs and an agreement to primarily adopt its management rules by consensus.

The process of building consensus within the Commission turned out to be nothing like the PICs had experienced in their own consensus-building exercises and frankly given their experiences with DWFNs, they should have known better. The result has been a tortuous and drawn-out process whereby the PICs retain sovereignty over their respective EEZs and try to use their leverage through a block of like-minded countries to exert their will in the management of international waters.

The Convention creates a secretariat to carry out the Commission’s mandate. There are four subsidiary bodies whose work is considered by the full Commission on an annual or special meeting basis. Of these the Technical Compliance Committee (TCC) and the Scientific Committee (SC) are the most crucial. The other two, the Northern Committee and the Finance and Administration Committee are less germane to PIC fisheries management. The Northern Committee generally covers fish stocks that are mostly found in the Convention Area north of 20 degrees North: north Pacific albacore, north Pacific swordfish, and Pacific bluefin.

The TCC is used to assess the adherence of members to Commission decisions. It recommends measures to the Commission that will improve and enforce compliance with those decisions. Information presented by members, cooperating non-members and participating territories (CCMs) at the Technical Compliance Committee meetings, contained in the second part of national annual reports, is not made public.

74 In situations where decisions have to be taken by vote, the Commission employs what it calls the “two chamber” system, with FFA members comprising one chamber and non-FFA members the other. Decisions are taken by a three-fourths majority of those present and voting in each chamber and no proposal can be defeated by two or fewer votes in either chamber. WCPFC (2010), http://www.wcpfc.int/doc/wcpfc-brochure.
The SC presents scientific and fishery-specific technical information to members once per year. The Committee then recommends measures to the Commission for action at its annual meeting. The meeting itself and documents produced are available to the public and form the most important part of information available to member countries on national catches and stock status.

4.1.1 Reporting and Information Collection

The Convention requires each member to establish and maintain a record of fishing vessels that are authorized to fish beyond that member’s area of national jurisdiction. This requirement follows that of FFA’s Regional Register of Fishing Vessels in that it protects and confirms the sovereignty of member states to manage their domestic fisheries in whatever manner they see fit. The Commission’s secretariat compiles a central database of the national lists. This is used to verify that fishing vessels are legally authorized to operate when present in the Convention Area.

The most important data on fishing activity is collected through mandatory logsheet requirements. National PIC regulatory frameworks require logsheets in an agreed form that usually follows those devised in association with SPC. This enables analysis on regional as well as national bases. These data are transmitted to SPC by the recipient country, either in hard copy or more commonly via the electronic scan-and-send TUFMAN system installed in those countries with a high level of fishing activity.

Some PICs with the capability to enter and analyze at least some of their own data do so before sending onward. PNG is a notable example, where logsheet and other data generated by domestic vessels are first entered at NFA. Regardless, SPC can provide analyses at the request of the PIC concerned and alleviate the need for separate, large-scale national data analysis programs.

Distant Water Fishing Nations may require their flag vessels to use different format logsheets for their own data collection and analysis. These data are important because they include fishing in high seas areas.

The Commission’s Regional Observer Program (ROP) coordinates the placement of observers onboard fishing vessels with the cooperation of member states. Data collected by observers are used to assess the effectiveness of management measures adopted by the Commission, as well as to provide scientific information relating to catches. Observers also collect information that may be used in compliance. Their role includes the collection of information such as species caught, discards, vessel location and others data during the course of the trip.

More and more, logsheet data are being compared to that collected by observers onboard. An important aspect of observer data is that of ownership. Current arrangements for observer data ownership were developed during the period when all or nearly all vessels belonged to DWFN operators. As it now stands, the data belong to the country whose national observer program deployed the observer, except in the case of trips undertaken within the Regional Observer Program (ROP). In this case, the data from trips which include fishing on the high seas or in one or more than one EEZ belong to the WCPFC.

It can be expected that some PICs who now own their own purse seiners will push for changes to these arrangements in upcoming regional meetings.

The Commission also operates a vessel monitoring system (VMS) that has its basis in the requirement that all vessels fishing in the Convention Area have an Automatic Location Communicator (ALC) onboard. This enables fisheries managers and compliance personnel at the national level to better promote compliance with area closures or other restrictions.
time data can be later analyzed to better understand the nature of fishing operations and where such activities as transshipment are taking place.

### 4.2 US TUNA TREATY

The Treaty on Fisheries between the Governments of Certain Pacific Island States and the United States of America (the Treaty) entered into force in 1988. A proposed extension of the subsidiary licensing arrangements is currently in the final stages of discussion between the parties. The vessel cap remains at 40 purse seine vessels (Irrespective of size).

There are several reasons why the US is keen to continue the treaty. From an industry standpoint it enables its vessels broad access to the zones of the parties under one management regime, a considerable operational and financial benefit. Second, it allows the US to play a major role in regional tuna management and to advance its ideas on resource sustainability and conservation. Third, it offers an administratively easy and cost-effective way to provide the PICs with what is described on the US side as foreign assistance: with just one check to write and relatively little overhead costs.

The US implements the reporting requirements of the Treaty under its own regulations\(^7^5\). The information collected by the US is sent to the FFA as treaty administrator; however, US rules require the fishing vessel operator to submit first to the US-nominated Regional Administrator, the Regional Administrator for the Pacific Islands Region of the National Marine Fisheries Service. The US has insisted on this format because it provides the US with the tools available under US law to require compliance and punish non-compliance. This concept had its beginnings in the early days of treaty negotiations, when the US fleet operated ostensibly independent of regulations applied to other US flag vessels.

There are 9 specific reports that must be made:

**Catch report forms.** Also known as *Regional Purse Seine Logsheets*. At the end of each day that the vessel is in the Licensing Area (defined by the Treaty) all information specified on the form must, for that day, be recorded on the form.

**Unloading and transshipment logsheet forms.** All information specified on the form for the unloading or transshipment must be recorded on the form. A separate form must be completed for each fish processing destination to which the unloaded or transshipped fish are bound. The submitted form must be accompanied by a report or reports of the size breakdown of the catch as determined by the receiver or receivers of the fish, and such report must be signed by the receiver or receivers.

**Port departure reports.** Before the vessel's departure from port for the purpose of beginning a fishing trip in the Licensing Area, a report must be submitted to the Administrator by telex, transmission via VMS unit, facsimile, or e-mail that includes the following information: Report type (“LBEG”); Regional Register number; trip begin date; date and time (in UTC) of report; IRCs; port name; weight of catch on board (in metric tons) for each of skipjack tuna, yellowfin tuna, and all other species combined; intended action; and estimated date of departure.

**Entry into port for unloading reports.** At least 24 hours before the vessel's entry into port for the purpose of unloading fish from any trip involving fishing within the Licensing Area, a report must be submitted to the Administrator by telex, transmission via VMS unit, facsimile, or e-mail that includes the following information: Report type (“LFIN”); FFA Regional Register number; trip

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\(^{75}\) Details can be found at [http://www.law.cornell.edu/cfr/text/50/300.34](http://www.law.cornell.edu/cfr/text/50/300.34).
begin date; date and time (in UTC) of report; IRCS; port name; weight of catch on board (in metric tons) for each of skipjack tuna, yellowfin tuna, and all other species combined; intended action; and estimated date and time (in UTC) of entry into port.

**Intent to transship notification and request.** At least 48 hours before transshipping any or all of the fish on board the vessel, a notification must be submitted to the Administrator and a request must be submitted to the Pacific Island Party in whose jurisdiction the transshipment is requested to occur. The notification to the Administrator and the request to the Pacific Island Party may be identical. The notification and request must include the following information: Name of vessel; IRCS (International Radio Call Sign); vessel position (latitude and longitude to nearest minute of arc); weight of catch on board the vessel (in metric tons) for each of skipjack tuna, yellowfin tuna, and all other species combined; and the date, time (in UTC), and location where such transshipment is requested to occur.

**Zone entry and exit reports.** Each time the vessel enters or exits the waters under the jurisdiction of a Pacific Island Party, a report must be submitted to that Pacific Island Party that includes the following information: Report type (“ZENT” for entry or “ZEXT” for exit); FFA Regional Register number; trip begin date; date and time (in UTC) of the entry or exit; IRCS; vessel position (latitude and longitude to nearest minute of arc); weight of catch on board (in metric tons) for each of skipjack tuna, yellowfin tuna, and all other species combined; and intended action.

**Weekly reports.** Each Wednesday while the vessel is within the waters under the jurisdiction of a Pacific Island Party, a report must be submitted to that Pacific Island Party that includes the following information: Report type (“WEEK”); FFA Regional Register number; trip begin date; date and time (in UTC) of report; IRCS; vessel position (latitude and longitude to nearest minute of arc); weight of catch on board (in metric tons) for each of skipjack tuna, yellowfin tuna, and all other species combined; intended action; and whether or not there is a vessel observer on board (“Y” or “N”).

**Port entry reports.** At least 24 hours before the vessel's entry into port of any Pacific Island Party, a report must be submitted to that Pacific Island Party that includes the following information: Report type (“PENT”); FFA Regional Register number; trip begin date; date and time (in UTC) of report; IRCS; vessel position (latitude and longitude to nearest minute of arc); weight of catch on board (in metric tons) for each of skipjack tuna, yellowfin tuna, and all other species combined; estimated time (in UTC) of entry into port; port name; and intended action.

**Transshipment reports.** Upon completion of transshipment of any or all of the fish on board the vessel, a report must be submitted to the Administrator and to the Pacific Island Party in whose jurisdiction the transshipment occurred. The report must include the following information: Report type (“TRANS”); FFA Regional Register number; trip begin date; date and time (in UTC) of the transshipment; IRCS; vessel position at time of transshipment (latitude and longitude to nearest minute of arc); amount of fish transshipped (in metric tons) for each of skipjack tuna, yellowfin tuna, and all other species combined; name of vessel to which the fish were transshipped; and the destination of the transshipped fish.

In addition to the nine reports listed above, there are other reports and notifications to several of the Pacific Island Parties that must be made to those parties. These reports and notifications generally have to do with daily reporting (Australia, Fiji, New Zealand, Tonga, Tuvalu), the entry/exit into closed areas (Kiribati), refueling from a tanker (Kiribati), time of reporting (Solomon Islands, New Zealand, Tuvalu).

Compliance with the above reporting requirements provides both the US and the PICs very good data on the fishery. It is generally acknowledged that the information requirements of the Treaty produce the highest quality and most complete data of any of the purse seine fleets in
the region\textsuperscript{76}. This is good information not only for fisheries management, but also because the reporting of accurate catch locations is important in determining the division of 85 percent of the license revenue among PIC parties to the Treaty\textsuperscript{77}.

### 4.3 FFA HARMONIZED MINIMUM TERMS AND CONDITIONS

The Harmonized Minimum Terms and Conditions of Foreign Fishing Vessel Access (MTCs) were developed in the early 1980s from work undertaken by the Parties to the Nauru Agreement. The process was one of the first attempts at PICs applying consistent access conditions to all foreign vessels. They provide a non-negotiable framework in which all foreign vessels fishing within FFA member countries’ EEZs are subject to the same rules. Administratively, MTCs lessens the burden on national fisheries administrations by providing standardized formats for reporting and compliance. Such standardization assists FFA in its work by providing information in similar or identical form from its members.

Uniform and consistent application of the MTCs is vital to providing a cooperative and coordinated approach to fisheries management by the PICs. One of the basic tenets in developing MTCs has been that they can assist the PICs in undertaking enforcement of their laws and ensure the PICs are not played off against each other in negotiating access agreements.

Changes to the MTCs can be made only by the Forum Fisheries Committee, the governing body of FFA consisting of all its members. The MTCs are an evolving process with the latest amendments made in 2011. Currently, the MTCs cover 14 subjects:

- Common Regional License Form
- Requirement for Good Standing on the FFA Vessel Register Prior to Licensing
- Control and Monitoring of Transshipment
- Maintenance and Submission of Catch Logs in Zones and on High Seas
- Vessel Reporting Requirements
- Observers and Observer Coverage
- Appointment of an Agent by the Flag State Government and/or Fishermen’s Association, and/or Vessel Operator
- Foreign Fishing Vessels in Transit
- Application of MTCs in Port
- Enforcement
- Flag State or Fishermen’s Associations Responsibilities
- Vessel Monitoring System
- Identification of Fish Aggregating Devices
- Pre-Fishing Inspections

One of the most important MTC components is the requirement to be listed on the Regional Register of Fishing Vessels. Although the registration aspects have been somewhat superseded by the WCPFC Register of Vessels, an early IUU provision of the PNA system was to provide

\textsuperscript{76} Gillett et al. (2002)
\textsuperscript{77} Fifteen percent is divided equally among the PICs.
for “blacklisting” and hence a prohibition against licensing by any member. This real threat was used several times against foreign fishing vessels and resulted in collections of fines and other sanctions when physical apprehension of the offending vessel was not possible.

Several of the other MTC conditions have formed the basis of PIC positions during the formulation of WCPFC Conservation and Management Measures.

4.4 OTHER LEGAL INSTRUMENTS

4.4.1 Niue Treaty

The Niue Treaty on Cooperation in Fisheries Surveillance and Law Enforcement in the South Pacific Region is an agreement on cooperation between FFA members that addresses items of exchange of information, procedures for cooperation in monitoring, prosecuting, and penalizing illegal fishing vessels. It entered into force in 1993 and all FFA States are parties. The basis of the agreement is that a regional-level agreement is the most appropriate and cost-effective manner of cooperation for small island states, and minimizes costs of the negotiation and administration of bilateral or other less-encompassing agreements.

The treaty establishes a framework in the form of a legally binding agreement which is intended to enhance the ability of the Parties to effectively enforce their fisheries laws and deter breaches of such laws. It does this by pooling resources that enhance cooperation in fisheries surveillance and enforcement. It also provides a link to the FFA Harmonized Minimum Terms and Conditions and reinforces some of those terms under an international agreement. The treaty specifically provides for:

- The exchange of information on activities of foreign fishing vessels
- Cooperation in fisheries surveillance and law enforcement, such as joint patrols and other activities
- Cooperation in prosecutions
- Cooperation in enforcement of penalties

In 2012 the PICs completed negotiation of a comprehensive subsidiary agreement aimed at strengthening the Niue Treaty. The agreement creates a Niue Treaty Information System as a secure, searchable system to store, manage, and make available the information provided under the agreement. It further addresses the means of cooperation among the parties and addresses such specific issues as:

- use of force and hot pursuit
- immunity and investigation
- enforcement and follow-up actions
- ports and port inspections
- payment terms and cost recovery
- sharing of fines
- cooperation in sharing and use of fisheries data and intelligence

To date, Australia, Niue, Solomon Islands, Cook Islands, FSM, Nauru, Palau, PNG, Marshall Islands, Samoa and Tuvalu are the signatories to the subsidiary agreement. It is to enter into
force upon the deposit of the instrument of ratification by the fourth party, a condition that is not known at present.

4.4.2 Wellington Convention on Driftnets

The Wellington Convention for the Prohibition of Fishing with Long Driftnets in the South Pacific entered into force in May, 1991. It was occasioned by the spread of large-scale drift nets in the region during the latter part of the 1980s after their introduction into the North Pacific earlier.

The Convention specifically prohibits the use of driftnets that exceed 2.5 km in length. It places a duty on signatory states to prohibit its nationals and vessels from driftnet fishing, to discourage the use of driftnets, and to prohibit their use in areas of national jurisdiction. Parties may also restrict port access and port servicing facilities to driftnet fishing vessels.

Interestingly, although its title conveys application to the South Pacific, the convention area set out in the treaty goes from 10 degrees N to 50 degrees S, and from 130 degrees E to 120 degrees W, encompassing nearly all of the current equatorial purse seine fishing grounds of the WCPO and EPO.

The success of the Convention (with the cooperation of many DWFNs and their fishing industries) is indicated by the fact that very few people knowledgeable about FFA's activities realize that FFA is the organization responsible for carrying out the administrative, scientific, and coordinating activities enumerated in the Convention.
5 SUB-REGIONAL FISHERIES CONSERVATION AND MANAGEMENT

5.1 THE NAURU AGREEMENT

The Nauru Agreement Concerning Cooperation in the Management of Fisheries of Common Interest entered into force December 4, 1982. It came about as a result of concerns in the early 1980s by several FFA member countries that their bilateral access agreements with DWFNs were providing poor results, financially and in terms of managing and developing the fishery. The countries believed that cooperation amongst the PICs that shared the same fishery and which dealt with the same DWFNs could provide better financial returns and better information on the fishery than that which they were currently receiving. At the time a feeling existed that the recently-established FFA was not moving fast enough to address pressing management issues and that those countries who became Nauru Agreement signatories (Figure 15) had more in common with their co-signatories than some of the other countries within FFA.

The agreement has become a valuable tool in creating a formidable block of FFA countries that has consistently been in the forefront of tuna fisheries management, putting forward management measures in the best interests of the resource owners. It has also provided a vehicle for advancing measures that facilitate the development of the fishery by and for the Parties to the Nauru Agreement (PNA).

Three arrangements adopted under the Agreement have led the way in PICs taking better control of the tuna fishery in the WCPO. The First Implementing Arrangement (1982) adopted Minimum Terms and Conditions relating to establishment of a Regional Register and licensing terms and conditions for DWFNs. These were later adopted by FFA and applied to all members as Regional MTCs.

The Second Implementing Arrangement (1990) expands the MTCs to prohibit transshipment at sea, instituted mandatory high seas catch reporting and maintenance of logbooks, required the
recording of catch and effort on a daily basis, carriage of observers, and installation and maintenance of an appropriate electronic positioning monitoring and data transfer device on the vessel at the request of the licensing Party.

The Third Implementing Arrangement (2008) requires catch retention of all tunas, a ban on the deployment of FADs during the third quarter of each year, closure of fishing in the two high seas pockets as a condition of a bilateral license, prohibited purse seine sets on whale sharks, 100 percent observer coverage for foreign purse seine vessels and imposes a condition of a license that the automatic location communicator (ALC) of a licensed vessel be switched on and operating properly at all times during the period of validity of a license issued by a Party.

The structure of the Nauru Agreement is such that with the exception of the Regional Register, the Parties themselves are responsible for implementation of the contents of the arrangements. As mentioned above, some of the management measures instigated by the PNA have been broadened to the wider FFA membership, however they remain the responsibility of members to implement. Some of the measures or concepts they contain have also been adopted by the wider WCPFC as Conservation and Management Measures. These include closed high seas pocket areas, observer coverage, prohibition of sets on whale sharks, and FAD restrictions.

The establishment of the Parties to the Nauru Agreement Office (PNAO) in Majuro in 2010 has served to focus the work of the PNA and has added impetus to their activities. The PNAO provides a mechanism for full-time coordination and communication among members. It is particularly important to their efforts to devise and implement management measures within the WCPFC management framework. Their increased leverage of access to PNA members’ resources through effort controls and allocation actions necessary for both conservation and economic reasons likely would not have occurred had FFA remained the PNA facilitator and coordinator.

5.2 PALAU ARRANGEMENT, VESSEL DAY SCHEME

The Palau Arrangement for the Management of the Western Pacific Purse Seine Fishery is an initiative of the PNA that was put in place in 1992. It came about through growing concerns in the late 1980s in the rapid increase in the number of vessels entering the purse seine fishery. The PNA recognized that the purse seine fishery was the most capital-intensive, technologically sophisticated and efficient means of catching tuna, and that it had led to a rapid increase in the purse seine tuna fishery at a time when scientific reports expressed concern over large catches of small yellowfin tuna.

The concept of limiting fishing effort took into account the threat to yellowfin stocks and anticipated an increase in revenue due to greater competition for fishing access. The initial agreement imposed a cap on the number of purse seine vessels that could be licensed by the parties, initially set at 205. Effort creep, the inability to maintain the number of vessels due to pressures from various sources, disappointing economic returns to the PNA, and growing resource concerns led to the dissatisfaction with the system.

In 2000 an FFA study first suggested a scheme based on purse seine fishing days to replace the cap on vessel numbers. It took nearly 7 years for adoption of the concept and a transition to be made. In 2007 the PNA abolished the cap on vessel numbers and commenced the scheme to establish a Total Allowable Effort (TAE) in fishing days within a new Vessel Day Scheme.

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The distinction is important, because FFA formed essentially a servicing role and provided little if any guidance or leadership to the PNA.
(VDS) in 2007. The scheme provides general rules under which the VDS operates\textsuperscript{79}, but it is the decision-making powers of the PNA that determine the allocation of fishing days through the setting of a Total Allowable Effort (TAE) and assignment of a Party Allowable Effort (PAE) to individual parties.

The TAE is set by the parties on the basis of four elements:

- Best available scientific, economic, management and other relevant advice and information
- Provisions of the WCPF Convention
- Objectives of the Management Scheme
- Any submission on the issue of the TAE from any party, individual, or organization\textsuperscript{80}.

The allocation of PAEs to parties effectively distributes the TAE on an individual party basis only. The formula for calculating the PAE may be selected by each Party from either of two options:

Option 1: (a) 40 percent of the PAE is based on the distribution of the assessed relative biomass of skipjack and yellowfin within the waters of the Parties, excluding archipelagic waters—for this purpose the average shall be taken over a ten year period using the most recent available data, and (b) 60 percent on the average of the annual distribution of the number of vessel days fished in the waters of the Parties, for this purpose the average shall be taken over a seven year period using the most recent available data, or

Option 2: 100 percent on the average of the annual distribution of the number of vessel days fished in the EEZs of the Parties, for this purpose the average shall be taken over a 7 year period using the most recent available data\textsuperscript{81}.

The accumulation of VDS days against the TAE and assigned PAEs are made via the FFA-operated VMS.

PNA members may trade days amongst themselves, allowing them to take advantage of the movement of fish in the fishery and still receive revenue. The increased competition among the purse seine fleets that purchase the days has led to an increased premium on access.

Discussion on pooling days has taken place amongst some of the parties and this may have implications for marketing of vessel days, particularly for some of those parties with smaller allocations.

The two most crucial components of the VDS are calculation of a Party’s use of its Party Allowable Effort (PAE) or adjusted PAE during a management year, and the setting of a floor or minimum price per day to be charged. The former is addressed in Article 6 of the Arrangement, while the latter is set by the meeting of PNA Ministers.

One of the important points to note about the VDS is that it is not designed to be a fishery development scheme in the sense of fostering, for example, domestic-based processing. It is essentially a technique to enable the PNA to capture greater amounts of rent in the fishery from

\textsuperscript{79} Palau Arrangement for the Management of the Western Pacific Fishery as Amended—Management Scheme (Purse Seine Vessel Day Scheme) (Amended 27 April 2012). Available at http://www.pnatuna.com/Documents

\textsuperscript{80} Palau Arrangement, paragraph 12.2

\textsuperscript{81} Palau Arrangement, paragraph 12.5.
the DWFNs. In simplest terms, as fishing-day prices increase, it is intended that those who can afford to pay will, while those who cannot afford to pay will tend to drop out of the fishery. This, in theory, should make the remaining vessels more profitable and produce a larger amount of rent which then can be captured, at least in part, by raising the daily rate.

It has also been pointed out that the biological dimensions of the VDS, both objectives and outcomes, are difficult to define and measure. This is because the control of effort does not treat species individually, so that controlling purse seine effort alone does not address conservation objectives for yellowfin and bigeye\textsuperscript{82}.

Challenges to increasing the benefits from the VDS include continued adherence of all the PNA to “hard limits” (i.e. staying within the number of days allocated to each PNA country), and the proliferation of PNA-country flag vessels, many of which are not as profitable to operate as DWFN vessels. This has put additional pressure on countries to provide adequate days to domestic vessels while maintaining a revenue stream from DWFNs.

Should a PNA country desire to provide a discounted rate to its own or other vessels for developmental or other reasons, it must then decide between direct revenue and the benefits that those vessels might bring. The framework that has governed access for these vessels has been the Federated States of Micronesia Arrangement.

Although there have been implementation and other problems with the VDS, its financial benefit to the PICs cannot be denied. It has been estimated that the value of a fishing day before the VDS was roughly $1,350\textsuperscript{83}. After several incremental raises in the rate from an initial floor rate of $5,000, in June, 2014 PIC Ministers announced the minimum daily rate would move to $10,000 in 2015.

Implementation of the VDS system has had other benefits as well. It has moved fisheries management in the region to a desirable rights-based system. That is, fishing rights such as vessel days are defined, allocated and traded. The cap on vessel days creates scarcity as noted above, and value is increased. Consistent with this transition to a rights-based approach, a VDS-style arrangement for management of the tropical longline fishery is being developed by the PICs.

### 5.3 FSM ARRANGEMENT

The Federated States of Micronesia Arrangement (FSM Arrangement) came into force in September, 1995. It is a mechanism for domestic vessels of the PNA to access the resources of other parties through a sub-regional licensing scheme. At the outset it was argued that vessels licensed under the US treaty were paying less and getting greater access than the PNA’s own vessels. FSM and Kiribati were the two countries most affected and they argued strongly for adoption of a preferential access system.

At the time there was no mechanism available for PNA countries to entice vessel operators to invest onshore. In fact, most of the foreign vessel operators seeking access at the time had no interest in or businesses connected with shore-based facilities. Nevertheless, a comprehensive licensing regime was devised, setting certain criteria for eligibility such as equity, local operations involved, vessel flagging, local purchases, onshore investment, and nationals of the Parties employed either on fishing vessels or in the local enterprise. A points system was applied, and later, regular audits undertaken to determine eligibility.

\textsuperscript{82} Havice (2013)
\textsuperscript{83} Havice (2013)
One of the outcomes of the Arrangement was some shore based investment in one or two PNA countries. In particular PNG enjoyed benefits of the arrangement as it facilitated investment onshore by non-vessel owners who could partially offset the costs of their investment by the sale of licenses to DWFV operators. An example of this use of FSM Agreement licenses is SSTC in Papua New Guinea.

In 2002 there were 19 vessels listed on the FSM Arrangement’s register of eligible fishing vessels\(^ {84}\). By May, 2014 that number had increased to 67. The proliferation of vessels licensed under the Arrangement and some questionable levels of compliance with the system has led to abandonment of the points system. It has now been switched to a simple “home party” arrangement whereby Parties certify and sponsor vessels for inclusion.

Although this change has not stopped newer entrants from being sponsored, there are a limited number of days set aside by the PNA VDS for the FSM Arrangement vessels. The number of days is insufficient for the number of eligible vessels and has resulted in problems in securing access for some truly domestic vessels\(^ {85}\).

With the VDS in place and generating ever higher revenue, the Arrangement forces Parties to decide whether they wish to forego some portion of that revenue or support the “home party” vessels with the limited number of VDS days available.

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\(^{84}\) Tarte (2002)  
\(^{85}\) Pers. communication, M. Kamber, May 24, 2014
6 TRADE FRAMEWORKS IN MAJOR TUNA MARKETS

Trade frameworks, the basic structures and their underlying requirements in international trade, are important in determining tuna supply chains in the WCPO. For a variety of complex reasons, the tuna industry in the PICs enjoys few comparative advantages (those that are “natural” such as endowments of land, labor/population, proximity to resources, etc) that enable it to compete with more industrialized nations in world markets. Proximity to resources is often thought as being an advantage in developing industrial tuna processing in the PICs. However, as is demonstrated by the more than 1 million tons of purse seine-caught tuna transshipped each year in the PICs, much of which goes to Thailand a country with no major tuna resources, this resource adjacency does not necessarily provide a significant advantage.

There are several reasons for proximity to good fishing grounds not being a large advantage. One or more of the other necessary components: land, efficient labor, abundant and reliable power and water, and others are often in short supply. In order to foster commercially viable enterprises, whether by themselves or in partnership with the industrialized world, businesses in the PICs must be able to access competitive advantages, i.e. benefits incurred through government policy or the specific strategies or activities of a firm.

Competitive advantages for the PICs can exist where the foreign investor possesses a business strategy that includes a component suitable to the particular PIC (e.g. loining albacore in Fiji, and loining skipjack and albacore in Solomon Islands). Important components fostering these activities are the trade frameworks that apply to the PICs within the tuna industry.

Supply chains are also subject to the food safety and sanitary standards of importing countries. This can have a large impact on the abilities of a particular PIC to become eligible to export. In general the US system is currently far less imposing than that in the EU, but the US is moving towards the latter in several aspects under implementation of the US Food Safety Modernization Act enacted in 2011.

The potential fluidity of trade frameworks and their application to competitors of the PICs as well as the PICs is important. Re-alignment of export partners and export destinations can have major impacts on frameworks that govern not only trade but other aspects of the supply chain as well. For example the Philippines, whose largest export market for canned tuna is the EU is currently applying for an import categorization (GSP+) from the EU that will enable tariff-free importation of processed tuna caught by Philippine-flag vessels. Should this be granted, some raw material (i.e. frozen fish) flows in PNG and perhaps elsewhere in the WCPO could be affected, since a significant part of the fleet operating in PNG and attached to processing there are Philippine flag.

6.1 US TRADE ARRANGEMENTS

US trade relations with developing countries have often been a part of preferential schemes that are regional in nature. An example is the Andean Trade Promotion and Drug Eradication Act, 1991—2013 that contributed to fostering the Ecuadorian tuna industry. More recently the US has sought bilateral or regional free trade agreements (FTAs) with some of the former participants in preferential schemes.

The US also has a Generalized System of Preferences (GSP) which is available to most developing countries but does not offer preferences on fish products produced by PICs. The US also has an expanded GSP system for Least Developed Countries (LDCs) for qualifying countries. Two of the most important PIC processors, Fiji and PNG, do not qualify for this
category. Solomon Islands does qualify, and has exported some tuna loins to the US in the past using this system.

All exports to the US under FTAs and the various preference schemes are required to meet somewhat complicated Rules of Origin (RoO) that include the flag of the vessel being of a qualifying beneficiary or the US. In addition, the direct costs of processing must equal at least 35 percent of the product’s value when it enters the US.

US trade data collection is the responsibility of the Census Bureau. Fish Import data are accessed by NOAA/NMFS and presented to the public on their website for commercial fisheries statistics. NMFS also uses the data to report US tuna cannery receipts by ocean area and species.

Shipments of tuna, tuna products and certain other fish products may not be imported into the US unless a properly completed Fisheries Certificate of Origin (FCO), NOAA Form 370, is filed with US Customs and Border Protection at the time of importation. At least part of the reason for such a requirement appears to be to monitor imports from countries included in the existing yellowfin tuna embargo related to aspects of the fishery in the Eastern Pacific Ocean. Fresh tuna is exempted from this requirement. Some information collected by NOAA in this the trade documentation system is considered confidential. For example, NOAA/NMFS has access to the names of the companies listed as Importer of Record, but data is considered confidential business data and is not available to the public.

US Highly Migratory Species (HMS) trade regulations for swordfish, southern bluefin tuna, and frozen bigeye apply to US trade of product that originated from any ocean area. The NOAA International Trade Permit program regulates trade, including import, export, and re-export of several species of tuna, including frozen bigeye tuna and swordfish. Fresh bigeye is not subject to the permit program.

6.1.1 Brief Description of the US Market for Canned Tuna

Canned tuna in the US has been described by one US government department as “a relatively undifferentiated commodity”. As such, it is often met with widespread consumer indifference to its country of origin or brand name, with price often being the key factor. The market price is set by private label market product from Southeast Asian producers. Advertising is seen as essential for higher sales growth, so securing advertising with grocery chains is critical. But grocers will only advertise if the product is a loss leader, a low-cost item that brings in customers.

Overall the US market for canned tuna is stagnant. The market is characterized by extreme price competition, meaning that margins on canned tuna products are very small and the dominant exporters to the US market have large economies of scale and use volume to generate profit.

Some of the US-based processors with brand names believe there is more potential in the premium end of the market such as albacore which is considered white meat in the US and commands a higher price than light meat (skipjack and yellowfin). They are actively promoting other value-added products such as snack packs, pouch tuna, and tuna salads. The pouch tuna market has been stagnant in recent years.

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86 http://www.st.nmfs.noaa.gov/commercial-fisheries/foreign-trade/index
87 US Department of Labor (2005), http://www.dol.gov/whd/as/sec7.htm#imports
There is some potential for ‘sustainability’ oriented products to have a niche in the market, but several hurdles, including disputes with Earth Island Institute over dolphin-free labeling, stand to limit the potential to capitalize on this market opportunity in the near term.

6.1.2 US Tariffs on Imported Tuna and Tuna Products

US tariffs on fish products are usually zero or very low except products that are commercially important to US interests. Tuna products, particularly canned tuna falls into this latter category. Processed fish products such as canned tuna carry tariffs of from 6 to 35 percent depending on product and quota. Canned tuna in oil has the highest tariff (35 percent), while that in water the lowest 6 to 12.5 percent. This is an artifact from earlier days in the US when tuna in oil was the preferred commodity. Consumer preference has now shifted to tuna in water (including brine). The canned tuna in oil market is a small segment of the total market, ~4.5 percent of the total canned market. It is somewhat to PIC advantage that increased consciousness by consumers of the health benefits of tuna in water has expanded that category to a point where it far outpaces tuna in oil in the US market.

Frozen tuna loins for canning material have a standard tariff of 6 percent when in bags of 6.8kg or less, or $0.011 per kg when in bags of higher volume. Even though whole fresh or frozen fish is imported duty free under what the World Trade Organization (WTO) calls Most Favored Nation (MFN) status (termed Normal Trade Relations, NTR in the US system), it is more advantageous for US-based canners to import loins.

It is important to note that the US market for loins for canning exists primarily because of current US trade policy that is geared to protect domestic canners, of which there are now only two. Should tariff protection be removed, these factories would be highly unlikely to be able to compete with places such as the Philippines and Thailand where production costs are far less.

6.1.3 US Food Safety Requirements

The US Food and Drug Administration (FDA) is the agency responsible for regulating the safety of domestic and imported fish and fishery products. It does so through regulations that mandate Hazard Analysis Critical Control Point (HACCP) principles in seafood processing. HACCP is a system that is preventative in nature, and intended to control hazards in food products and make them safe for human consumption. All foreign seafood exporters to the US are required to have a HACCP plan in place. Further, the US importer of fishery products is subject to written verification procedures and documentation verifying the product has been prepared under a HACCP plan and is not contaminated.

The FDA also requires domestic and foreign facilities that process, pack or store food for human and animal consumption in the US to register with the FDA under the Bio-Terrorism Act (formally the Public Health Security and Bioterrorism Preparedness and Response Act). PIC exporters are required to register their company’s details through an online system and designate the importer as a US agent.

These straightforward requirements are likely to be enhanced and expanded by requirements of the US Food Safety Modernization Act now under consideration (Section 6.1.4 below).
6.1.4 US Food Safety Modernization Act

The Food Safety Modernization Act (FSMA, not to be confused with the PNA’s Federated States of Micronesia Arrangement for fishing access) gives the US FDA a new public health mandate that will apply in some respects to seafood and the food industry.

FDA is currently in the midst of the implementation process of the Act. Exporters of processed and unprocessed seafood to the US can expect additional layers of food safety verification schemes on top of existing HACCP requirements. These requirements will put additional responsibilities for food safety on exporters, and are expected to include at least some potential for third party verification schemes. Third party verification should be within the realm of some PICs to contend with, as long as their Competent Authorities for food safety are able to qualify.

6.2 EU TRADE ARRANGEMENTS

EU import regulations and food safety requirements are very important to some PICs, since the EU is the destination for exports of loins and cans from PNG, some loins from Solomon Islands, and potentially a market for Fiji. In addition to requiring food safety/health certification, since 2010 the EU has also required catch certification that guarantees the imported product does not originate from IUU fishing activities. This has given rise to significantly increased regulation of trade and resulted in increased costs to the exporting countries.

6.2.1 Brief Description of the EU Market for Tuna

The EU is the world’s largest importer of processed and semi-processed tuna. In 2012 it imported approximately 500,000 tons of processed and semi-processed tuna worth €2.2 billion. Canned tuna imports in 2012 were 372,110 tons, a decrease of just 4.3 percent from 2011 but a drop of 12.4 percent from 2008.

EU imports of tuna loins in 2013 totaled nearly 114,000 tons. The top exporter of tuna loins to the EU in 2013 was Ecuador, with 35,800 tons. PNG was a distant second with 9,800 tons, followed by Thailand, 9,100 tons, and Mauritius at 7,700 tons. Canned tuna imports in 2013 were led by those from Ecuador with 84,100 tons, Thailand with 61,400, Seychelles 51,400 tons and Mauritius 50,500 tons.

Canned tuna is the largest category of total fish consumption in the EU, accounting for 2.14 kg per capita in 2011. The EU countries importing the most canned tuna were the United Kingdom and Spain. Most UK imports originated from Mauritius, while Spain’s came from Ecuador.

6.2.2 EU Tariffs on Imported Processed Tuna and Tuna Products

The current EU tariff framework for processed tuna consists of four components related to a country’s status in the EU system:

1. Countries with no trade arrangements are assessed 24 percent
2. Countries with GSP get a 3.5 percent discount to 20.5 percent
3. Countries that qualify for GSP+ have no tariffs assessed

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88 Broche, J. (2014)
89 GLOBEFISH, using EUROSTAT data
4. Countries that qualify under EBA and are LDCs have no tariffs assessed

In order to qualify for GSP, exports must qualify under strict conditions of Rules of Origin. In order to qualify for GSP+, countries must sign up to and maintain international standards on good governance, labor and human rights. It requires the exporting country to accede to a large number of agreements.

In addition to the above, tariffs can be negotiated bilaterally with the EU under Free Trade Agreements, FTAs.

Since January, 2014 GSP is not guaranteed. There are what the EU calls “GSP Graduations” where they are no longer eligible, and “GSP+ Promotions” where countries granted GSP can apply for GSP+ with resultant reductions in tariffs.

Of paramount importance in the PIC region is the Interim Economic Partnership Agreement between the EU and PNG. This agreement allows duty free and quota free access to the EU market for processed tuna with derogation for Rules of Origin, which in this case means fish may be produced by non-PNG flag vessels.

6.2.3 EU Food Safety Requirements

The European Commission’s Directorate General for Health and Consumer Protection (DG SANCO) is responsible for food safety in the EU. In addition to HACCP plans, the EU requires the establishment of an EU-approved Competent Authority (CA) to carry out inspections of seafood exporters’ facilities, including fishing and carrier vessels. All such facilities are included on a list of authorized establishments for the country concerned.

Seafood products exported to the EU must be accompanied by a health certificate from the exporting country’s CA that certifies all health and food safety requirements in the particular shipment are met. This health certificate (also termed a sanitary certificate) is mandatory.

Seafood can be exported to the EU only from authorized countries, and approved vessels and processing plants or factories. Upon arrival in the EU passing of a further extensive system of inspection is required prior to entry.

For those PICs that export to the EU, the recognized CAs are:

- The PNG National Fisheries Authority
- The Fiji Ministry of Health
- The Solomon Islands Ministry of Health

All inspection visit reports by the Food and Veterinary Office are publicly available and published on the FVO website. The reports contain findings, references and (if necessary) recommendations to facilitate compliance.

When the EU identifies a risk to human health in the food and feed chain, they use the Rapid Alert System for Food and Feed to enable an exchange of information between EU Member States and the European Commission.
6.2.4 EU Regulations to Combat Illegal, Unreported and Unregulated Fishing

A catch certification scheme is used by the EU to ensure that no products imported into the EU are as a result of IUU fishing. The exporting country’s CA for this purpose is required to provide the certifications from a domestic legal framework and issue the certificate. The CA is not necessarily the same CA as is used for EU health requirements.

As expressed by an expert in this aspect of the EU regulatory system, the basic questions that need to be addressed and answered in the certificate are:

- Who caught it?
- Where was it caught?
- How much was caught?
- When was it caught?
- How was it caught?[^91]

Validated catch certificates must accompany all marine fishery products traded with the EU, including processed products. In PNG, NFA operates a Catch Documentation Scheme that is geared towards tracing production and providing the certifications required. In other PICs the CA can be the Fisheries Department, Fisheries Authority, etc.

The exporter must request the catch certificate, and it is the exporter who transmits it to the country’s CA for validation. There are additional provisions in the EU system for indirect importation with and without processing in a third country.

The system relies on the capacity of the fisheries CA of the vessel’s flag state to give official assurances about the existence and “legality” of fishing activities. The CA in turn uses tools available within their own MCS systems (fishing permits, fisheries observers, inspectors, VMS, landing controls or whatever it takes) to validate the accuracy of information in the catch certificate.

When the catch is imported to the EU after processing in a country that is not the flag state of the vessel, the importer must provide catch certificates as well as a statement containing an exact description of the products. This statement must be endorsed by the CA in the processing country.

These reporting requirements can be formidable to implement for some PICs, even those that are familiar with the EU requirements. As noted in Section 1.5.3 above, PNG has had problems with the EU’s acceptance of their traceability systems. This has been going on for some time and PNG has recently been warned that considering the PNG authorities’ lack of traceability, proper legislation and other important checks on landings, PNG “cannot ensure that fishery products entering PNG or PNG-based processing plants do not stem from IUU fishing”[^92]. The situation is ongoing, with PNG issued a “yellow card” by the EU and given a timetable within which to fix the identified problems.

[^91]: Blaha (undated)
7. SUSTAINABILITY FRAMEWORKS AND ECO-LABELING

The central purpose of eco-labels is to influence the purchasing decisions of consumers and the procurement policies of retailers selling food products, in this case canned tuna. The process is intended to reward producers who practice fishing responsibly, leading to sustainable use of fishery resources. In providing a “seal of approval” to products that are considered to have a lesser impact on the environment than other products, the intention is to gain access to markets that otherwise would not be available and/or obtain a premium price for the producer.

Organizations that provide eco-labels set a series of standards with which applicants must comply. Once certified, periodic audits are supposed to insure continued compliance and re-affirm the producer’s sustainable practices. The other half of the equation is that retailers must see a potential for eco-labels to increase demand. Environmental groups and the media play an important role in urging the adoption of sustainable practices by suppliers to retailers who often respond by including eco-labels in their social responsibility policies. Such labeling can be first party (self-declared by individual companies), second party (established by industry associations for their members’ products) or third party (usually a producer-licensed certification provided by a third party that conducts audits).

Consumers, retailers and non-governmental organizations (NGOs) in Europe are asking for more products certified as sustainable. Europe has become the primary destination for processed and semi-processed tuna with sustainability certifications from organizations such as the Marine Stewardship Council (MSC) and Friend of the Sea (FOS). Although not involved in a certification process, the International Pole and Line Foundation also promotes its members’ products on the basis of sustainability and social equity, primarily in Europe.

7.1 THE CASE OF PNA FREE-SCHOOL SKIPJACK TUNA

The PNA countries identified an opportunity to market fish from ‘free schools’, (i.e. fish captured from sets unassociated with floating animate or inanimate objects including FADs) as a means of capturing a larger share of the economic value of fish caught in PNA waters. Data held by SPC for the WCPO purse seine fishery indicated that the PNA catch of free school skipjack is significant: 422,921 tons in 2011 and 662,062 tons in 2012.

The PNAO pursued certification from MSC as a means of certifying the catch as sustainable. After further investigation and approval of procedures, the PNA Western and Central Pacific skipjack tuna unassociated purse seine fishery was certified by the Marine Stewardship Council in December, 2011. The certification is held by the PNA, and applies to all PNA waters excluding archipelagic waters. Any vessel except US-flag vessels can become part of the supply process; US vessels are excluded because they do not participate in the VDS. The VDS is used as the fishery-specific management system that results in measures and strategies to achieve the required objectives. As noted above, third party audits are conducted periodically to certify the practices are in compliance with MSC standards.

In order to proceed with a particular vessel, the PNAO executes a Memorandum of Understanding with the vessel operator stating that the operator agrees to the terms of

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93 Blaha (undated)
94 Pirovano, L. (2014)
95 Moody International (2011)
compliance. PNAO then assists with training of captains, crew, observers, and others in what is required to comply with the MSC chain of custody.

Prior to departing on a trip, the vessel applies to the PNAO for a trip number and the appointment of an MSC-certified observer. At the present time, PNAO reports that about half of current national country observers are certified. Observers are important to the process, as it is the observer’s job to certify the catch is from a free school. The observer is also responsible for key documentation, including daily log sheets and catch reports. SPC has produced new catch report forms that now have a column on the daily report form where observers can indicate if the catch is eligible or not eligible for MSC certification. Compilation of this data will be useful to PNA in determining future potential supply volumes.

The chain of custody is maintained by keeping all free school fish completely separate from any other catch onboard. This is done after documenting the free school catch by sealing the storage wells into which the free school catch has been placed. If any portion of the free school catch is transferred or transshipped, it must be segregated from the other catch. This is done with cargo nets, a normal practice in transshipments.

The observer stays onboard to monitor the entire unloading or transshipment of a catch containing free school fish. If the observer is scheduled to leave, a new certified observer is required to continue the monitoring. At the port of discharge, the free school portion of the catch is considered “eligible” for certification. When the catch is brailed onto the sorting table other commercially-valuable tuna species are removed. The remaining skipjack is inspected to make sure it is free of any bycatch that might be prohibited or otherwise not allowed by flag state regulation or other management measure applicable to the vessel’s operation. Once that determination has been made by the observer, the skipjack is weighed and certification as free school skipjack is made. From that point, the fish enters the processing facility where a different MSC chain of custody is taken up, one which is standard for tuna processing and unique to that processor.

To date, for a variety of reasons unrelated to the process described above, there has been very little use of the MSC label in the processing and marketing of purse seine-caught tuna from the WCPO. One trial and marketing exercise was undertaken in November, 2013 from fish caught and processed by Frabelle in PNG with the resulting product marketed in the EU.

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96 Chain of custody description provided by pers. communication from M. Brownjohn, PNAO, May 23, 2014
8 CONCLUSIONS

8.1 TRENDS IN FISH PRODUCTION AND PRODUCTS

8.1.1 Technology and Market-Driven Changes in Longline Activities

In terms of technology advances in the longline fishery, the most important is considered to be those made in catch preservation (i.e. ULT freezing of high value tuna species), primarily in the in the albacore-target longline fishery but also the targeted bigeye target fishery. This change has enabled certain fleets (mainly Taiwan and China) to have greater vessel autonomy by reducing the need to unload fresh fish which results in potentially larger landed catches per trip.

Coincidental to improvements in freezing technology has been the increase in number, size and storage space of Taiwanese and Chinese longliners in the South Pacific albacore fishery and elsewhere. Some Chinese companies are now utilizing the third generation of longliners in the fishery since the last decade, incorporating lessons learned from earlier designs. Taiwan has also greatly improved their fleet, switching to fiberglass-hulled vessels that are more economical to build and operate than steel hulled vessels.

The result of this fleet expansion and resultant increase in catch has been large difficulties in maintaining profitability for domestic Pacific island fishing fleets targeting primarily southern albacore. Since 2005 WCPFC’s Scientific Committee has warned the Commission’s members that any increase in southern Pacific albacore catch would have significant negative impacts on domestic longline fleets, even though key findings of a stock assessment in 2010 showed the albacore population healthy with the level of fishing considered “sustainable. Nevertheless, there have been large increases in catches since 2008 associated with the large influx of new vessels and fishing effort97.

Most of these new entrants operate under license, charter or joint venture arrangements from the PICs. The newer vessels have entered the fishery at the precise time that the PICs are looking for greater employment opportunities through landing of catches in their ports, bycatch for domestic markets and other benefits. It is therefore somewhat ironic that the use of these newer generations of vessels in several PICs has meant less reliance on shore-based support facilities while still delivering albacore to the Fiji cannery, a market that enables the domestic fleet to exist in the first place.

Longliners can expect to see increased demand for the ULT portion of their catch. The demand for ULT fish is significant in Europe and is growing in the North American market. It has been an accepted product in Japan for years, and as attrition in the Japanese fleet continues, non-Japanese fleets will continue to provide greater percentages of the supply.

One company that deals in imported frozen tuna for non-canning has noted that they expect the US to begin to move to the European model of ULT usage. In this model the imported frozen fish (usually in loins) is thawed at the distributor level and then delivered to stores for cutting, packaging and display. In this manner there is no need for a ULT freezer at the retail store level and the critical thawing process of ULT tuna can be more easily controlled98.

The adoption of these and other marketing mechanisms are expected to increase the ULT share of sashimi-grade fish in the US and European markets. At least one company, Tri-Marine, is betting on this market increase by building processing facilities in Noro, Solomon Islands and

97 SPC (2013.
98 Walsh (2014)
Pago Pago, American Samoa to produce ULT processed or semi-processed products for export. It is not coincidental that these ULT processing facilities are to be located in close proximity to canneries or loining plants that utilize the albacore portion of the longline catch from the vessels unloading there.

In order to take advantage of ULT processing and transshipment onshore, PICs must have the infrastructure available to handle increased sea freight container volumes, including the provision of reliable electric power and sufficient wharf and storage space. To date, most semi-processing (i.e. loining) of ULT tuna is done either at the market destination or in an intermediate country. For example, some of the high seas ULT bigeye and yellowfin destined for Japanese markets is first shipped to China and Korea for processing. Bringing this intermediate processing onshore will require new facilities and equipment beyond the “put the fish in a box and ship it” procedure that is common in the current export of fresh tuna.

8.1.2 Technology and Market-Driven Changes in Purse Seine Activities

The single most important change in the purse seine fishery has been the increase in fishing capacity, as represented by the increased numbers and sizes of vessels in the fishery. Also contributing to increased capacity is improvement to the technology onboard vessels. Improvements to fishing gear, including nets, power blocks, winches, and electronics, including so-called “smart buoys” that transmit information on fish aggregating beneath FADs, have all increased the ability of some purse seiners to land quantities of fish unheard of in the past. One Korean purse seiner reportedly caught 15,000 tons in 2013 of predominantly non-FAD fish.\(^{99}\) The catch by this one vessel equals nearly 60 percent of the total catch by the entire Solomon Islands purse seine fleet of five (much smaller) vessels in 2012.

According to the International Seafood Sustainability Foundation (ISSF), there are currently 24 newly-constructed large-scale purse seine vessels and an additional 12 vessels with an unknown date of construction approved for construction by Regional Fishery Management Organizations (RFMOs) worldwide. Considering only those of known new construction, this represents an addition of one vessel every month, and according to industry sources and news stories citing shipyard contracts, this trend is expected to continue for the next two to three years.\(^{100}\) Clearly, these developments represent a considerable challenge and implications for the management of purse seine fishing capacity in the near future.

The increased capacity through the introduction of new vessel building has provided some PICs with an opportunity to enter into joint ventures with DWFNs who need to reduce their fleet in order to stay within domestic caps on fleet size. This is most predominant with the Korean and Japanese fleets which have flagged and/or set up such arrangements with FSM, Kiribati, PNG, and others. Taiwanese firms operating purse seiners in the WCPO have also entered into joint arrangements with at least two countries: Tuvalu and Marshall Islands.

A market-driven change in purse seine activities by some fleets is the increased production of semi-ULT yellowfin for use in some sashimi markets. The production of this product for both skipjack and yellowfin has been practiced for some time by the Japanese purse seine as well as distant-water pole-and line fleet. In Japan such products are labeled “PSS”, purse seine special with skipjack being used domestically in the production of katsuobushi and tataki (lightly seared sashimi). The desired catch is quickly pre-chilled and frozen in brine tanks, then transferred to dry freezers and held at -40° to -45°C. Appropriate yellowfin sizes for this method are those

\(^{99}\) Pers. communication, G. Hurry, WCPFC
\(^{100}\) Justel-Rubio and Restrepo (2014)
above 10 kg\textsuperscript{101}. Purse seine special grade yellowfin competes on the Japanese market with lower grade longline-caught tuna, including that caught by PIC-based firms. With the size of the Japanese sashimi market essentially stagnant, entry into this segment could adversely affect some fresh exports from the PICs.

8.2 INCREASED MARKET ACCESS FOR PIC TUNA PRODUCTS

Processed tuna products, primarily cans and loins, generate the largest interest from many PICs as a means to obtain greater benefits from their tuna resources. In the pursuit of these objectives, there are some important points that should be recognized.

First, national aspirations for tuna processing are important, but they may not coincide with the global strategies of the major firms engaged in the tuna industry. The current structure of processing investments in the most important countries from a tuna resource standpoint is linked to fishery access. Most investors in tuna processing plants do so to gain access to resources rather than make profits from tuna processing. This results in many existing plants operating at below capacity with the investors seeking to limit their losses rather than expand the plants as profitable investments.

Second, the tuna processing industry (loining, canning) is one based on high volume. Very small changes to such things as processing yields at various stages of production are magnified by the volume produced and can have a large impact on profitability. Thus attempting to work on a small scale is not effective unless other conditions apply, such as major price premiums for eco-labels or significant tariff preferences better than those afforded competitors. Even then, high costs of production in PICs can easily wipe out any such advantages.

A major concern is the “erosion of trade preferences”. Since PICs have no control over the trade practices of the importing countries with respect to their other trading partners, a trade preference that at first is seen as an advantage can be eroded by similar or other preferences granted those suppliers whose costs of productions are less.

Fourth, the tuna industry is a global one, with competition with PICs coming from producers who try to minimize high costs of production with improvements to technology and processors who already possess processing efficiencies in low-cost countries.

8.2.1 Increased Access to the US Market

Longline-Caught Tuna

The US market for fresh and frozen whole longline-caught tuna and commercially valuable bycatch species such as mahimahi, wahoo, and opah is not restricted by trade or tariff barriers. The major challenge is securing cost-effective means of getting the product to the markets (Section 2.3.2). This has often been a challenge for exporters in Fiji for example, because of changing air routes and sometimes the type(s) of aircraft employed on those routes.

Purse Seine-Caught and Processed Tuna

There has been discussion in the PICs, particularly in connection with the US treaty negotiations about preferential access into the US market for canned tuna. Although several PICs hope that

\textsuperscript{101} Pers. communication, M. Nakada, FFA, April 4, 2014
duty free access to the US market would attract investors to build and operate processing plants in the region, it is not clear that the other drawbacks and high costs of operating in the Pacific islands region would be sufficiently offset by a reduction or elimination of tariffs.

From a practical standpoint only Papua New Guinea and Solomon Islands are in a position to take advantage of such access. In the former, access could provide alternatives to the EU market. In the case of Solomon Islands it is unlikely the current operators would pursue such an objective since they already have such access and are not taking advantage.

The reality is that even PNG would have difficulty competing with Thailand, Philippines and other low-cost producers in the US market. In fact, two processors, SSTC in Wewak and RD Tuna in Madang both sent all their production to the US before PNG obtained access to the EU market. When that market became available they exited the US market. Re-entering that market would depend on the global strategies of companies which have interests other than greater development of PNG’s processing and exporting capacities.

There are also constraints to the US market for canned tuna. Even though it is a large one, it is stagnant if not in decline, and is characterized by heavy competition and discounting. As noted, the existing suppliers to the US market are focused on delivering high volumes in order to gain benefit from the very small margins available in the market. The ability to deliver high volumes into this market lies with sites in industrialized locations with a large, productive labor force, extensive and reliable infrastructure, as well as favorable shipping rates to deliver the product to market. Most, if not all PICs have trouble meeting even one of these conditions let alone all of them.

8.2.2 Increased Access to the EU Market

Longline-Caught Tuna

An extensive and well-documented report (Gillett 2011b) done for the Pacific Islands Forum Secretariat detailed the EU market for primarily longline-caught products other than whole round fish. It concluded that the main current opportunity associated with the EU market appeared to be as an alternative to Japan/USA markets, allowing exporters to take advantage of temporary or seasonal high prices. It cites global sourcing as a prerequisite for most PICs to enter the trade, but points out that global sourcing is unlikely by itself to catalyze tuna industry development in a PIC where there has been little success in the past. The report also points out that air freight costs to Europe from one of the most economical locations in the Pacific Islands region, Fiji, is about twice that of the major competing countries, and from other PICs the freight costs are even greater.

In order to take full advantage of EU markets for these products, significant advances would have to be made towards PIC compliance with the EU requirements described above. These are not insignificant and would be costly to undertake solely to provide an occasional market.

Purse Seine-Caught and Processed Tuna

The same considerations for the production of canned tuna for the US market apply to the EU. Some of the disadvantages can be overcome in the EU with global sourcing and duty-free
access as PNG has shown. Even then, PNG is hindered by the same problem of fitting the business strategies of the investors in their tuna industry.

A major issue confronting potential PIC export of processed tuna to the EU is the erosion of preferences as described earlier. Obtaining GSP+ status in the EU system is not easy, particularly for smaller countries. For example, the large number of international agreements and treaties that must be acceded to by the exporting countries mentioned earlier represent a significant hurdle. Such a task would overwhelm most of the small foreign affairs departments of the PICs. Additionally, the new approach to GSP and GSP+ systems mean that these preferential terms are not guaranteed, and this could stifle investment in the sector.

The EU system makes it not only difficult to export but also costly. Administration costs, the operation of a Competent Authority and other items are made possible in the PNG situation because of NFA’s autonomous nature and the fact their income stream, estimated at nearly $65-$70 million annually (larger than annual government budgets of some of the PICs) allows them to absorb the costs. The other two PICs that have established CAs, Fiji and Solomon Islands, have struggled even with foreign assistance.

8.3 POSSIBLE RESPONSES OF REGULATORY FRAMEWORKS

8.3.1 Economic Problems in the Domestic S. Pacific Albacore Fishery

There is currently a WCPFC conservation and management measure, CMM 2010-05, in place that is supposed to limit further growth in the albacore fishery south of 20° South. This CMM is generally agreed by PICs to have been ineffective, not least because the geographic limit does not take into account a good portion of existing albacore fishing grounds.

The FFA addresses the issues of catch and capacity increase in the southern albacore fishery primarily through its Sub-Committee on South Pacific Tuna and Billfish Fisheries. The sub-committee consists of those members with EEZ areas south of the Equator, and in whose waters southern albacore is fished. The Director General of FFA has been quoted as saying that PICs need to exercise control over the fishery, noting that 66 percent of the albacore catch comes from the EEZs of South Pacific Island nations and territories (i.e. PICs plus American Samoa and the French territories) 103.

The sub-committee’s main undertaking has been to come up with an FFA-member country proposal on albacore management to the WCPFC. To date they have been unable to do so and the next opportunity will be the WCPFC meeting in December, 2014.

A further management concern of the greater autonomy of ULT longline vessels is the potential for further at sea transshipment that could avoid port calls and greater scrutiny of operations. There is also an economic incentive, as transshipment at sea enables vessels in the fishery to maximize the available days of operation, enabling them to become more efficient in economic terms.

It is not completely clear if the conditions set out in WCPFC Conservation and Management Measure 2009-6 are sufficient to deter IUU activity in high seas transshipment, and a closer look at the activities of this newer fleet component may be warranted. CMM 2009-6 required high seas transshipment guidelines to be established, but as of late 2013 these have not been fully addressed. The US responded to the Commission request for information on developing guidelines that in part noted it had difficulty in determining the economic factors to be

103 Collective action can end the albacore crisis, Atuna, 16 April 2014, www.atuna.com
considered in allowing transshipment. The US further stated that they believe a fairer approach may be to move to compliance-based considerations\textsuperscript{104}. The situation thus appears to be dormant, one of many contentious issues placed in the WCPFC “too hard to solve” basket.

### 8.3.2 Overcapacity in the Purse Seine Fishery

The responses so far to overcapacity in the WCPO purse seine fishery have not been very effective. The primary vehicle for controlling purse seining in the WCPO by WCPFC is currently CMM 2013-01. Capacity management for purse seiners is addressed by requiring CCMs (other than SIDS and Indonesia) to adhere to two requirements:

- To not increase the number of purse seine vessels “above the current level”.
- To ensure that any new large scale purse seine vessel (i.e. over 24 meters) constructed or purchased to replace a previous vessel or vessels shall have a carrying capacity or well volume no larger than the vessel(s) being replaced, or shall not increase the catch or effort in the Convention Area from the level of the vessels being replaced.

CMM 2013-01 also set a deadline of March 1, 2014 for the Commission to allow construction of those vessels for which building approval had already been granted and notified to the Commission.

The PNA VDS is used by CMM 2013-01 as a means of limiting overall purse seine effort. It currently is set at 2010 levels, with specific reporting requirements against EEZ limits placed on PNA. CMM 2013-01 also sets limits on FAD sets, and restricts high seas purse seine effort levels for non-small island developing states (SIDS).

Even before the restrictions on new building came into force, DWFN national administrations were limiting vessel numbers in their own fleets, but the fishing capacity of many of those fleets had continued to increase. Many of the vessels that were replaced in DWFN fleets found their way to the PICs in the form of joint ventures, outright sales, charters, or other mechanisms.

In this regulatory environment, it does not look very likely that further efforts at reducing capacity are feasible in the near term. The aspirations of PICs that have bought, been given, or otherwise provided with older, sometimes smaller purse seiners is a disincentive to put limits on the proliferation of vessels. Pulling in the other direction is the desire for PIC revenue from operation of the VDS, and the conundrum PICs face with possibly subsidizing the fees of their own underperforming fleets.

### 8.4 FURTHER CHALLENGES TO REGULATORY FRAMEWORKS

Several reports in the recent past have taken hard looks at the challenges to tuna fisheries management in the Pacific islands region\textsuperscript{105} and it is not necessary to re-state those here. There are some specific challenges that are worth reviewing here in relation to their impacts on the regulatory frameworks discussed above.

\textsuperscript{104} WCPFC (2013)

\textsuperscript{105} For example, Gillett and Cartwright (2010) and Gillett (2011a).
8.4.1 Availability and Management of Data

Obviously, fishery scientists need the best possible data with which to do their work and provide as accurate assessments as possible. During 2014 there was significant publicity given to the practice of some fishing nations not releasing their data to SPC for the required analyses\textsuperscript{106}. This is an issue that appears will have to be addressed at the political level.

Since 2013 SPC and FFA have been developing National Information Management Systems to integrate existing fisheries data such as that provided by SPC, VMS, and to capture other related fisheries data sets in additional modules. To date, the work has dealt primarily with administrative matters, such as managing observer placements and associated data. It is important that the work be expanded quickly to capture a larger part of the data collected under various systems so that integrated data sets can provide useful information for management purposes.

8.4.2 Surveillance and Enforcement Cost Effectiveness

Since the inception of the Australian patrol boat program more than 20 years ago, PICs have had the benefit of fast patrol vessels and technical assistance for fisheries surveillance and enforcement purposes. The program provided 22 patrol boats to 12 different countries between the period 1987—1997. It includes ongoing maintenance, logistics support and training as well as a small number of Royal Australian Navy specialists per site\textsuperscript{107}.

It is appreciated that the patrol boat program is aimed at multiple uses, not just fisheries enforcement. Nevertheless, the vessels can be a drain on the financial resources of many PICs, in particular the smaller countries. The existence of one or more patrol boats in a country can engender a certain sense of security and possibly contribute to a tendency to overlook other lower-cost management options in favor of the more “sexy” and high profile option.

There are current limitations to the effectiveness of the operations of the existing patrol boat program. It is no secret in many countries that the high cost of maintenance and operation of these vessels has led to their less than optimum utilization. Some PICs believe that the information and communication technology provided is insufficient to enable patrol vessels to effectively communicate with each other and with shore bases. Onboard, the patrol boats are unable to track vessels via the International Maritime Organization’s Automated Identification System. Hopefully, these and other shortcomings will be addressed in the newer generation of vessels and equipment to be provided.

In June, 2014 Australia announced an A$594 million program to build “more than 20” purpose-designed, all-steel patrol boats for 12 PICs and Timor-Leste. The total cost of the program is estimated to be A$1.38 billion over the 30 year life of the project, including repairs, refit, and advisory personnel costs\textsuperscript{108}. Even considering the other uses to which the vessels and personnel will be put, that is an extraordinarily large sum to spend for the program, considering that many patrol boats spend much of their time in port (where they can easily be viewed by foreign fishing vessel crews or their agents there) and only venture out on specific calls or to participate in subsidized regional surveillance and enforcement exercises.

\textsuperscript{106} SPC (2014)
\textsuperscript{107} This is also a cost-effective way for Australia to obtain on-the-ground intelligence on the activities of local police, military, and fisheries enforcement agencies.
\textsuperscript{108} Defence Industry Daily, \url{www.defenseindustrydaily.com}
8.4.3 Observers

In spite of significant improvement in the number of observers trained and employed, there is still a shortage of qualified personnel. In particular, the various longline fleets in the region are still experiencing very light observer coverage.

According to the FFA’s Director General, fewer than 2 percent of longline vessel trips have independent Pacific island observers onboard and sound scientific assessment requires a minimum of 20 percent coverage on longliners. This has led to a situation where FFA is unable to verify that operations are being carried out in accordance with fishing regulations, or that the data collected are sufficient for scientific purposes\(^\text{109}\).

Observer programs in general face problems of funding training costs, identifying suitable candidates, retention of those trained. There have also been unpublicized reports of growing corruption among observers.

Training more observers and finding the funds to outfit and place them onboard is more difficult than it sounds. Observers on longline vessels must be willing to take long trips at sea in cramped quarters that are nothing like those experienced by observers assigned to purse seiners.

Another problem that often goes unnoticed in the ongoing battle to recruit, train, and employ observers is the lack of qualified debriefers in many of the PICs. The standard is said to be a 5:1 ratio of observers to debriefers\(^\text{110}\). One PIC is known to have 56 observers, 14 of whom are newly trained, and only two qualified debriefers, one of whom still works as an observer.

In the short term, it may be necessary to offer financial incentives greater than those currently used in the employment of observers on longliners. In the mid to long term it is essential that automatic systems be developed that will be able to alleviate the need for a physical presence. Some such systems are already used in some fisheries in a few industrialized countries.

There are already trials being undertaken towards development of such systems for use in WCPO longline fisheries, and these efforts should be moved quickly and provided the financial and technical resources necessary as soon as possible.

8.4.4 Joint Ventures and Pseudo Joint Ventures

There has been a proliferation in the PICs of purse seiners under joint venture arrangements and what could be termed “pseudo” joint ventures. These usually involve a DWFN vessel owner and a PIC, either a government or PIC-registered company.

The driving force behind these arrangements is the limit on vessel numbers described above, including limits imposed by DWFN flag-state policies, and the exemption given PICs as SIDS. From the PIC perspective, the undertakings are often driven by a desire to obtain greater benefits from resources, particularly when there is no opportunity to take advantage of shore-based processing.

A purse seine joint venture typically has the following characteristics:

- Organized on business principles but the company’s books are maintained by the DWFN partner

\(^{109}\) Islands Business (2014)

\(^{110}\) PIRFO (2010)
Includes fishery access to the host PICs waters through bilateral licensing and sponsorship in the FSM Arrangement

Day to day management, including fish sales are the responsibility of the DWFN partner

At least some degree of employment is promised to PIC nationals onboard the vessel by the DWFN partner

Payment of a dividend to the host PIC and/or a mechanism by which the host PIC applies profits towards purchase of the vessel

Does not typically involve up-front investment when a PIC government or government entity is the partner

Usually involves older vessels that have been replaced by the DWFN partner with a newer vessel.

A pseudo joint venture contains all of the above points except that the host PIC holds no ownership interest in the vessel. They are still the recipient of what are described by the DWFN as dividends from profits of the venture.

Even without ownership or potential ownership, a pseudo joint venture can provide a net benefit to the PIC if they are paying the going rate for vessel days under the VDS and then paying a dividend in addition to access fees. If the vessel in question is getting discounted access, then other, greater benefits would have to accrue to the PICs to justify the subsidy.

In practice the appropriate level of PIC benefits may be difficult to determine, since all information on the financial performance of the vessel is usually generated and held by the DWFN partner. In addition, the level of understanding of the industry by the PIC entity acting as partner is usually very low. For political or other reasons, some PICs have not been too keen on investigating or tallying their benefits versus costs, including opportunity costs, for some of these ventures.

8.4.5 Regional Solidarity

In the late 1970s and early 1980s the PICs were able to overcome “divide and conquer” tactics of the DWFNs through mechanisms described above such as the Nauru Agreement and MTCs. It has been pointed out more recently that regional solidarity amongst PICs will be central to mitigating most of the management challenges as well as taking advantage of most of the opportunities (Gillett and Cartwright 2011). In 2007 the leaders of the Pacific Islands Forum issued the Vava’u Declaration committing to maintaining regional solidarity among Forum member countries in managing the region’s tuna stocks.

Slowly but perceptively there have been some cracks developing in the PIC armor. Some countries turn a blind eye to the requirements of MTCs when dealing bilaterally with some DWFNs. Since the emergence of the PNA as a leader and the commencement of the VDS system, some countries have openly flaunted the limits and ignored application of the system to some of their bilateral agreement partners. Recently, at the FFA level there has been an inability for the PICs to agree on how to take collective control of the southern albacore longline fishery as was done earlier with the purse seine fishery.

There has been some success in the PNA with tightening up on the VDS, and some see it as the result of leadership backed up by significant increases in revenue. Overall however, these
are political problems that require political solutions, far beyond the ability of fishery managers to resolve.

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