Market and Industry Dynamics in the Global Tuna Supply Chain

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<td>AAFA</td>
<td>American Albacore Fishing Association</td>
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<tr>
<td>ACP</td>
<td>African, Caribbean and Pacific Group of States</td>
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<tr>
<td>ALB</td>
<td>Albacore</td>
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<td>Tuna Longline Association – Indonesia</td>
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<td>ANABAC</td>
<td>Asociación Nacional de Buques Atuneros Congeladores y la Organización de Productores de Túñidos Congelados</td>
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<td>ANZ</td>
<td>Australia and New Zealand</td>
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<td>APTA</td>
<td>Asia-Pacific Trade Agreement</td>
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<td>ASCM</td>
<td>Agreement of Subsidies and Counterveiling Measures</td>
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<td>ASEAN</td>
<td>Association of Southeast Asian Nations</td>
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<td>ASPIRE</td>
<td>American Samoa Protection of Industry, Resources and Employment Bill</td>
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<td>ATL</td>
<td>Atlantic Ocean</td>
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<td>BE</td>
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<td>CCSBT</td>
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<td>Cámara Ecuatoriana de Industriales y Procesadores Atuneros</td>
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<td>CH</td>
<td>China</td>
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<td>CITES</td>
<td>Convention on the International Trade of Endangered Species</td>
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<td>CMB</td>
<td>Chevannes-Merceron-Ballery</td>
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<td>CMM</td>
<td>Conservation and management measure</td>
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<td>CNADGC</td>
<td>China National Agricultural Development Group Corporation</td>
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<tr>
<td>CNFC</td>
<td>China National Fisheries Corporation</td>
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<tr>
<td>CNM</td>
<td>Cooperating non-member</td>
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<tr>
<td>CO</td>
<td>Carbon monoxide</td>
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<td>COSI</td>
<td>Chicken of the Sea International</td>
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<tr>
<td>CRA</td>
<td>Citra Raja Ampat</td>
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DFZ declared fishing zone
DG Fish EC - Directorate General for Fish
DG Trade EC - Directorate General for Trade
DG-SANCO EC - Director General for Health & Consumers
DWFN distant water fishing nation
EBA Everything But Arms Agreement
EC European Commission
EDF Economic Development Fund
EEZ exclusive economic zone
ENKATSUKYO National Ocean Tuna Fishing Association of Japan
EPA Economic Partnership Agreement
EPO Eastern Pacific Ocean
EU European Union
FAD fish aggregation device
FAO UN-Food and Agriculture Organisation
FCF Fong Cherng Fishery Company Ltd.
FFA Pacific Islands Forum Fisheries Agency
FFC Frabelle Fishing Corporation
FMA Fishery Management Areas
FOS Friend of the Sea
FPA Fisheries Partnership Agreement
FRP fibreglass reinforced plastic
FSM Federated States of Micronesia
FSMA FSM Arrangement
FTA free trade agreement
GAPPINDO Indonesian Fisheries Industry Association
GRT gross registered tonnage
GSP EU Generalised System of Preferences
GT gross tonnage
HS code Harmonised System code
IATTC Inter-American Tropical Tuna Commission
IBL Ireland Blyth Ltd.
ICCAT International Commission for the Conservation of Atlantic Tunas
ICSI Investment Corporation of Solomon Islands
IEPA Interim Economic Partnership Agreement
<table>
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<th>Acronym</th>
<th>Full Form</th>
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<tr>
<td>IO</td>
<td>Indian Ocean</td>
</tr>
<tr>
<td>IOT</td>
<td>Indian Ocean Tuna Ltd.</td>
</tr>
<tr>
<td>IOTC</td>
<td>Indian Ocean Tuna Commission</td>
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<tr>
<td>IPDCP</td>
<td>Indonesia Philippines Data Collection Project</td>
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<tr>
<td>ISSF</td>
<td>International Seafood Sustainability Foundation</td>
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<td>IUCN</td>
<td>International Union for Conservation of Nature</td>
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<tr>
<td>IUU</td>
<td>Illegal, unreported, unregulated fishing</td>
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<tr>
<td>JFA</td>
<td>Japan Fisheries Agency</td>
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<tr>
<td>JTEPA</td>
<td>Japan-Thailand Economic Partnership Agreement</td>
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<tr>
<td>JV</td>
<td>Joint venture</td>
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<tr>
<td>KINKATSUKYO</td>
<td>National Offshore Fisheries Association of Japan</td>
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<td>KOFA</td>
<td>Korea Overseas Fisheries Association</td>
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<td>KR</td>
<td>Korea</td>
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<tr>
<td>KTI</td>
<td>Indonesian Tuna Commission</td>
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<tr>
<td>LDC</td>
<td>Least-developed country</td>
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<td>LL</td>
<td>Longline</td>
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<td>LTFV</td>
<td>Luen Thai Fishing Ventures</td>
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<td>MAFF</td>
<td>Ministry of Agriculture, Fisheries and Forestry – Japan</td>
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<tr>
<td>MCS</td>
<td>Monitoring, control and surveillance</td>
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<td>MFMR</td>
<td>Ministry of Fisheries and Marine Resources – Solomon Islands</td>
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<td>MFMRD</td>
<td>Ministry of Fisheries and Marine Resources Development - Kiribati</td>
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<td>MIFCO</td>
<td>Marshall Islands Fishing Company</td>
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<td>MIMRA</td>
<td>Marshall Islands Marine Resources Authority</td>
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<td>MMAF</td>
<td>Ministry of Marine Affairs and Fisheries – Indonesia</td>
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<td>MSC</td>
<td>Marine Stewardship Council</td>
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<td>MSG</td>
<td>Melanesian Spearhead Group</td>
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<tr>
<td>MSY</td>
<td>Maximum sustainable yield</td>
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<td>mt</td>
<td>Metric tonne</td>
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<td>NAFTA</td>
<td>North American Free Trade Agreement</td>
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<td>NAMA</td>
<td>Non-Agricultural Market Access</td>
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<td>NFD</td>
<td>National Fisheries Development</td>
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<td>NGO</td>
<td>Non-government organisation</td>
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<td>NIKKATSUKYO</td>
<td>Japan Tuna Fisheries Co-operative Association</td>
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<td>NMFS</td>
<td>National Marine Fisheries Service (US)</td>
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<td>NOAA</td>
<td>National Oceanic and Atmospheric Administration (US)</td>
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<td>Abbreviation</td>
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<td>NORMA</td>
<td>National Oceanic Resource Management Authority - FSM</td>
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<td>National Provident Fund</td>
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<td>O2</td>
<td>oxygen</td>
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<td>Office of the Trade Advisor</td>
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<td>ODA</td>
<td>overseas development assistance</td>
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<td>OPAGAC</td>
<td>Organización de Productores Asociados de Grandes Atuneros Congeladores</td>
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<td>OPRT</td>
<td>Organisation for the Promotion of Responsible Tuna Fishing</td>
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<td>ORTHONGEL</td>
<td>Organisation des Producteurs de Thon Congelé</td>
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<tr>
<td>P&amp;L</td>
<td>pole and line</td>
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<td>PACER</td>
<td>Pacific Agreement on Closer Economic Relations</td>
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<td>PACPs</td>
<td>Pacific ACP States</td>
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<td>PAFCO</td>
<td>Pacific Fishing Company</td>
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<td>PCA</td>
<td>Partnership Cooperation Agreement</td>
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<td>PICs</td>
<td>Pacific Island countries</td>
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<td>PS</td>
<td>purse seine</td>
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<td>purse seine special</td>
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<td>PTM</td>
<td>Princes Tuna Mauritius</td>
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<td>Research Centre for Capture Fisheries - Indonesia</td>
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<td>RDTTC</td>
<td>RD Tuna Canners</td>
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<td>RFMO</td>
<td>Regional Fisheries Management Organisation</td>
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<td>Republic of Marshall Islands</td>
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<td>Rules of Origin</td>
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<td>RSW</td>
<td>refrigerated sea water</td>
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<tr>
<td>S&amp;DT</td>
<td>special and differential treatment</td>
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<td>SAFAIi</td>
<td>Soksargen Association of Fishing and Allied Industries Inc.</td>
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<td>SBF</td>
<td>Southern bluefin tuna</td>
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<td>SCODI</td>
<td>Société des Conserves de Côte d’Ivoire</td>
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<td>SFGCG</td>
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<td>SNDCS</td>
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<td>SOE</td>
<td>state-owned enterprise</td>
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<td>SOVETCO</td>
<td>Société de Vente de Thon Congelé</td>
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<td>Vietnam Association of Seafood Exporters and Producers</td>
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<td>yellowfin</td>
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EXECUTIVE SUMMARY

As major stakeholders in the global tuna industry, it is critical that Pacific Island countries (PICs) have a comprehensive understanding of supply chain dynamics. An enhanced understanding of how industry drivers and market dynamics shape the global tuna supply chain and influence the major industry players is particularly critical to PICs in achieving stronger control and deriving greater economic benefits from their tuna resources.

Over a series of ten chapters, this report provides an overview of the current status of the global tuna industry in terms of major tuna fishing fleets, tuna trading companies, processing sites and principal markets. It is intended to serve as a platform in the development of a systematic approach to improving the ongoing provision of accurate and useful global tuna industry and market information to Pacific Island countries.

THE CANNED TUNA INDUSTRY

Canned Tuna Fishing Industry – Major Fleets

Annually, at least 2.5 million metric tonnes of the global tuna catch is destined for canning; the majority of which is caught by purse seine vessels. Given canned tuna is a price competitive and nutritional source of protein, overall demand has increased markedly over the past three decades and remains strong. To match this growing demand, the canned tuna fishing industry has experienced massive growth in terms of vessel numbers, vessel catching capacities and total catch. The level of complexity of the canned tuna fishing industry has also deepened due to factors such as resource sustainability issues, stricter regulatory requirements, increasing operating costs, developments in consumer demand, changing preferential market access regimes, to name a few.

Globally, there are currently at least 580 industrial-scale tuna purse seine (PS) vessels in operation in four major ocean regions - Western and Central Pacific (257), Eastern Pacific Ocean (226), Indian Ocean (55) and Atlantic Ocean (40). At present, global annual purse seine catch is around 2.7–2.8 million tonnes, accounting for around 66% of total global tuna catch (4.2 million tonnes in 2009).

Total capital investment in purse seine fishing vessels is in the order of US$5.8 billion, representing over 30% of total capital investment in the global canned tuna industry (around US $15 billion). In the last 3-4 years there has been significant additional investment in vessels (at least $1.2 billion worth); the majority of new investment being for vessels based in the WCPO. Interestingly, this investment occurred despite increasing operational and regulatory challenges for the tuna industry including overcapacity and sustainability issues, increased regulations and newly introduced fishing restrictions, erosion of tariff preferences, as well as the global financial crisis.
Japan

- The Japanese purse seine (JP-PS) fleet is stable in terms of vessel numbers and catch volumes – the fleet has been comprised of 35 vessels since 1997 and annual catch volumes consistently exceed 200,000 mt; 2009 catch was 237,599 mt. Vessels operate within WCPO and Japanese coastal waters.

- A Japan Fisheries Agency regulation limiting PS vessel size to 1,096 GRT has been relaxed, enabling three companies to trial three new larger vessels (1,800 GRT) with helicopters, in an effort to improve the competitiveness of the Japanese fleet relative to other fleets operating larger vessels (notably, Korea and Taiwan).

- While a Government regulation has been relaxed which stipulates that JP-PS vessels must return to Japanese ports to offload catch rather than transhipping catch in fishing grounds, most vessels are still opting to return to port at this stage. If the Bangkok skipjack price continues to strengthen relative to the Japanese skipjack market, transhipment volumes will likely increase.

- The majority of the JP PS fleet’s catch is sold to katsuobushi processors (60%); 20% to low-end sashimi markets (ULT-portion of catch); 10% to Japanese tuna canners; 10% to Thailand tuna canners.

- In response to PNA countries’ calls for greater domestic investment from DWFN, several fishing companies have established joint venture PS fishing operations in PNG, FSM and Kiribati. Japanese companies are more likely to invest in ‘islandisation’ projects that centre on joint fishing ventures and/or technical cooperation, rather than investing in processing facilities, given negative experiences of Japanese companies in tuna processing investments in the Pacific region in the past.

- All Japanese purse seine vessels were accounted for following the March 2011 earthquake and tsunami in Sendai Prefecture.

Taiwan

- The Taiwanese purse seine fleet expanded rapidly during the late 1980s and early 1990s. Despite the introduction of a Taiwan Government regulation limiting the number of Taiwan-flagged vessels to 34, the fleet has continued to expand through alternative flagging arrangements.

- In 2010, there were an estimated 58 Taiwanese-owned purse seine vessels operating exclusively in the WCPO - 33 Taiwan-flagged; 18 Vanuatu-flagged; 4 Marshall Islands-flagged; 3 joint ventures (Marshall Islands, Tuvalu). A further 18 Taiwanese-owned vessels operated as US vessels under the US Multilateral Treaty.

- A long-standing Government prohibition on the importation of used purse seine vessels resulted in the development of a domestic shipbuilding industry in Taiwan that has been able to carefully refine vessel design and size to be economically efficient in purse seine fishing and transhipping in the WCPO. The ongoing success of the Taiwanese purse seine fleet has meant that financing new vessels and operations has not been difficult for experienced operators.

- Total estimated catch of Taiwanese-owned/controlled vessels was 416,900 mt in 2009 (excluding US-flagged vessels). The majority of catch (90-95%) is marketed to trading companies and transhipped to Bangkok.
To ensure ongoing fisheries access in WCPO waters, some Taiwanese vessels owners are forming strategic alliances with PIC-based processors and/or establishing joint fishing ventures in a several PICs.

Taiwanese-owned longline vessels targeting albacore for canning operate in the WCPO, Atlantic and Indian Oceans (estimated total catch of 40,000 mt in 2008). The number of Taiwan's large-scale longliners has decreased worldwide (359 in 2010), largely due to high operational costs, particularly fuel. Conversely, the number of small-scale longliners has increased (over 1,900 in 2008), as they are more fuel efficient and less impeded by Government regulations. An estimated 38 large-scale and 60-80 small-scale longliners targeted albacore in the Pacific in 2009. These vessels utilise port facilities in American Samoa and Fiji for unloading and re-supply, with the majority of catch marketed through trading companies.

**Korea**

The Korean purse seine fleet is comprised of 28 vessels, owned predominantly by three large diversified companies. The fleet peaked at 39 vessels in 1990, but has remained stable at 28 since 2004.

The Korean fleet operates almost entirely in the WCPO. In 2009, total catch was a record 280,000 mt – the first year in which Korea has been the highest catching fleet in the WCPO. Catch volumes in 2010 (and in future) have been affected by high seas closures, while the impact of FAD closures has been less severe than for other fleets, as Korean vessels fish more on free-swimming schools.

Catch is transhipped to Korean ports for domestic processing or to export markets. Annually, around 120,000-130,000 mt is unloaded in Korea. In 2009, 160,000 mt was exported; 80% of which was destined for Thailand.

Several ‘islandisation’ projects are underway with PICs – two vessels are reported to be commencing a joint fishing venture with Kiribati; Dongwon (owner of 15 PS vessels and major US tuna brand, StarKist) is establishing a canned tuna processing facility in the Solomon Islands.

Some industry operators are nervous about ongoing access to PNG waters (an historically important fishing ground for Korean purse seine vessels), as Korea has no existing onshore investments in PNG, with related second-generation access arrangements for vessels. In terms of broader fisheries access in WCPO waters, Korea is potentially vulnerable due to the lack of absence of any significant aid programme and a lack of close diplomatic ties with most PICs.

**US**

In the 1980s and 1990s, the US purse seine fleet was comprised of 30-50 vessels. The fleet was deeply affected by international competition and declining fish prices in the early 2000s and contracted significantly to 11 vessels. Since 2007, the fleet has burgeoned again as a result of external investment, with 37 vessels active in the WCPO in 2010.

The US fleet is now characterised by two vessel groups – the ‘old fleet’, being US-built and owned vessels which have been historical players in the fleet (18 vessels in 2010); and, the ‘new fleet’ (18-19 vessels in 2010), being Taiwanese-built vessels which have come under US flag since 2007, under joint venture arrangements between US nationals
and foreign investors.

- US vessels spend the majority of their time fishing in the WCPO, with 40 licences available under the US Multilateral Treaty. Occasionally, US vessels will fish in EPO waters. With fleet re-expansion in 2007, total catch volumes in the WCPO expanded rapidly from 88,736 mt to 209,374 mt in 2008. In 2009, total catch was 281,589 mt.

- Around 20% of the US fleet’s catch is offloaded in American Samoa for processing, mostly by the ‘old fleet’ which is based in Pago Pago. The majority of catch (80%) is transhipped from WCPO fishing grounds to tuna processors in Thailand and Latin America, largely due the ‘new fleet’ utilising the Taiwanese operational model.

- The US Treaty is set to expire in 2013 and negotiations have been ongoing between the US Government, US industry and Pacific Island Parties (PIPs) for the Treaty’s renewal since 2009. In light of overcapacity in the WCPO purse seine fishery and related sustainability concerns, PIPs have been seeking to apply fishing effort restrictions to US vessels under the Vessel Day Scheme. In addition, PNA members in particular, have been pushing for greater economic returns in the form of domestic development, increased broader cooperation and preferential market access to the US.

- In May 2011, PNG tabled its intention to withdraw from the US Treaty, which means from June 2012, US vessels will need to negotiate bilaterally for fisheries access, unless a new multilateral treaty can be negotiated.

**Philippines**

- The Philippines has one of the largest purse seine fleets operating in the WCPO – in 2009, 40 large vessels (>250 GRT) and 55 smaller vessels (<250 GRT) were on the WCPFC vessel register.

- Twenty-two large PS vessels currently fish in PNG waters under bilateral access arrangements; a further 18 operate under charter arrangements in PNG (and are regarded as part of the PNG fleet) and eight vessels have re-flagged to PNG.

- Catch rates of Philippines vessels are significantly lower than those of the larger and more modern vessels operated by other DWF fleets operating in the WCPO (e.g. Japan, Taiwan, Korea). Total catch by domestic vessels in Philippines waters in 2009 was estimated at around 148,000 mt, with a further 71,400 mt caught in PNG waters by foreign access vessels. Philippines chartered vessels operating in PNG caught around 70,000 mt (although this catch is attributed to PNG).

- Catch from Philippines domestic vessels is largely processed by Philippines canneries (around 130,000 mt), with the remaining catch exported to Thailand and possibly, Vietnam. A portion of catch by PNG-based vessels is processed by PNG processors (owned by Philippines investors), with the rest either exported to Philippines domestic canneries and Thailand.

- The Philippines domestic fleet has been significantly hampered by the loss of access to Indonesia waters in 2007, as well as the recent closure of several WCPO high seas areas. To maintain catch levels, the Philippines fleet is under pressure to find alternative fishing grounds, which will likely see increased fishing in PIC EEZs by existing vessels, as well as additional vessels seeking licences in association with new processing plants (in PNG and the Solomon Islands).
China

- As China only began to develop its WCPO purse seine fleet in 2001, it is a relatively new player in the fishery. In 2010, Chinese firms owned 16 purse seiners, with twelve registered in China, three in Marshall Islands (with a fourth to commence operations in 2011) and one in FSM.

- In 2009, total catch by Chinese-flagged PS vessels was 77,000 mt.

- PS fishing companies without direct ties to processing facilities market their catch to the three major trading companies, the majority of which is sent to Thailand. Some catch (~15,000-20,000 mt) is likely sent to China for processing. The Marshall Islands registered vessels will offload a portion of their catch to the newly-opened Chinese loining plant in Majuro, with the remaining catch sold to a trading company.

- While China operates longline vessels in the Atlantic, Indian and Pacific oceans; vessels targeting albacore specifically for canning operate exclusively in the WCPO, using Fiji (Suva) as a primary operating base. An estimated 80 or so Chinese-owned vessels operated from Fiji in 2008, with some fishing in Fiji waters, while others operated outside of Fiji waters (in adjacent high seas areas, as well as Vanuatu and Solomon Islands EEZs), while using Fiji as a base. Total reported catch in 2009 was almost 20,000 mt, with albacore supplied to canneries in Levuka (Fiji) and American Samoa.

- Most of the impetus for China's entry and expansion in the tuna industry, both in the WCPO and globally, has come from state-owned enterprises. Government policy is strongly supporting expansion in the agriculture sector, which includes overseas tuna fisheries. Hence, China is a ‘developmental’ mode in terms of the WCPO purse seine and longline albacore fisheries. Given the dominant role of state-owned enterprises there is adequate capital available for expansion and government subsidies (i.e. fuel, shipbuilding) to assist new and existing operations. Fleet expansion, including increased vessel registration in PICs, in some cases in association with joint fishing ventures and processing investments, is inevitable.

PNG

- In 2010, the PNG purse seine fleet (that being, vessels whose catch is attributed to PNG) was comprised of around 45 vessels – 8-9 PNG-flagged vessels (fishing in PNG archipelagic and EEZ waters); 18 Philippines-flagged chartered vessels operated by PNG-based processors (fishing in PNG EEZ); and, 19 PNG home-party vessels operating under the FSM Arrangement (fishing in PNG waters and beyond). Total WCPO catch of the PNG fleet was around 200,000 mt in 2009.

- All vessels are privately-owned, mostly by Philippine and Taiwanese companies with investment in onshore processing and net repair facilities in PNG, as well as fishing/processing operations elsewhere.

- PNG’s second generation access agreements link vessels to PNG-based processing plants and other onshore developments, with catch unloading provisions included in the agreements whereby vessels must unload a portion of catch to domestic processors. In 2010, 30% of the PNG fleet’s catch was processed onshore in PNG (~65,000 mt), with the balance transhipped and exported mostly to Thailand and the Philippines. PNG has a long-term goal to locally process 100% of tuna catch from within its EEZ.
PNG is committed to enhancing the value of catch taken from PNG waters through fishing-related onshore investments in processing. As such, fisheries access will be geared even further towards second-generation access agreements where fishing licences will be tightly linked to onshore processing obligations and investments.

EU

The EU purse seine fleet is the largest in the world and is comprised of some of the most powerful purse seiner businesses in the world. In 2010, an estimated 88 vessels were owned or controlled by EU-interests; 56 of which were flagged by EU member states (Spain, France and Italy), and 32 (at least) which carried foreign flags. The EU fleet is active in each of the world’s main tropical tuna fisheries; the main fishing grounds being the Eastern Central Atlantic and Western Indian Ocean.

The EU is a very minor player in the WCPO, with only four Spanish-flagged vessels actively operating in the region to date under fisheries partnership agreements with Kiribati, Solomon Islands and FSM (26,563 mt in 2009). Two El-Salvadorian purse seiners also fish in Kiribati waters (8,824 mt in 2009). Given the current complexities associated with implementation of the Vessel Day Scheme in the WCPO, EU vessel owners have indicated that they are unlikely at this stage to extend their current levels of activity in the region beyond the existing network of FPAs.

EU vessels that are owned by vertically integrated companies supply catch to their processing plants or those with whom they have financial connections, with any surplus catch sold on the global market. Specialised boat-owning companies supply the global market. Given catch by EU-vessels is Rules of Origin (RoO) compliant under preferential trading arrangements between the EU and ACP countries, vessels are generally orientated towards supplying ACP-based tuna processing facilities.

EU import tariffs and preferential RoO are central to the commercial survival of the EU fleet. The provision of ‘global sourcing’ RoO for processed tuna under the P-ACP Interim EPA is a deep source of concern for the EU fishing and processing sectors.

EU vessels operating in the Western Indian Ocean (WIO) have suffered greatly in the past several years due to attacks from Somali pirates, as well as considerable reductions in high value yellowfin catches. These two factors have contributed to a shift in capacity from the WIO to other ocean regions, particularly the Eastern Atlantic Ocean.

Indonesia

In contrast to other large industrial tuna purse seine and longline fleets operating in the WCPO, Indonesia’s tuna fisheries are largely artisanal in scale and multi-gear/multi-species by nature. Commercial-scale purse seine and longline vessels account for only 3% of the total number of inboard-powered vessels (~200,000 vessels).

In 2007, 176 commercial-scale purse seine vessels (<2,000 GT) were licensed to fish in two Fishery Management Areas in Indonesia’s Pacific EEZ waters. There is very little fishing outside domestic waters by Indonesian vessels by virtue of their generally small size and limited range.

Production figures for Indonesia tuna fisheries are generally incomplete or uncertain due to the difficulties of monitoring catch and effort associated with large numbers of
artisanal vessels offloading to multiple landing points. Total purse seine catch in 2009 may have been in the order of ~190,000-200,000 mt.

- An increasing volume of catch is processed locally by tuna canneries (~90,000 mt/year), and smaller volumes are smoke-dried for katsuobushi production. Catch is also exported to Thailand and Vietnam-based processors.

- Since production levels and exports cannot be quantified with any level of certainty, it is difficult to ascertain Indonesia’s significance in the canned tuna supply chain. Indonesia remains an important middle-level supplier of raw material to WCPO canneries and its own growing domestic canning industry, but no major increases in supply is anticipated in the short term.

**Other Fleets – EPO**

- In 2008, there were 218 licences purse seine vessels operating in the EPO. The two largest fleets in the region are Ecuador and Mexico, each comprised of 40-50 vessels. Both fleets primarily supply domestic processing industries, which are also the two largest processing countries in the EPO. Panama and Venezuela have fleets consisting of 20-30 vessels each, while Columbia has 11 vessels. Nicaragua, Peru, Vanuatu, Spain and Honduras each have less than 10 vessels operating in the EPO fishery. Current total purse seine carrying capacity in the EPO is the highest in history (~212,000 m3).

- Total skipjack catch in EPO waters (for all gear types) was around 305,000 mt in 2008. In 2010, skipjack catches reached a record low, resulting in EPO processing plants sourcing a considerable volume of raw material from the WCPO.

**Others Fleets – WCPO**

- In 2009, the Solomon Islands fleet consisted of five purse-seine vessels (total catch around 18,000 mt), which supply Soltai’s processing plant based in Western Province. Catch over and above Soltai’s requirements is transhipped and exported to Thailand. With productive skipjack resources and encouragement from the Solomon Islands Government for onshore investment, there may be more locally-based purse seine fishing and processing developments in the near future.

- The FSM purse seine fleet consisted of seven vessels in 2010, five of which have FSMA status. Total catch in 2009 was 19,143 mt, but much of this catch was taken outside of the FSM EEZ, given five vessels are licensed to fish in other PNA members’ EEZs. All catch by FSM vessels is exported to Thailand.

- In 2010, the Marshall Islands (RMI) fleet consisted of eight purse seine vessels, five of which were licensed under the FSMA. In 2009, total catch was around 44,000 mt. The fleet will increase to ten vessels in 2011, with an additional two vessels (of a total of four licences) commencing operations in conjunction with the recently re-established loining plant in Majuro, which is now owned and operated by Chinese interests (Pan Pacific Foods (RMI) Ltd.). While some of the fleet’s catch is processed by the loining plant, the majority of catch is exported for processing elsewhere (i.e. Thailand, Philippines, Japan).

- In 2010, 19 purse seine vessels were Vanuatu-flagged, although 13 of these were classified as PNG home party vessels under the FSMA (with catch attributed to PNG). Vanuatu’s vessels are generally owned by Taiwanese investors and are some of the most
efficient in the entire WCPO fleet. Total Vanuatu PS catch in 2009 was around 38,000mt; all of which was transhipped. In 2009, four vessels switched to US flag to operate under the US Treaty.

- The Kiribati purse seine fleet consisted of five vessels in late 2010, comprised of three vessels of Ecuadorian origin and two Japanese joint venture vessels. With the introduction of the Ecuadorian vessels in 2009, total catch increased from 6,000 mt in 2009 to over 21,000 mt in 2009. Prior to 2009, the entire Kiribati PS catch was exported to Thailand. Now, the catch from the three Ecuadorian vessels is exported mostly to Ecuador-based processors.

- Four New Zealand vessels are licensed to operate in the WCPO, with a recorded catch of 26,600 mt in 2009. The majority of catch is unloaded in Pago Pago, with small volumes exported to Thailand and other markets.

**Longline-Caught Albacore for Canning**

- Albacore is caught in all oceans, mostly by longliners, with global catch exceeding 200,000 mt in 2008.

- The estimated catch of albacore in the WCPO was 125,479 mt in 2009. Longline catches comprised close to 70% of this total (around 80,000 mt). Taiwan and Vanuatu (Taiwan-owned) vessels accounted for the largest share of longline albacore catch, closely followed by China and Japan. PIC-flagged fleets operating in the South Pacific albacore fishery also made a significant contribution to the WCPO catch (i.e. Fiji, Samoa, Tonga, Cook Islands) (around 67,000 mt in 2009).

- Most of the albacore longline catch is destined for canning, with the US being the primary market. Some at-sea transhipping occurs for export to Thailand, as well as unloadings to processing plants in Fiji, American Samoa and French Polynesia.

**Canned Tuna Trading Companies – The ‘Big Three’**

In the simplest sense, tuna trading involves the procurement of raw materials from multiple fishing vessels and coordinating transhipment of catches into reefer carriers for sale and delivery to tuna processors.

Canning-grade tuna trading companies have grown to a position of relative dominance in the supply chain, largely due to the effectiveness of the services offered to vessel owners. Engaging a trader enables vessel operators to channel their energies into fishing, rather than having to deal with the financial, administrative and logistical hassle and risk associated with marketing catch. In the case of processors, purchasing raw material from tuna traders removes the complexities of dealing with a large number of vessel owners selling small volumes of catch. Working with trading companies also ensures that processors have continued access to large volumes of raw material.

Tuna trading is a highly competitive business; as limited profit is made per shipment, trading companies capitalise on economies of scale and attain profits through trading high volumes of product.
Three major companies dominate canned tuna trading activities in the WCPO - Tri Marine, Itochu and FCF Fishery Co. Ltd. Collectively, these companies handle annually over 1,350,000 mt of raw canning material; around 70% (900,000 mt) of which is sourced from vessels operating in the WCPO.

Of the three companies, FCF handles the largest volume of raw material (around 650,000 mt per year) and is by far the most prominent tuna trader in the WCPO region. While Tri Marine handles lower volumes than FCF (500,000 mt/year), it has a much stronger global presence (especially in the European market and other oceans) and has a more vertically integrated business model. Itochu is the most conservative of the three, operating almost exclusively in the WCPO and trading the smallest volume of raw material (200,000 mt annually).

The canned tuna trading business in the WCPO grew significantly in the 1980s, largely in conjunction with the development of Thailand’s tuna packing industry. Tuna traders established an integral role for themselves since WCPO fishing grounds are located a fair distance from Bangkok and Thailand did not have an established domestic purse seine fleet from which to source raw material, nor a sufficiently sizeable local market for finished product. Originally, there were 20 or so trading firms supplying raw material to Thai processors. However, by the mid 1990s, FCF, Tri Marine and Itochu emerged as the dominant players and nowadays, collectively supply Bangkok-based tuna processors with around 80% of their raw material needs.

The ‘Big Three’ tuna traders have established an integral position for themselves in the WCPO tuna fishery and, to an extent; the global canned tuna supply chain as a whole. Their position is unlikely to change or be challenged anytime soon given their well established long-term relationships with fishing and processing clients, strong financial backing to fund trading transactions and sophisticated market intelligence systems. It is unlikely that any new trading companies could enter the market and compete with FCF, Tri Marine and Itochu in the WCPO.

**Canned Tuna Processors**

The contemporary global canned tuna processing industry developed in the mid 1950s, in conjunction with the development of industrial-scale tropical tuna fisheries, with significant growth experienced in the late 1970s-early 1980s. Originally, the US mainland, EU and Japan were the dominant canned tuna processors. Commencing in the early 1980s, with the development of tuna canning industries in the Philippines and Thailand, and later in other lower-cost production sites in South East Asia, Central/Latin America and the Indian Ocean, the dominance of the former three major producers diminished. Today, global canned tuna production exceeds 1.7 million metric tonnes (net finished weight) annually.

Globally, there are at least 144 tuna processing facilities in operation producing canned tuna products and/or frozen cooked loins. In 2008, global maximum processing capacity was around 14,220 mt/day of raw material and estimated annual production was 3.05 million mt (whole round equivalent). Currently, Thailand processes almost one-quarter of the world’s canned tuna (736,000 mt in 2008). The second largest processing site is Ecuador which accounts for almost 12% of global annual production (362,400 mt in 2008).

Total global capital investment in canned tuna processing facilities is estimated to be around $1.3
billion. In 2009, it was estimated that new capital investment in processing facilities over the
three years prior was around $0.5 billion, around 40% of which went into onshore investments
in the WCPO region ($186 million).

Developing world players have risen in dominance in the past 20-30 years due to these countries’
ability to achieve economies of scale, as well as other factors including some sites being located
close to major fishing grounds, having access to productive and lower-cost labour sources,
and in some cases, preferential access to the major canned tuna markets (EU, US). High-cost
processing locations (i.e. US, EU) are increasingly switching to using frozen cooked loins for
canned tuna production that are sourced from lower-cost sites of production (or outsourcing
production altogether) where labour costs are considerably less.

Like the canned tuna fishing industry, the canned tuna processing industry is both complex
and dynamic. Global processing operations are currently influenced by factors such as
increasing cost of raw materials and other production inputs, tuna resource sustainability issues,
overcapacity, complex tariff regimes, increasingly stricter standards (i.e. labour, quality, food
safety and environment) and changing consumer preferences.

**Thailand**

- Thailand is the world's leading producer of canned tuna and global price market leader
  for canning-grade whole round frozen tuna. Over the past 30 years, Thailand's tuna
canning industry has grown exponentially, with annual total production of canned tuna
  and cooked loins now exceeding 700,000 mt.
- In late 2010, there were 30 canned tuna processors operating in Thailand; with a total
  combined annual processing capacity of 3,000 mt/day. Facilities are currently operating
  at around 85% capacity (2,500 mt/day).
- The industry is dominated by two large-scale processors, Thai Union (1,000 mt/day) and
  Sea Value (850 mt/day). Several medium-scale operations process around 300 mt/day
  (or less), with the remaining processing firms being mostly small companies.
- Around 85% of raw canning material for processing is imported by Thai tuna processors.
  The majority of raw material is sourced from the WCPO (~90%) through trading companies.
- Thai canners experience difficulties attracting Thai workers and rely heavily on migrant
  labour from Burma (50-60%).
- The most significant markets for canned tuna exports from Thai tuna processors are the
  US, EU Middle East, Australia and Canada.
- The most notable recent industry developments include the takeover of major EU
  processor and brand owner, MW Brands by Thai Union and Thai Union's investment in a
  joint processing facility in Lae, PNG.
- Given Thailand’s huge processing capacity and related economies of scale, global
  competitiveness, industry know-how and market share, it will continue to dominate the
  global canned tuna processing industry. The industry is considered to be relatively stable;
  it is unlikely that there will be any new entrants in the short-term.
US – Mainland

- The US was the first and the largest contemporary tuna canning industry in the world. As low cost competition emerged from Southeast Asian countries, the US switched production to the US territories of American Samoa and Puerto Rico to combat high wages and strict environmental regulations on the US mainland.

- Since 1979, twelve canneries based in the US and its overseas operations have closed. In 2010, there were two tuna canneries operating in mainland US – Bumble Bee (Santa Fe Springs) and Chicken of the Sea (Georgia). Both plants only process cooked tuna loins in highly productive, capital intensive production systems. In 2010, total combined maximum processing capacity of the two US mainland facilities was 60,000 mt of frozen loins.

- The US has three major branded tuna processing firms - Bumble Bee Foods, Chicken of the Sea International and StarKist Seafood Co; each of which have investments and/or managerial control over processing plants in third countries.

- The WCPO is a critical source of supply for the three major US brand firms.

- The vast majority of product produced by the US ‘big three’ is destined for the North American market, primarily the US. The ‘big three’ brand labels command upwards of 80% of the US market.

US – American Samoa

- In the 1950s, Chicken of the Sea International and StarKist invested in processing plants in American Samoa (Pago Pago). With production capacities of well over 100,000 mt per annum each, the plants were two of the biggest operators globally. One of American Samoa’s major strengths has been in the processing of high value albacore (white meat). Canned tuna processed in American Samoa is destined for the US market, as it enters duty free.

- Beginning in the 2000s, the Pago Pago plants began to lose their competitive edge as wage costs were far higher than competitors in Asia and Latin America. In 2007, minimum wage legislation was passed in the US, requiring American Samoa to incrementally increase wages by more than double. This was a significant blow to the two canneries and a major contributing factor to Chicken of the Sea closing its plant in 2009 and relocating to the US mainland (Georgia).

- StarKist remains operational, but is making significant changes to its production system to remain as competitive as possible, including reducing its labour force and processing increasing volumes of loins. In 2010, StarKist processed 70,000 mt of skipjack and 32,000 mt of albacore.

- The former-Chicken of the Sea facility was purchased by Tri Marine in October 2010 and will recommence operations (under the name of Samoa Tuna Processors Inc.), albeit processing smaller volumes under a completely different business model.

- The Government of American Samoa is attempting to protect its canning industry through the proposed Protection of Industry, Resources and Employment (ASPIRE) bill, which if passed by the US Congress, would subsidise tuna processors in Pago Pago.
**EU**

- The most important canned tuna processor in the EU is Spain, which accounted for around 60% of annual EU canned tuna production from 1998-2007. In 2007, Spanish production was 216,400 mt.

- There are five major Spanish processing firms (Calvo, Jealsa, Frinsa, Garavilla and Salica); four of which own their own fishing capacity. A further four major non-Spanish companies are also involved in canned tuna production (Bolton, Princes, MW Brands and Thunnus Overseas Group); only one of which is owned by ‘European’ capital (Bolton).

- Given relatively high labour costs in the EU, considerable attention is paid to labour time/cost and fish yield; canneries source large-sized whole round fish (i.e. yellowfin over 10 kg) to enhance labour productivity through high recovery rates (average 48.5%).

- Investment in processing facilities in the developing world (i.e. Sub-Saharan Africa and Ecuador) is central to the production strategy of most EU-based firms and is closely connected to EU trade preference schemes.

- The vast proportion of canned tuna processed in Spain, Italy, France and Portugal are sold within the European Union.

- The survival of EU-based canned tuna processing firms will continue to depend on tariff protection against relatively low cost imports and cost-reduction strategies. Some of the major Spanish players are moving away from a focus on market share growth to increasing operational profitability, and as such are focusing increasingly on value-added products to minimise the impact of rising raw material price.

**Ecuador**

- Ecuador is the most significant canned tuna processing player in the Americas, with a total daily maximum raw material processing capacity of 1,865 mt/day (~450,000 mt annually). In 2010, there were approximately 18 processing plants located in Guayaquil, Posorja and Manta. In 2008, Ecuador processed around 362,400 mt of raw material, making it the world’s second largest producer behind Thailand.

- In 2010, plants in Ecuador were suffering from supply constraints (both overall and of RoO-compliant fish) due to poor catches in the EPO (an estimated 40% lower than 2009 catches). Plants undertook several strategies to respond to supply shortages – operating at below capacity and extending planned maintenance closures, expanding cold storage capacity to stockpile raw material, and importing larger volumes of fish (mostly from WCPO).

- Two critical factors are cited for Ecuador’s success in canned tuna processing - an efficient, productive and stable labour force, and in the case of several plants, vertically integrated business models including purse seine fishing operations.

- Ecuadorian processing plants produce primarily for the EU and US markets; it is the top volume supplier of tuna loins into the European Union (mostly to Spanish and Italian canned tuna processors).
There is also some production for the growing Latin American market. Ecuadorian processors are interested in expanding supply for the regional market, in part to reduce their dependence on sourcing RoO compliant fish for the EU and US markets.

**Philippines**

- Philippines' canned tuna processing industry developed during the late 1970s and 1980s and it has become the second largest processor in the WCPO, following Thailand.
- Seven canneries are currently in operation (six of which are based in General Santos). In 2009, annual production was ~220,000 mt (daily processing capacity 850 mt/day); a reduction from a peak in 2006/07 of 250,000 mt.
- Several of the canners are part of vertically integrated operations, sourcing at least some of their raw material requirements from their own company fleets in Philippines or overseas (PNG, and formerly, Indonesia).
- The majority of Philippines cannery production is exported, mostly to the EU and US market (10.4 million cases (83,604 mt) in 2009), with around 10% of canned tuna consumed locally.
- Production in domestic Philippine canneries seems unlikely to expand due to raw material supply problems (i.e. declining domestic catches and reduced access to Indonesian waters). Any strategy for major expansion in production capacity will more likely involve the construction of new processing plants elsewhere in the WCPO (i.e. PNG, Solomon Islands, Indonesia).

**Korea**

- The establishment of the Korean tuna canning industry is a relatively recent development, beginning in the early 1980s.
- There are currently five major Korean canneries in operation, with a combined daily processing capacity of 500 mt. In 2009, total annual production was around 125,000 mt. Production is entirely for domestic consumption.
- All fish currently processed in Korean canneries is sourced from catches in the WCPO by the Korean purse seine fleet. Two of the canning companies are vertically integrated operations with their own fishing vessels (i.e. Dongwon and Sajo).
- The most significant recent industry development has been Dongwon's acquisition of StarKist from Del Monte Foods in 2008.
- Future growth in the Korean domestic processing sector is possibly limited. Any expansion of Korean processing capacity will likely be linked to the establishment of overseas operations (such as that planned by Dongwon for the Solomon Islands), with export rather than domestic markets to be found for the product.

**Japan**

- The Japanese canned tuna processing industry was originally export-orientated, supplying the US market primarily. Due to rising competition from lower cost sites of production, Japan's canned tuna processors changed their focus to produce exclusively for the domestic market.
Since the mid-1980s, canned tuna production in Japan has declined markedly due to diminishing consumer demand, and increased competition from cheaper imports of finished production (mostly from Thailand).

In 2008, fourteen canned tuna processors were operating in Japan, with a combined raw material processing capacity of 400 mt/day (annual production of ~80,000 mt).

Japanese canners mainly source raw materials (whole round and loins) through the major tuna trading companies. Catch sourced from Japan’s purse seine fleet currently only accounts for around one-quarter of production (20,000 mt annually).

Japanese canned tuna production is entirely for domestic consumption and is a high-quality market. Hagoromo Foods Corporation, Japan's pioneer canned tuna processing company (est. 1931), dominates domestic canned tuna production and its 'Sea Chicken' brand claims 60-70% market share.

Japan's domestic canned tuna production is likely to increasingly shift to offshore locations (either through Japanese investment in offshore facilities or increased sourcing of finished product from overseas supplies), due to several issues impacting on the competitiveness of Japan’s processing operations – labour cost and availability, strict environmental standards, stagnant consumer demand, and increased competition from Thai imports.

**China**

Canned tuna processing in China represents a very small fraction of the country's large and active export-driven fish re-processing sector. Processing is primarily undertaken by the private sector; the large state-owned enterprises engaged in tuna fishing do not appear to be directly engaged in the processing sector.

Obtaining a clear picture of the sector (in terms of the number of facilities and raw material sources and processing volumes) is difficult due to China’s commodity tracking system. In 2010, two tuna processing facilities were likely in operation, processing between 30,000–50,000 mt of raw material.

The US has been the largest market for canned tuna from China for the last several years (6,000 mt in 2009). There appears to be a general trend towards increased production and exports of loins, with exports to EU processors reportedly increasing by 300% from 2007-2009 (4,400 mt in 2009).

The major problems confronting China's tuna processing sector are similar to those facing the country’s fish processing sector in general - increasing labour costs in a labour-intensive industry, as well as rising land, water and energy costs as China’s economy develops, particularly in coastal cities.

Given these constraints, coupled with a very limited domestic market for canned tuna, it is unlikely that China will become a major tuna loining or canning centre, in the same way as it has become a significant player in other manufacturing industries in recent years. No one geographic centre has emerged for tuna processing, which limits the opportunities for gaining economies of scale, an important factor in counteracting rising costs.
Indonesia

- The Indonesian tuna processing sector is showing clear signs of resurgence, after a period of decline in the late 1990s and early 2000s. Prior to this, over twenty tuna canneries were in operation.
- In 2010, there were at least thirteen canneries in operation with an estimated annual throughput of around 100,000 mt. The supply of raw material to Indonesian canners is almost fully sourced from local vessels.
- Canned tuna production is predominantly for export, with minimal local demand. Canned product is exported to a wide range of markets including the EU, US, Japan and the Middle East.
- The revitalisation of canneries in Bitung is a major development for the Indonesian canned tuna processing industry, with three plants commencing or expanding operations in 2008-2009. A fourth plant is scheduled to open in 2011 and an inactive plant may also resume operations in the future. It is unclear whether Indonesian canning capacity will continue to grow beyond the current period of resurgence.

Vietnam

- Tuna canning and processing capacity in Vietnam has developed since the early 2000s, in parallel with processing of product for export markets from its very large aquaculture industry.
- There are three main privately owned tuna canners based in the Mekong Delta area; two of which are owned by overseas interests (Thailand, US). Other small seafood processors may also occasionally process small volumes of light meat. In 2009, Vietnam’s estimated production was 50,000 mt.
- The US and EU markets collectively accounted for close to 70% of the total value of exports in 2009. There is also a small local market for canned tuna.
- Vietnam’s major strength is its cheap and highly productive labour force. However, there is some pessimism about Vietnam becoming a significant canned tuna processing site in future, given several constraints, including the heavy reliance on imported raw material, comparatively higher freight costs, a restrictive bureaucratic environment and lack of economies of scale.

PNG

- PNG’s first canned tuna processing facility was established in 1997 by a Philippines investor (RD Tuna Canners). Since this time, two more plants have been established (SSTC and Frabelle).
- An estimated 65,000 mt of raw material is currently processed annually. Total production capacity is estimated at 410 mt/day (80,000 mt per year), although all three plants are operating at below capacity. All three plants source fish locally from either PNG flagged or PNG-chartered vessels.
- Duty free access to the EU market, coupled with the recent RoO relaxation under global
sourcing provisions, enables PNG to compete against lower cost sites of production for exports to the EU. The domestic canned tuna market is significant, accounting for 20-30% of production by local canners.

- There has been significant interest from foreign investors to establish additional canned tuna processing facilities in PNG, with proposals in various stages of development for an additional four plants in 2010. New investment is driven largely by licensing incentives from second generation access arrangements.
- Despite advantages conferred by duty preferences, relaxed RoO and rich tuna resources, PNG processors continue to face many challenges including low labour productivity, a high-cost operating environment and infrastructure constraints.

**Solomon Islands**

- Soltai Fishing and Processing Ltd. (formerly Solomon Taiyo) is currently the Solomon Islands’ sole tuna processing plant. In late 2010, Soltai’s processing capacity was around 60 mt/day, with plans to increase to 80 mt/day in 2011, and eventually reach 150 mt/day. The plant operated at less than full capacity during 2009 and mostly focused on loining for the EU market (Italy) (2,200 mt in 2009). In September 2010, Tri Marine became Soltai’s majority investor (51%).
- Two proposals for new processing developments are in place. Philippines-owned Frabelle Fishing Corporation is proposing to establish a facility (50-100 mt/day) in either Guadalcanal or Western Province. Dongwon (Korea) has also proposed to establish a facility in Guadalcanal (200 mt/day), contingent on Solomon Islands Government establishing wharf facilities.

**Others - WCPO**

- There is one major canned tuna processing operation in Levuka, Fiji (PAFCO) which commenced operations in 1976. It has operated since 1999 as a loining plant under contract to Bumble Bee. Daily processing capacity is 120 mt/day, but could potentially be increased to 180 mt/day if sufficient cold storage becomes available.
- A loining plant was built in Majuro, Marshall Islands in 1999. After withdrawal by the former owner and a period of inactivity for several years, the plant was purchased by a Chinese investor (Pan Pacific Foods, a subsidiary of Shanghai Deep Sea Fishing Company) in 2006. The plant commenced trial processing in 2008, but suffered technical difficulties and temporarily closed until mid-2009. Potential processing capacity is 80-100 mt/day, but to date, the plant has been operating at less than half this capacity.

**Others - EPO**

- In addition to Ecuador, there are a number of other Latin-American (EPO) based canned tuna processing sites) – Mexico, Columbia, Venezuela, Costa Rica, El Salvador and Guatemala. Total production capacity of these plants (excluding Ecuador) is 1,710 mt/day (annual production ~410,000 mt in 2010). After Ecuador, Mexico is the second most significant EPO-based processor (~175,000 mt in 2010). Latin American processors enjoy duty free access to the EU (loins/cans) and US (pouch) markets.
Other Processors – Sub-Saharan Africa

Canning facilities in Sub-Saharan Africa are generally linked to investment from European tuna firms and are commercially dependent on EU trade preferences. Major processing sites include Mauritius (120,000 mt/year), Côte d’Ivoire (110,000 mt/year) and the Seychelles (100,000 mt/year).

Principal Canned Tuna Markets

Canned tuna has risen to become an extremely popular relatively low-cost source of protein and is now traded as a global ‘commodity’ product (i.e. high-volume, low value, low margins). In 2008, total global tuna consumption was estimated to be around 256 million cases (3.2 million mt whole round equivalent), valued at US $7.5 billion. The largest canned tuna markets are currently Europe and the US. These major traditional markets are maturing, with consumption levels stabilising (for the US and EU) or even declining slightly, in the case of Japan. Future growth in canned tuna market demand will likely stem from Latin America, the Middle East, and other emerging markets such as Eastern Europe (e.g. Russia) and South Africa.

Supermarkets dominate retail canned tuna sales globally, with an increasing volume of canned tuna products being produced by processors under direct contract to retailers and sold under supermarkets’ own labels (i.e. private label).

In recent years, to counteract rising raw material prices and help to boost profitability, there has been considerable effort channelled into value-added product development and more innovative packaging by canned tuna processors.

EU

The EU remains the world’s largest market for canned tuna, consuming around 76 million cases in 2008. In the mid 1990s, domestic production dominated supply. However, since 2002, the majority source of supply of canned tuna has shifted from domestic production in favour of imports from non-EU countries.

Loin imports have continued to grow; in the ten-year period 2000-2009, the value of the EU imported loin market rose by 58%, while in volume terms it grew by 46%. EU trade preferences are critical to the logic of loining and the role of the loin market will continue as long as domestic EU canneries are protected.

Per capita consumption of canned tuna is stabilizing in the principal EU15 markets and the EU is now broadly considered to be a mature market for canned tuna. The largest four consumer markets of the EU27 are Spain, Italy, UK and France; each of which consumes over 100,000 mt of canned product annually. Eastern Europe, especially Poland, has the most probable growth potential. Another area of growth is in product innovation.
US

The US is the second largest and oldest contemporary market for canned tuna and was the impetus for the development of an export-oriented tuna-canning sector in Japan and Thailand (among others). The US market for imported canned tuna has expanded rapidly since the 1970s due to increased consumption and declining domestic production. In 2009, 138,000 mt of canned tuna in brine and 31,100 mt of tuna in pouches were imported into the US. The US is also a major market for imported tuna loins.

In 2010, tuna represented 74% of the total dollar value of the US shelf-stable seafood category and was valued at US$1.75 billion. Canned tuna is second in the Top 10 consumed seafood products, accounting for 37% of all seafood consumed in the country.

Despite gains made by private labels, the ‘big three’ brands (i.e. StarKist, Bumble Bee and Chicken of the Sea) still commanded upwards of 80% of the value in US retail markets. The US canned market is largely differentiated into the light meat (skipjack) and white meat (albacore) segments.

US market volume has remained stagnant in the most recent years. Given these conditions, branded tuna labels have begun to focus on capturing profit, rather than volume. Their major market strategies are informed in anticipation of market demographic shifts that indicate that consumers will be looking increasingly towards shelf-stable ‘meals to go’ and value-added tuna products.

Japan

For over two decades (mid-1980s to mid-2000s), canned tuna consumption in Japan remained stable at around 100,000 mt/year (finished weight). In recent years, Japanese consumption of canned tuna (as well as other shelf-stable seafood products) has started to decline. By 2007, consumption had declined by almost 20% to 145,000 mt (around 1.6% per annum). In synchronisation with this trend, the share of domestically produced canned tuna has also declined due to high production costs, with increasing volumes of imports (mostly from Thailand and the Philippines) to compensate for this. In 2006, the value of canned tuna sales in Japan was estimated at US$ 358 million. At best, Japanese canned tuna consumption will remain stagnant, but is more likely to continue to decline over time. To date, pouched tuna for retail sales has been relatively unsuccessful in the Japanese market.

SASHIMI TUNA INDUSTRY

Sashimi Fishing Fleets

Annual tuna supply to the global sashimi market is currently around 500,000 mt, the majority of which is supplied to the Japanese sashimi market (around 80%). The Japanese and Taiwanese longline fleets are the top two suppliers of sashimi-grade tuna, collectively accounting for over half of global longline catches. Other significant longline fleets include Korea, China and Indonesia.
The longline industry is generally characterised by two vessel types – large-scale distant water vessels (supplying frozen tuna) and small-medium scale offshore vessels (supplying fresh tuna). Longline vessels targeting albacore for canning (e.g. Taiwanese, Chinese, PIC fleets) or other species such as sharks and swordfish, may also supply incidental bigeye and yellowfin catch to the fresh sashimi market.

Distant water vessels operate in all three oceans and are typically around 400-500 GRT, significantly greater than 24 metres in length, steel-hulled, have ultra-low temperature (ULT) freezer capabilities (-55-60°C) for storing catch and generally tranship at sea. Smaller-scale fresh tuna longliners usually limit operations to one ocean area and are typically less than 100 GRT, below 24 metres in length, fibreglass reinforced plastic (FRP) or steel-hulled and use ice or refrigerated seawater (RSW) for storing catch, which is offloaded in ports.

Longline vessel numbers in most fleets have declined markedly over the past 5-10 years, in part due to serious profitability constraints stemming from increasing operating costs (especially fuel) and declining catches relating to overcapacity and stock sustainability issues. Further vessel number reductions relate to capacity reduction programs implemented by the Governments of the two largest distant water fleets, Japan and Taiwan, in an effort to reduce global longline fishing overcapacity. A notable exception is the Chinese fleet which, contrary to vessel number declines in other major fleets (i.e. Japan, Taiwan, Korea), has increased in size, due largely to the purchase of ex-Japanese vessels which had ceased operations due to bankruptcy.

A number of key issues currently impacting longline vessel fishing operations globally include – longline fishing overcapacity, purse seine fishing overcapacity, IUU fishing, stock sustainability issues resulting in lower catch levels and reduced quota allocations, rising fuel costs, stagnant prices and market demand, and competition from ranched/farmed bluefin. Large distant water longline fishing operations have been, and continue to be, the most vulnerable to these issues. Smaller-scale vessels, particularly those capable of multiple targets (e.g. albacore and/or bigeye) have demonstrated greater resilience, as they have more flexibility to adapt to changing operating conditions.

**Japan**

- Japan’s sashimi market is supplied with catch from the Japanese longline, pole and line and purse seine fleets.

- The Japanese longline fishery has three major vessel classes – distant water (>120 GRT), offshore (10-120 GRT) and coastal (<20 GRT). Total longline catch (excluding coastal vessels) was 47,199 mt in 2009, with catch volumes declining significantly in conjunction with decreases in vessels numbers.

- In 2000, 529 distant water longline vessels were in operation; by 2010 this number had decreased to 268. Around 30% of Japan’s distant water longline vessels are profitable; only 100 or so vessels are predicted to survive in the next few years. In late 2010, there were 275 small offshore vessels (10-20 GRT) and 51 mid-sized offshore vessels (20-120 GRT) in operation. The number of mid-sized offshore vessels has reduced significantly (142 in 2000), while small offshore vessel numbers have remained relatively stable.

- Japan’s pole and line fleet is comprised of two major vessel classes – distant water (>120
GT) and offshore (20-120 GT). In 2010, the fleet consisted of 26 distant water and 67 offshore pole and line vessels; vessel numbers have decreased over time. Total catch in 2009 was 95,000 mt; a significant decrease from 150,000 mt in 2005. Catch composition has also changed with much higher catch volumes of albacore (i.e. 10% albacore in 2005, 34% in 2009).

- High fuel prices, as well as the ageing of experienced officers and problems with recruiting young Japanese crew members were identified as the most serious factors which will continue to impact Japanese sashimi fishing fleets in the future.
- Following the March 2011 earthquake and tsunami, vessel numbers in the coastal longline and pole and line fleets have declined due to wreckages sustained from the natural disaster. Lives of fishing crew members and employees in shore-based tuna businesses have also been lost.

**Taiwan**

- Taiwan's sashimi-grade longline fishing fleet consists of two classes of vessels - large-scale (>100 GT, primarily targeting bigeye) and small-scale (<100 GT, primarily targeting yellowfin). Some of the albacore-targeting longliners of both size classes may also produce sashimi-grade fish from their incidental catch of bigeye and yellowfin.
- Two major operational characteristics define Taiwan longline activity - the ability to switch target species and in some cases freezing and holding temperature to maximize value of a particular segment of the catch; and, the retention where possible of much of the incidental catch.
- The number of vessels in Taiwan's large-scale longline fleet has decreased significantly in recent years – in 2010, the fleet consisted of 359 vessels, a decrease from 562 in 2004. In 2008, an estimated 1,400 small-scale longline vessels between 20-100 GT were in operation and around 500 vessels less than 20 GT. There is also significant Taiwanese ownership of non-Taiwan flag longline vessels fishing for sashimi-grade tunas.
- The number of Taiwan's large-scale tuna longline vessels operating in WCPO waters in 2009 was 75, a steep decline from 133 active in 2005. The total bigeye catch for the large-scale fleet was reported to be 8,863 mt in 2009. About 1,220 small-scale tuna longline vessels fished in the WCPO in 2009, catching an estimated 16,500 mt of yellowfin and 4,500 mt of bigeye.
- Among the two fleets, the large-scale component is the most vulnerable to increased operating costs. Similarly, small-scale vessels are challenged by operating cost increases, but exhibit greater flexibility and are in a better position to adapt to changing conditions in the fishery. The design and construction of small-scale longliners has continued to evolve in recent years.

**Korea**

- In 2008, the global Korean longline fleet was comprised of 158 vessels (compared with 276 in 1990), with a total global catch of almost 38,000 mt. Most are large ULT vessels, typically 350-500 GRT in size.
- In 2009, 111 Korean longliners operated in the WCPO, catching around 31,000 mt; 50%
of the retained catch was bigeye and 30% yellowfin.

- The majority of Korean longline catch is exported to Japan, but increasing volumes are supplied to the growing domestic sashimi market.
- Vessel numbers in the longline fishery have continued to fall due to increased regulation, increased operational costs and uncertainties regarding the resource base, although vessel numbers are believed to have stabilized for the time being.
- Given most of the Korean longline catch is taken in WCPO waters, future prospects for the Korea's longline fleet closely relate to ongoing developments in the region. At-sea transhipment is critical to the viability of the Korean fleet. Hence, Korean vessel owners are particularly concerned about the possible prohibition of at-sea transhipment in the WCPFC convention area.

**China**

- Sashimi-grade tuna is produced from two Chinese longline vessel categories - smaller vessels (<30 metres) based in Pacific Island ports, and larger distant-water ULT vessels (up to 70 metres) operating in the Pacific, Atlantic and Indian Oceans. Fiji-based Chinese longliners targeting canning-grade albacore also supply fresh sashimi-grade fish from the last 10-15 sets of a trip. Global bigeye catch by Chinese longliners totalled around 21,800 mt for 2008.
- About 138 Chinese large-scale distant water tuna longliners operate worldwide.
- In 2010, 90-100 distant water longliners were active in WCPO waters; an increase from a reported 45 vessels operating in 2008. In 2009, 70-80 small-scale vessels delivered fresh fish to fish bases in FSM and Marshall Islands. Total longline catch by Chinese longliners in WCPO waters in 2009 of bigeye and yellowfin was around 9,800 mt and 6,300 mt respectively.
- Although distant water longliners do not require extensive support from shore bases, Suva (Fiji) has become the preferred port for re-supply and general support of Chinese ULT longliners, when required.
- ULT catch by distant water longliners is exported to Japan. Fresh sashimi-grade yellowfin and bigeye from smaller-scale vessels is air-freighted to the Japanese and US markets.

**Indonesia**

- Indonesian longline and handline fisheries operate in both the Indian and Pacific Oceans. In 2009, total sashimi-grade catch by Indonesian vessels was around 45,000 mt, 25,000 mt of which was caught in Indian Ocean waters (one-third of late 1990s levels) and around 20,000 mt in Pacific waters.
- Indonesia has declined considerably in importance as a supplier of sashimi-grade tuna since the late 1990s, particularly with the reduction in Indian Ocean catch. However, it remains a significant source of lower grade frozen sashimi-grade tuna to the US market.
US

- US longline fisheries in the WCPO are based in Hawaii and American Samoa. In 2010, 156 vessels operated in the region. The Hawaii-based fleet comprised of around 130 vessels, targets sashimi-grade bigeye. The American Samoa-based fleet (26 vessels in 2009) supplies canning-grade albacore, although incidental bigeye and yellowfin may be marketed for sashimi.

- Total catch of all tuna species by the US longline fleet in the WCPFC convention area was 9,203 mt in 2009; a marked decline from 2007 catch volumes of 12,753 mt. Around 4,000 mt of bigeye and 820 mt of yellowfin were caught in 2009.

- The Hawaii-based longline fleet targets not only bigeye, but also swordfish. A three-year closure of the swordfish fishery from 2001-2004 and the subsequent introduction of stricter management regulations has harmed vessel operators’ swordfish and tuna businesses, due to a buyer perception that vessels could not consistently provide product.

Others – Indian Ocean

- Sri Lanka is growing in importance as a supplier of sashimi-grade tuna to European markets. Total catch reached close to 100,000 mt in 2005 and is anticipated to continue to grow given national tuna fishery development plans for tuna fisheries expansion which include new fishing ports and infrastructure development.

- The Maldives remains a minor supplier of sashimi-grade tuna (at best, ~20,000 mt), but has some potential to expand.

Others - WCPO

- Vietnam’s small-scale longline fleet lands an estimated 15,000 mt (mostly yellowfin), while larger vessels land less than 5,000 mt annually. Vietnam is a significant exporter of fresh and frozen tuna (mostly yellowfin) in various processed forms and was the largest exporter of fresh tuna to the US market in 2009 (2,600 mt, 12% of total US imports). Potential exists to further develop the domestic longline fishery and value-added export processing sector, with recent dramatic growth experienced in these sectors.

- While the Philippines has a small fleet of less than twenty large distant water longliners, it has a significant handline fishery of around 1,000 vessels (total catch 8,200 mt in 2009; 90% yellowfin). During the 1990s, much of the catch was exported as sashimi-quality fresh chilled whole fish to Japan. However, with the increasing shift to value-added processing (typically CO-treated tuna products), less than 25% of exports are now marketed in whole round fresh-chilled form.

- In 2009, 97 Fiji-based longline vessels caught 13,849 mt of tuna (52% of which (7,200 mt) was canning-grade albacore; 3,185 mt of bigeye/yellowfin). High quality fresh-chilled bigeye and yellowfin is exported to the Japanese and US markets. Significant quantities were also exported to the EU market (880 mt whole round, 200 mt fillets in 2008), prior to Fiji losing EU market access in late 2008.
- Tonga, Solomon Islands and Papua New Guinea all produce (or have formerly produced, in the case of Solomon Islands) small quantities of sashimi quality tuna for export to the Japanese and US markets. French Polynesia has a large domestic longline fleet (68 vessels), although the majority of catch (80%; ~5,000mt) is utilised for local consumption.

**Principal Sashimi Markets**

Japan is the world’s principal and pioneer market for fresh-chilled and frozen sashimi-grade tuna, given sashimi and sushi are food dishes which are unique to Japanese cuisine.

Until the 1990s, sashimi tuna was almost exclusively consumed in Japan. Today, Japan still remains by far the largest sashimi market, accounting for at least 80% of global consumption. By comparison, the second most significant sashimi market, the US, accounts for an estimated 8-10% of total sashimi consumption. Annual tuna supply to the global sashimi market is currently estimated at around 500,000 mt; 300,000-400,000 mt of which is supplied to Japan. An estimated 60,000-100,000 mt is currently supplied to other non-Japanese sashimi markets. The first sashimi markets to develop outside of Japan in the 1990s were the US and Europe (particularly, the UK). Sizeable markets have since developed elsewhere in Asia, with consumption in Korea, China and Taiwan already exceeding that of the European Union. The growing popularity of Japanese food is also evident in Australia and New Zealand, with a huge boom in the past several years of fast-food retail sushi outlets. Markets are also emerging in Eastern Europe (i.e. Russia) and South America (i.e. Ecuador).

**Japan**

Japan consumes an estimated 80% of total annual global sashimi production, with a market value of US $3.4 billion (2006 estimate). Sashimi consumption in Japan peaked in 2002 at around 650,000 mt, but has declined significantly since this time; by 2009, annual consumption was an estimated 308,000 mt.

An estimated 149,000 mt of sashimi-grade tuna was supplied by Japanese domestic landings in 2009. The remaining supply (159,000 mt) was met from imports from other longline and handline fleets, as well as bluefin tuna ranching operations in the Mediterranean, Mexico and South Australia. Roughly, 30% of total sashimi-grade tuna supply to Japan is fresh-chilled, while 70% is frozen.

Since the mid 1990s, sashimi prices in the Japanese market have been depressed due to oversupply. Price stagnation has been further exacerbated by economic recession in Japan and the recent global economic crisis, which has depressed food prices generally and influenced Japanese consumer’s preference for cheaper, lower-end sashimi and sushi products. Competition from cheaper farmed product has also placed pressure on prices.

The Japanese sashimi market is characterized by multiple complex market arrangements and distribution systems, but these can largely be distinguished into two channels according to the fresh and frozen sashimi market segments – ‘traditional’ channels (i.e. government regulated wholesale markets systems) and, ‘unofficial’ channels (i.e. more direct marketing channels which largely by-pass the traditional wholesale market system). Historically, both fresh and
frozen tuna was marketed through the traditional wholesale market system. This market channel remains significant for high quality fresh-chilled tuna. However, with large advances in freezing technology and development of the cold chain over the past 20-30 years, coupled with the growing significance of trading companies in tuna sashimi trading, there has been a considerable shift in the volume of frozen sashimi-grade tuna sold through unofficial channels, rather than the traditional wholesale market channel. Unofficial channels dominate sales to supermarkets and large retailers (i.e. restaurants, sushi bar chains).

Over the past twenty years, Japanese consumers’ purchasing preferences for sashimi tuna have changed markedly. During the economic boom of the 1980s and early 1990s, Japanese consumers’ expenditure on eating out was high and their exposure to, and subsequently, consumption levels of high quality of fresh sashimi tuna increased. However, since the mid 1990s, economic recession prompted Japanese consumers to eat at home much more, which has had a major influence on the rise in supermarket sales of lower-priced and lower quality frozen sashimi-grade tuna. Japanese household consumption of tuna in Japan is in decline, in both volume and value terms. This stems from competition from other protein sources, both seafood and non-seafood. The declining overall trend in sashimi consumption (both in restaurants and homes) is likely to continue given continued low population growth, declining household expenditure on food items generally, and changing consumer taste preferences of the younger generation away from seafood to non-seafood protein sources.

It is too early to determine the medium-long term impacts on Japan’s sashimi market of the recent earthquake and tsunami (March 2011). In the first few weeks following the disaster, fresh exports to the Japanese market declined significantly due to issues with Japan’s cold storage capability stemming from electricity rationing. Due to concerns of radiation contamination of seafood caught in surrounding Japanese waters as a result of leakage from the Fukushima Daiichi Nuclear plant, some overseas buyers have opted to source tuna from alternative markets for the time being. Japanese consumption may also shift from fresh/frozen tuna (and other seafood products) to shelf-stable products in the short-medium term due to radiation concerns.

**US**

The US market for sashimi-grade tuna products has grown in significance. In the mid-1990s, albacore was the primary imported product. By 2009, yellowfin and bigeye were the dominant products by volume and value.

Despite the general growth trend, the US market for fresh tuna was significantly impacted by the economic recession in 2008-9. The high range sashimi and sushi bar market came to a complete standstill as a result of the economic crisis. With the fragile economic recovery in the US, the restaurant segment has reported improved sales figures, including in expensive restaurants.

The US fresh sashimi market is supplied by a wide range of sources. In 2009, domestic landings of bigeye and yellowfin were around 9,900 mt and 19,100 mt respectively, but the vast majority of product is imported (20,000 mt in 2009). The fresh tuna commodity chain in the US is highly fragmented. Large wholesalers and distributors have a very ‘hands on’ relationship with both their supply sources and their market outlets.
There is increased interest in ultra-low temperature (ULT) tuna, which retains sashimi-grade quality. There are a few firms in the US market trading in ULT tuna. However, the lack of cold chain facilities across the production chain has limited more comprehensive adoption.

**VALUE-ADDED & OTHER TUNA PRODUCTS**

**Fresh & Frozen Value-Added Products**

Outside of Japan, the major markets for non-shelf-stable tuna are the European Union and the United States. Both markets rely heavily on tuna imports and support a wide array of products, from high end fresh tuna, to lower grade frozen, processed product used for catering sectors, supermarket sushi and increasingly, value-added tuna products. While fresh tuna consumption has increased in both markets over the last two decades, market growth is near, or at maximum capacity because of increased competition for tuna products, supply constraints and the seasonality of products. Buyers express interest in new sources of supply. Suppliers are exploring new ways to serve the market, including the use of ultra-low temperature technological innovation. The markets for frozen tuna products are expanding and diversifying to include a wide range of product types. Trends on the horizon include further development of value-added products and the increasing role of certifications (food safety, as well as sustainability).

**EU**

In the EU, the most important species for fresh tuna products is yellowfin, although in France and Spain albacore plays an important market role. The main imported product is chilled, vacuum packed, skinless and boneless yellowfin tuna loins, which are currently sourced primarily from the Indian Ocean.

In 2008, the estimated value of EU retails sales of non-canned tuna products was € 780 million ($US 1 billion), with France and Spain having the highest market penetration (15% of households). In the UK, tuna was the only tropical fish in the top ten seafood species in retail value sales in 2009.

While there is a general growth trend for seafood in the UK food service sector, both fresh and frozen tuna products declined in volume and value sales from 2007-2009. This could potentially stem from the impact of declining consumer demand in the face of the economic downturn, supply constraints, as well as a wider range of seafood products coming onto the market, which has watered down demand for tuna products.

It is impossible to provide formal data on the EU import market for fresh-chilled tuna ‘fillets’ because import data are not species-specific. Instead tuna ‘fillets’ (e.g. fresh chilled vacuum packed loins) are imported under a generic tariff heading. However, a specific tariff code is applied to frozen tuna ‘fillets’ for direct consumption (e.g. tuna steaks). Data indicates that that the price of frozen tuna ‘fillets’ rose by around 27% during 2000-2009 (i.e. from €3,079/mt to €4,630/mt in 2009). The price increase since 2006-07 might be explained by the relative decline in yellowfin catch in the Indian Ocean in 2007 – the main source of tuna fillets for the EU markets. During the same period, import volumes of frozen tuna fillets have increased from
just under 4,000 mt in 2000 to around 8,500 mt in 2009. Sri Lanka is a major player supplying the EU market with frozen tuna fillets and South Korea and China are also emerging as major suppliers. Some ULT product is also entering the EU market, with ULT cold storage facilities being established (or already established) in the UK, Belgium, Netherlands and Spain.

**US**

The US has a commercially significant market for non-stable tuna products, including fresh and frozen whole tuna and value-added tuna products (i.e. fillets, steaks, saku blocks). The vast majority of product consumed in the US market is imported, although detailed data on import volumes by product type is not available. In 2009, the total volume of US fresh and frozen tuna imports into the US was 27,000 mt, valued at just over US $200 million. Frequently, domestic firms import fresh and/or frozen whole fish (or headed and gutted), and then process and repackage them to retail outlets or restaurants. In 2009, total domestic production of tuna fillets/steaks was around 3,500 mt, valued at US$ 48.6 million.

The fresh and frozen tuna commodity chain in the US is fragmented, particularly in the fresh segment of the market. Large wholesalers and distributors have a very ‘hands on’ relationship with both their supply sources and their market outlets. Firms buy from suppliers around the world in order to stabilise supply.

Frozen products have increased in significance over the last ten years, driven by the introduction and extensive use of carbon monoxide (CO) treated tuna in the US market. CO treatment, which is prohibited in Europe, enhances the red colour of the tuna flesh, which consumers associate with tuna quality. CO-treated tuna products have fuelled significant growth in supermarket and food service sushi items and the market is reportedly growing rapidly.

**Other Products – Katsuobushi**

In addition to shelf-stable and fresh-chilled and frozen products, another notable product utilizing tuna, which is unique to Japan, is katsuobushi – flakes or shavings of dried and smoked skipjack (bonito) tuna, used widely in Japanese cooking as a condiment and as a key ingredient in soup broths (dashi) and sauces. The use of katsuobushi in Japanese cuisine is steeped in tradition as its origins date back as early as the Muromachi period (1336-1573).

Previously, around 200,000 mt of raw material was required annually for domestic katsuobushi production in Japan. Over the past five years or so, raw material requirements have declined to around 160,000 mt, due to decreasing consumer demand, as well as an increase in the volume of imported katsuobushi products. Japan’s katsuobushi processing industry relies heavily on raw materials caught in WCPO waters by the Japanese purse seine fleet (and to a much lesser extent the Japanese distant pole and line fleet), as well as imported skipjack from other fleets, also operating in WCPO waters.

Total annual domestic production volumes of katsuobushi products in Japan in the early 2000s ranged between 35,000-40,000 mt (net finished weight), but have since declined to around 32,000 mt in 2009.
Katsuobushi accounts for almost 25% of total tuna consumed in Japan annually. Given katsuobushi products are so culturally ingrained in Japanese cuisine and the market is mature, this relative trend is long-standing and unlikely to change. However, like Japanese canned tuna and sashimi consumption, the actual volume of katsuobushi products consumed annually is steadily declining, due to an ageing population and low population growth.

Given the decline experienced in consumer demand, compounded by increasing competition from imports and rising production costs, Japanese katsuobushi processors’ profitability levels have suffered considerably in recent years. As a means of cutting costs and creating economies of scale, large production facilities were established. However, this has created productive overcapacity and has led to oversupply, which has resulted in a downward trend in prices. Processors are also constrained by difficulties sourcing labour and well as increasingly environmental standards which are costly to comply with. These constraints may influence the decision of processors to source greater volumes of imported product.

The Japanese market for skipjack has traditionally been higher value than the Bangkok canning market, although recently, the price differential between the two markets has been much lower. This price trend has the potential to influence raw material supply arrangements for domestic katsuobushi production, if Japanese purse seine vessels opt to export more product to Bangkok. Katsuobushi processors will need to rely increasingly on imported raw material, as well as imported processed product.

Given domestic demand for katsuobushi products is stagnant several companies are working to develop export markets in Asia, with an intention to eventually extend marketing efforts to the US and EU. Developing export markets will take considerable effort, given the use of katsuobushi products to date is more or less limited exclusively to Japanese cuisine.

OTHER RELEVANT ISSUES

Sustainability Movement

In the past several years, concerns over the health of tuna populations and resource sustainability have steadily become a part of mainstream debates in the tuna sector. Sustainability issues are directly influencing the nature of tuna production in the WCPO, and the industry more broadly.

Sustainability Certification Schemes

An eco-label is a mark or a logo that identifies a consumer product as ecologically superior to commercially similar products. Since the 1990s, several eco-labelling initiatives have been introduced in the fisheries sector and increasingly, are being applied to tuna fisheries (i.e. various dolphin-safe labels, Marine Stewardship Council and Friend of the Sea). The goal of these efforts is to tap into market-based incentives to improve fisheries management systems and contribute to sustainability of fisheries resources, with various implications and outcomes for the tuna industry.
International Seafood Sustainability Foundation

In 2009, leading players in the canned tuna industry collaborated with marine scientists and environmental NGOs to establish the International Seafood Sustainability Foundation (ISSF) to undertake ‘science based initiatives for the long-term conservation and sustainable use of the tuna stocks, reducing by-catch and promoting ecosystem health’.

ISSF is emerging as a major player in tuna management since the organisation represents some of the sector’s most powerful players. The ISSF serves to lobby RFMOs to adopt conservation measures based on scientific grounds. Members are also committed to adopting practices that can promote conservation and complement the efforts of RFMOs. Given its broad membership, ISSF holds the power to use members’ collective control over tuna processing to shape tuna management and production.

Environmental Non-Government Organisations

Environmental non-governmental organisations (eNGOs) (i.e. Greenpeace, WWF, Pew Oceans Commission and Oceana) are playing an increasingly important role in tuna management and the tuna industry by employing a wide array of strategies to encourage shifts towards conservation and sustainability in tuna fisheries. In addition to participating as observers and tabling statements at tuna management meetings, eNGOs conduct independent research, present policy recommendations to and collaborate with governments and industry, undertake direct and indirect government lobbying, and undertake direct action campaigns to act as watch-dogs and urge reform in fisheries production (e.g. tracking and reporting IUU vessels) and in retail markets (e.g. publicising information about seafood sourcing strategies).

Consumer Recommendation Campaigns

Several fisheries interest groups, such as aquariums and eNGOs have developed sustainability recommendations designed to influence consumer buying patterns towards more sustainable products. While these are not eco-labels, per se, they offer consumers easily digestible recommendations on seafood products in three categories: those that are the best sustainability choices, those that are good and those that consumers should avoid.

Developments in the International Trade Regime

Since tuna is a globally produced and traded product, the industry is shaped by an increasingly complex suite of international and regional trade regimes. Some relate directly to the fisheries sector (i.e. WTO Fisheries Subsidies Negotiations, EU-IUU Fishing Regulation), while others are much broader in scope, but also have implications for fisheries (i.e. EU-Economic Partnership Agreement, Pacific Agreement on Closer Economic Relations).
**EU-Economic Partnership Agreement**

PICs benefit from duty free market access for fisheries exports to the EU under the Cotonou Agreement. To comply with WTO rules, these preferential trade arrangements are being reformulated under a series of reciprocal Economic Partnership Agreements (EPAs) established between the EU and African, Caribbean and Pacific (ACP) states. Negotiations between the EC and the 14 Pacific ACP States (PACPs) commenced in 2004 and fisheries issues have been a critical component.

EC-PACP negotiations have been complex, drawn out and, at times, heated, resulting in an inability to conclude a comprehensive EPA by the end-2007 deadline. Fiji and PNG signed an interim EPA in November 2007 to ensure uninterrupted preferential market access into the EU. While the IEPA does not include a separate fisheries chapter, it contains ‘global sourcing’ rules of origin provisions for canned tuna and cooked loins (HS 1603/1604). Negotiations for a comprehensive EPA are ongoing and PACPs are reportedly growing increasingly frustrated by the slow pace of negotiations.

**EU-IUU Fishing Regulation**

In an effort to combat the flow of IUU fish into the EU market, in September 2008 the EU adopted a regulation establishing a system to prevent, deter and eliminate illegal, unreported and unregulated (IUU) fishing (referred to as the ‘IUU Regulation’), which entered into force on 1 January 2010. The IUU Regulation establishes a catch documentation scheme to enhance the traceability of fisheries products through the various stages of the supply chain, from fishing vessels onwards. This regulation affects most PICs as it applies to fishing vessels (both PIC-flagged and distant water fishing vessels operating in PIC EEZs) and PIC processors/exporters involved in trade with the EC.

While the IUU Regulation offers significant potential in reducing IUU fishing and in turn, enhancing fisheries sustainability, there are several issues of concern including: i) the administratively burdensome nature of the catch documentation scheme; ii) a view by some countries that the regulation text has been poorly written and explained; iii) the potential for the regulation to be used as a non-tariff barrier to trade (especially in terms of SPS compliance); and, iv) potential WTO incompatibility of some aspects of the regulation. PICs have concerns about the role of coastal and flag states in validation of catch documentation and believe that responsibility should rest with the coastal state, not flag states, as is currently the case under the IUU Regulation.

**WTO Fisheries Subsidies Negotiations**

Under the Doha Round, the World Trade Organisation’s (WTO) Negotiating Group on Rules has been tasked with developing rules to eliminate fisheries subsidies that contribute to overcapacity and overfishing and distort international trade in fisheries products. Negotiations have been ongoing and while the need for disciplines on harmful fisheries subsidies is generally supported by all WTO members, considerable divergence remains in positions regarding which subsidies should be prohibited. PICs’ position on the prohibited list of fisheries subsidies rests heavily on their developmental needs being adequately met under special and differential treatment provisions for developing members, as well as conditions relating to fisheries management system being reasonable and achievable.
1 INTRODUCTION

1.1 Background

The tuna industry is one of the most complex and highly dynamic of the world’s seafood industries. Tuna fishing is undertaken in the Pacific, Indian and Atlantic oceans, using a range of gear types (purse seine, longline, pole and line, handline, troll), targeting five main commercially significant tuna species groups (bigeye, yellowfin, skipjack, albacore, bluefin)\(^1\), all of which are considered highly migratory. The global tuna fishing fleet is comprised of thousands of vessels which collectively produce over 4.2 million metric tonnes of tuna annually. These vessels range from small artisanal-scale vessels operating in coastal waters to medium/large-scale domestic vessels operating within national waters and high seas, as well as large-scale distant water foreign vessels capable of operating far from their home base in any ocean. Over 40 countries host tuna processing industries. A range of products including canned tuna, fresh and frozen sashimi, fresh and frozen value-added products and katsuobushi are marketed globally through complex distribution systems. Components of the global tuna supply chain (i.e. fishing, trading, processing, distribution, marketing, consumption) are closely interrelated. Hence, developments in one of these components have the potential to generate change throughout the entire tuna supply chain. This supply chain is particularly sensitive to developments relating to the status of tuna stocks, regulation (e.g. fisheries management, labour, environment, food safety etc.), input costs (e.g. raw materials, labour, energy, packaging, freight etc.), technological innovation, international trade regimes and consumer preferences.

The global tuna supply chain is heavily dependent on tuna supplies from the Western and Central Pacific Ocean (WCPO), with almost 60% of global catch (currently around 2.4 million mt) taken from the region. Pacific Island countries (PICs)\(^2\) are the primary custodians of WCPO tuna resources, as the majority of WCPO catch is taken from within their EEZs. Collectively, the PICs comprise the majority of membership of the Western and Central Pacific Fisheries Commission (WCPFC). In addition to their fisheries management responsibilities, PICs seek to use their tuna resources as a platform for economic development. For many PICs, tuna represents the only available resource for potential economic development. Hence, as major stakeholders in the global tuna industry, it is critical that Pacific Island countries have a comprehensive understanding of supply chain dynamics which extend beyond issues pertaining to tuna resource management.

In particular, an enhanced understanding of how industry drivers and market dynamics shape the global tuna supply chain and influence the major industry players is critical to PICs achieving stronger control and deriving greater economic benefits from their tuna resources. In recognizing the need to develop a systematic approach to improving the provision of accurate and useful global tuna industry and market information to FFA members (14 PICs), the FFA Secretariat commissioned a study under a dedicated project, ‘Improving Provision of Global Tuna Industry and Market Intelligence to FFA Members’.

\(^1\) Significant volumes of small tunas and tuna-like species are also caught (e.g. tongol, frigate tuna, bullet tuna, bonito, mackerel; most of which are neritic (coastal) species and are generally more important for food security than commercial processing. These species (and related fisheries) fall outside the scope of this study.

\(^2\) For the purposes of this report, Pacific Island Countries (PICs) refers to those countries that are also FFA member countries and territories – Solomon Islands, Papua New Guinea (PNG), Federated States of Micronesia (FSM), Kiribati, Palau, Republic of Marshall Islands (RMI), Tuvalu, Fiji, Samoa, Cook Islands, Tonga, Vanuatu, Niue and Tokelau.
The project is comprised of two parts:

**Part A:** Provision of industry and market intelligence to FFA members regarding the current status of the global tuna industry.

**Part B:** Recommendations for the development of a system for ongoing collection and dissemination of industry and market intelligence to FFA members. 3

This report provides an overview of the current status of major tuna fishing fleets, tuna trading companies, processing sites and principal markets (Part A).

While the primary intended beneficiaries of this report are FFA members and the FFA Secretariat, given its public availability, the report also serves as a useful information source for a wider audience including, for example, industry operators, RFMOs, international fisheries specialists, academic institutions, NGOs and others.

Developments and change occur constantly in the global tuna industry. Hence, information and data relating to industry and market status (such as that contained within this report) will inevitably become quickly outdated. If FFA members are to stay abreast of ongoing global tuna industry developments, it is imperative that adequate resources are dedicated to developing a system for ongoing and meaningful intelligence gathering, interpretation, analysis and dissemination.

### 1.2 Intended Project Benefits to FFA Members

Pacific Island countries are committed to deriving considerably greater sustainable economic returns from their rich tuna resources, through exercising stronger control over access to those resources, as well as promoting increasing levels of domestic tuna industry development. In the past several years, FFA members have continued to put in place numerous initiatives to better ensure in the achievement of these goals, including:

- **Vessel Day Scheme (VDS)** – introduced by the Parties to the Nauru Agreement (PNA) under the Palau Arrangement (PNG, Solomon Islands, FSM, Marshall Islands, Nauru, Palau, Tuvalu, Kiribati), the VDS aims to enhance management of the WCPO purse seine fishery, as well as increase the value of access to PNA members’ EEZs and facilitate domestic fisheries development. It does so by placing a limit on available purse seine fishing days. A similar scheme is now being trialled for the longline fishery.

- **Third Implementing Arrangement (3IA)** – enacted under the Nauru Agreement by PNA, the 3IA includes closure of high seas pockets, 100 per cent observer coverage on purse seine vessels, a catch retention scheme and FAD closures. As well as reducing bigeye and yellowfin catches and enhancing monitoring, control and surveillance, the 3IA’s high seas closure component is intended to increase the value of access and provide greater opportunities for fisheries development, since foreign fishing vessels with PNA licences will be forced to shift effort to these members’ EEZs.

- **Establishment of the ‘PNA Office’** – PNA members have strengthened the institutional arrangements for their cooperation through the establishment of the PNA Office in Majuro, Marshall Islands, which commenced business on 1

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3 Recommendations for the development of a system for ongoing information flow to FFA members have been provided to the FFA Secretariat in a separate report intended for internal use.
January, 2010. The PNA Office’s primary functions are to develop strategic fisheries conservation and management initiatives for the PNA parties, as well as to develop initiatives to maximize sustained direct and indirect economic benefits to the Parties.

- **Establishment of Te Vaka Moana Group** – The Cook Islands, Samoa, Tonga, Niue and New Zealand established the Te Vaka Moana Arrangement (TMVA) in January 2010. This intends to improve cooperation in the areas of science, fisheries management and development, industry cooperation and MSC, as well as strengthening the promotion of Polynesian members’ interests who are not parties to the Nauru Agreement at the regional level (i.e. FFA and WCPFC).

- **WCPFC – SIDS Aspirations** – In response to some developed members of WCPFC remaining unsupportive of small island developing state aspirations (in accordance with Articles 4, 8, 10 and 30 of the WCPFC Convention), FFA members were instrumental in the development of the WCPFC Resolution on Aspirations of Small Island Developing States and Territories (Resolution 2008-01). This commits WCPFC’s members to cooperate in accommodating the aspirations of SIDs to develop their own fisheries, facilitate investment in onshore developments, and ultimately, help developing members derive a greater share of the economic benefits than what is currently being realized from highly migratory fish stocks harvested in the WCPFC Convention Area.

- **Regional Tuna Management and Development Strategy (2009-2014)** – This strategy was developed under the direction of FFA’s Fisheries Ministers to serve as ‘an important backbone for the region’ to guide strategic management and development in delivering two goals: i) sustainable oceanic fish stocks and ecosystems; and ii) economic growth from highly migratory stock fisheries.

- **‘Islandisation’ initiatives** – PNA members are actively seeking to increase economic benefits derived from the WCPO tuna fishery through ‘islandisation’ initiatives, whereby fisheries access is being used to leverage investment from foreign fishing nations in onshore tuna-related developments, particularly tuna processing operations.

Having a clearer understanding of industry and market dynamics of the global tuna supply chain is critical in helping to strengthen FFA members’ ability to effectively design, as well as implement initiatives (such as those mentioned above). Conversely, FFA member strategies have the ability to significantly influence industry and market dynamics along all segments of the tuna supply chain, given such a significant proportion of global catch comes from WCPO waters. A more comprehensive understanding by FFA members of the potential level of influence on industry and market dynamics is critical to enabling the development of appropriate policies and strategies.

Enhanced provision of industry and market intelligence to FFA members will be valuable in a number of key areas, including:

i) general use in better understanding how industry drivers and market dynamics shape the global tuna supply chain and influence major industry players;

ii) direct use in relations with distant water fishing nations, trading and processing firms, including access agreements and shaping alternative arrangements to access agreements;
iii) use in discussions and negotiations with foreign interests for fisheries-development related projects;

iv) understanding the market and industry implications of regulatory conservation and management measures enacted at the regional or sub-regional level; and

v) enhancing the capacity of FFA members to become increasingly involved in commercial aspects of the tuna fishery (e.g. strengthening relationships and commercial links with key players in the tuna supply chain such as tuna trading companies and leading processors).

1.3 Defining ‘Industry Intelligence’ and ‘Market Intelligence’

For the purposes of this study, the consultancy team interpreted the terms ‘intelligence’, ‘industry intelligence’ and ‘market intelligence’ to mean the following:

*Intelligence* – information that is collected, integrated, analysed and disseminated to support and inform strategic decision making by FFA members in the management and development of the Western and Central Pacific Ocean tuna fishery.

*Industry intelligence* – information concerning operations of key tuna industry participants (e.g. fishing vessels and fleets, tuna trading companies, tuna processing firms/facilities, brand owners, retailers).

*Market intelligence* – information pertaining to key geographic areas and/or participants in the selling/buying/consumption of tuna and tuna products.

Examples of industry and market intelligence are as follows (Table 1.1):
Table 1.1 Examples of Global Tuna Industry and Market Intelligence

<table>
<thead>
<tr>
<th>Intelligence type</th>
<th>Information type</th>
</tr>
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<tbody>
<tr>
<td>Industry Intelligence</td>
<td>Operational parameters:</td>
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<tr>
<td></td>
<td>- catch/processing volumes</td>
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<tr>
<td></td>
<td>- operating costs</td>
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<tr>
<td></td>
<td>- geographic location of operations</td>
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<tr>
<td></td>
<td>- labour inputs</td>
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<td></td>
<td>- logistics</td>
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<tr>
<td></td>
<td>- major markets</td>
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<tr>
<td></td>
<td>- operational impacts of fisheries management/development policy changes</td>
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<tr>
<td></td>
<td>Market price data</td>
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<tr>
<td></td>
<td>Company ownership/control</td>
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<tr>
<td></td>
<td>Management structure</td>
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<tr>
<td></td>
<td>Corporate mission/business strategies</td>
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<tr>
<td></td>
<td>Major competitors</td>
</tr>
<tr>
<td></td>
<td>Commercial linkages with other tuna industry players</td>
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<tr>
<td></td>
<td>New industry entrants/departures</td>
</tr>
<tr>
<td>Market Intelligence</td>
<td>Market price data</td>
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<tr>
<td></td>
<td>Supply volumes/trends</td>
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<tr>
<td></td>
<td>Consumption volumes/trends</td>
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<tr>
<td></td>
<td>Market access arrangements</td>
</tr>
</tbody>
</table>

1.4 Methodology

This study is intended to provide an overview of the current status of the global tuna industry in terms of major fishing fleets, tuna trading companies, processing operations and principal markets.

It was completed over a twelve month period from April 2010-April 2011 and largely focuses on industry and market developments during a 12-24 month period spanning the beginning of 2009 to late 2010. In addition, future prospects and potential developments in the following 12-24 months (2011-2012) have also been discussed, as well as important historical events of direct relevance to the current industry status.

This study was undertaken by the following team:

- Ms. Amanda Hamilton - Fisheries Consultant, Independent
- Dr. Antony Lewis – Fisheries Consultant, Independent
- Mr. Mike A. McCoy – Fisheries Consultant, Gillett, Preston & Associates
- Dr. Elizabeth Havice – Assistant Professor, University of North Carolina-Chapel Hill
- Mr. Liam Campling – Lecturer, Queen Mary, University of London

Members of the study team conducted extensive in-country consultation with key tuna industry stakeholders in a number of countries (see below and Appendix 1 - List of Persons Consulted). Desktop research, telephone interviews and email consultation was also conducted to complement the teams’ existing knowledge and information/data gathered during in-country consultation. The consultancy team focused on collecting industry and market information in accordance with the examples presented in Table 1.1.
Industry consultation involved interviews with major tuna industry stakeholders, including vessel owners, fishing industry associations, trading companies, processors, major brands, government agencies, non-government organizations and relevant regional/international organizations. In prioritizing countries to visit, the team focused on geographic locations where significant tuna-related business activities originate and/or high-level corporate representatives responsible for major decision making are based. For other locations, information was gathered through desktop research and email/telephone contact with key stakeholders.

<table>
<thead>
<tr>
<th>Consultation mode</th>
<th>Countries/stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-country visits</td>
<td>China, Taiwan, Japan, Korea, Philippines*, Thailand, Singapore, Indonesia*, US (mainland), EU (Spain, Netherlands), Ecuador.</td>
</tr>
<tr>
<td>Telephone interviews/ email + desktop research</td>
<td>FFA (Solomon Islands), PNA Office (Marshall Islands), PIC processing sites (PNG, Fiji, Solomon Islands, Marshall Islands), Vietnam, EU (France, Italy, UK), American Samoa, Indian Ocean, Sub-Saharan Africa, Latin America, Middle East.</td>
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* In-country consultation undertaken in tandem with consultation conducted for other projects.

The report is intended to serve as a useful and accessible reference document for FFA members. Given the complex inter-linkages that exist between key sectors and players in the global tuna supply chain, the report is structured in chapters according to product sectors (i.e. canned tuna; sashimi (fresh and frozen); fresh/frozen value-added; other products). Discussion centres on the relationships between each of these product sectors and major fishing fleets, trading companies, processors and markets. The report also includes chapters on other key cross-cutting issues including sustainability initiatives and developments in the international trade regime. Each chapter concludes with a summary of key implications for FFA members.

Each section of the report has been peer reviewed internally by members of the consultancy team and FFA staff, and reviewed externally by selected industry representatives and tuna fisheries experts.
PART 1 – THE CANNED TUNA INDUSTRY

2 CANNED TUNA FISHING FLEETS

2.1 General Overview

Annually, at least three million metric tonnes of global tuna catch is destined for canning; the majority of which is caught by purse seine vessels. Given canned tuna is a price competitive and nutritional source of protein, overall demand has increased markedly over the past three decades and remains strong. To match this growing demand, the canned tuna fishing industry has experienced massive growth in terms of vessel numbers, vessel catching capacities and total catch. The level of complexity of the canned tuna fishing industry has also deepened due to factors such as resource sustainability issues, stricter regulatory requirements, increasing operating costs, developments in consumer demand, changing preferential market access regimes, to name a few.

This Chapter serves to provide a brief snapshot of some of the key issues currently influencing the global purse seine fishing industry, as well as providing an overview of the current status of the canned tuna fishing fleets.

2.1.1 Typology of Fishing Fleets for Canned Tuna

Raw material for canning is largely sourced from two gear types:

- Purse seiners primarily targeting skipjack, as well as yellowfin.
- Longliners specifically targeting albacore for canning, as well as some by-catch from longliners otherwise targeting sashimi-grade tuna.

Globally, there are currently at least 580 industrial-scale tuna purse seine vessels in operation in four major ocean regions - Western and Central Pacific (257), Eastern Pacific Ocean (226), Indian Ocean (55) and Atlantic Ocean (40). At present, global annual purse seine catch is around 2.7–2.8 million tonnes, accounting for around 66% of total global tuna catch (4.2 million tonnes in 2009).

Total capital investment in purse seine fishing vessels is in the order of US$ 5.8 billion, representing over 30% of total capital investment in the global canned tuna industry (around US$15 billion). In the last 3-4 years there has been significant additional investment in vessels (at least $1.2 billion worth); the majority of new investment being for vessels based in the WCPO.

Interestingly, this investment occurred despite increasing operational and regulatory challenges for the tuna industry including overcapacity and sustainability issues, increased regulations and newly introduced fishing restrictions, erosion of tariff preferences, as well as the global financial crisis.

Around 65% of global purse seine catch comes from WCPO waters (1.84 million mt in 2009), making this region the most significant global contributor of raw material for canned tuna.

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4 Estimate as at November 2010 from RFMO vessel registries.
6 Update on estimate made by Hamby 2009, assuming each vessel is valued at $10 million each. This estimate is likely to be conservative given it excludes vessels that are currently inactive and artisanal/small-scale vessels.
7 Hamby 2009. Investment in vessels was estimated to be $1.2 billion, compared with $0.5 billion for processing plants and $1.3 billion for brands. Of the $1.2 billion of investment in vessels, those operating in WCPO accounted for $622 million; IO $332 million, EPO $206 million and ATL $46 million.
production. The second largest purse seine fishery is based in the Eastern Pacific Ocean (EPO), with a total catch volume of 487,900 mt in 2009. The Indian Ocean (IO) and Atlantic Ocean (ATL) catch volumes are lower and were 295,800 mt and 169,850 mt respectively, in 2009.8

The majority of purse seiner catch in the WCPO is supplied to canned tuna processors in Thailand (between 700,000-750,000 mt annually). Up to 250,000 mt is supplied to Japan, mostly for katsuobushi production. Raw material is also supplied to canned tuna and cooked loin processors in American Samoa (80,000 mt), Central/South America (100,000 mt), Philippines (150,000 mt), Korea (120,000 mt), China (100,000 mt), Vietnam (40,000 mt) and others (100,000 mt). Around 115,000 mt is also processed by plants based in the Pacific region (PNG, Solomon Islands, Marshall Islands, Fiji).9

Over 300 purse seine vessels from most of the major distant water fishing nations (DWFNs) are members of the World Tuna Purse Seine Organisation (WTPO), accounting for 60% of the world’s purse seine fleet and 80% of purse seine vessels operating in the WCPO.10 The OPRT grouping was established in 2001 to stabilise the severe collapse in canning-grade tuna prices experienced in 1999-2000, due to serious overcapacity experienced in the purse seine fishery. In 2001, WTPO members collectively agreed to temporarily reduce fishing effort, by keeping vessels in port for longer periods of time, as a means of reducing supply and in turn, increasing skipjack prices. The effectiveness of the WTPO has been largely tempered by internal tensions, given some purse seine fleets, notably Taiwan and the Philippines, have continued to expand vessel capacity and fleet size.11 While the WTPO continues to play a lobbying role as an NGO (for example, WTPO has observer status in the WCPFC), and meets periodically in the margins of other major regional/international tuna fisheries-related meetings, according to industry sources, progress has been stalled due to a divide in the membership between the EU (i.e. Spanish/French) and Asian members.12

2.1.2 Global Industry Issues

i) Fleet overcapacity

By far one of the most difficult issues facing governments and industry is settling the well-recognised need for a global fleet capacity freeze (or reduction) in tuna fisheries. Over the past 20-30 years, rapid expansion in vessel numbers, capacity and efficiency has resulted in significant increases in overall harvesting capacity, as well as catch levels per vessel.

While the majority of vessel owners indicate that they support fixed capacity limits on the global purse seine fleet, the continued increase in vessel numbers demonstrates a reluctance to date to accept that in honouring capacity limits, fleets cannot continue to grow. The urgent need for capacity limits also continues to be tempered by the legitimate development aspirations of coastal developing countries, including PICs (discussed further below).

Without capacity controls, new boats will continue to enter purse seine fisheries, placing additional pressure on tuna resources, particularly juvenile yellowfin and bigeye, and potentially even the target species, skipjack. In addition, oversupply depresses prices, which in turn translates into declining profits for vessel owners and reduced access fee revenue for resource owners.

8 ISSF 2010.
9 Phil Roberts 2010.
10 Tan 2006.
11 Campling 2010.
12 Interviews, various purse seine industry representatives, 2010.
The issue of overcapacity is particularly serious for the WCPO purse seine fishery. In 1980, total purse seine catch in the WCPO was around 113,000 mt. Thirty or so years later in 2009, total purse seine catch in the region was a record 1.8 million mt.\textsuperscript{13} In 1986, catch per vessel was 3,750 mt, whereas in 2007, this had almost doubled to 7,100 mt.\textsuperscript{14} The number of vessels operating in the fishery was relatively stable from 1990-2006 at between 180-220. However, since 2006, the fleet has increased markedly to currently around 260 vessels, with newly constructed vessels entering the fishery, along with some capacity shift from other oceans and revitalization of the US fleet. This number has the potential to further increase as PNA members exercise their development rights - additional fishing licences are being issued in association with onshore investments; new vessels may be constructed for joint venture partnerships with PNA; and, replacement vessels may be constructed by distant water fishing fleets with old vessels being transferred into joint ventures.

In July 2010, the Japanese Government took a proactive stance in reducing overcapacity, by proposing the introduction of a capacity control mechanism, whereby seven distant water fishing fleets (China, Japan, Korea, Taiwan, US, EU and Philippines) reduce their purse seine vessel numbers operating in the WCPFC convention area by 20% by the end of 2013; and, in acknowledging PNA members' legitimate fisheries development aspirations, these vessels could then be transferred to PNA members.\textsuperscript{15} Given this proposed measure involves the transfer of capacity, rather than the complete removal of capacity, at best, if all parties agreed to faithfully implement it, it would assist in ensuring capacity levels in the WCPO do not continue to increase. Japan eventually proposed at WCPFC7 (December 2010) that Members should commit to limiting capacity on the high seas to the 2004 level (or the average of 2001-2004) and coastal States should limit capacity in their respective EEZs to present levels. The measure should apply only to vessels with freezing capacity (presumably to protect small-scale coastal purse seiners and perhaps the Filipino group purse seine fleet). Included in the proposal was language to the effect that the measure was not intended to diminish the rights of small island developing states (SIDs) to manage and develop the fisheries within their zones. The proposal was generally supported by some DWFNs, but was opposed by FFA members, which resulted in the failure of the proposal.

ii) Tuna Stock Status

Tuna stock sustainability is an issue of growing and significant global concern.

A global overview of the stock status of tropical tuna species is as follows:\textsuperscript{16}

- **Bigeye:** Previously overfished in EPO & ATL oceans, but stocks are in recovery; stocks fully exploited in IO; WCPO overfishing is occurring, but stocks are not yet in an overfished state.

- **Yellowfin:** Previously overfished in ATL, but stocks are in recovery; overfishing occurring and stocks are slightly overfished in IO; stocks fully exploited in EPO; WCPO stock not overfished, but fully exploited due to overfishing in the western equatorial region (Region 3).

- **Skipjack:** Stocks deemed to be healthy in all four oceans, with no overfishing occurring; rapid increase in WCPO purse seine catch to record levels is cause for concern, with catch rates likely to decline as MSY levels are approached.

\textsuperscript{13} SPC 2009.
\textsuperscript{14} Phil Roberts, pers. comm. 2010.
\textsuperscript{15} Proposal delivered by Japan at Joint RFMO Meeting (Kobe II Management Workshop), 29 June – 1 July 2010, Brisbane, Australia.
\textsuperscript{16} ISSF 2010.
- Albacore: Stocks healthy in IO and North Pacific; uncertainty of stock health in South Pacific due to issues estimating Fmsy; stocks in overfished state, with slight overfishing occurring in North ATL; South ATL stock is slightly overfished, but overfishing is not occurring.

Biological limits for bigeye and yellowfin are being approached or even exceeded and cannot support increasing catch levels in all four oceans. The level of incidental juvenile bigeye and yellowfin catch associated with purse seine fishing, particularly from the use of fish aggregation devices (FADs), has fuelled sustainability concerns. While skipjack resources are supposedly still abundant, questions are also starting to be raised concerning the long-term resilience of stocks, which, like other species, are also not finite. This is evidenced by concerns raised by Japanese scientists that northern skipjack migration to the Japanese coastal waters from equatorial waters in the WCPO has possibly decreased in the last three years. Albacore stocks are also under pressure in several regions. Hence, there is a clear need for effective management measures to be put into place for all four species.

Increasingly, NGOs are focusing on sustainability issues and consumers are becoming more aware, prompting brands and retailers to seek sustainably caught tuna. This has seen an increase in demand for certified sustainable eco-labelled tuna products (e.g. Marine Stewardship Council (MSC), Friend of the Sea (FOS)) and also pole and line caught tuna, in preference to purse seine caught tuna, since the former is considered to be a more environmentally friendly form of tuna fishing. There are also signs of a move towards FAD-free purse seine catch, which is fortuitous for PNA members who are currently attempting to obtain MSC certification for WCPO skipjack caught by purse seine vessels fishing on free-swimming (non-FAD set) schools, as well as naturally occurring logs (see Chapter 10).

iii) Recognised Failure of All RFMOs

It is widely perceived that the five regional fisheries management organisations (RFMOs) charged with the responsibility of conserving and managing tuna stocks are failing to effectively carry out their responsibilities. In the case of purse seine fisheries, conservation and management measures (CMMs) are doing little to restrict fishing capacity and subsequently, catch levels.

Decision making within RFMO’s should be fully based on scientific grounds. However, to date, political and economic pressures stemming from memberships with diverse interests, and consensus-based decision making means it is increasingly difficult for agreement to be reached on the implementation of effective management measures. Meanwhile, some stocks continue to decline. One of the most difficult issues to resolve is balancing the need for enhanced management of bigeye and yellowfin, with the large economic cost of such measures to purse seine fisheries targeting skipjack.

In light of ineffective management processes implemented through RFMOs, concerned stakeholders are looking to find their own solutions. For example, a group of major global canned tuna industry players, in partnership with fisheries scientists and the environmental NGO, WWF, have established the International Seafood Sustainability Foundation (ISSF), with a mission to “undertake science-based initiatives for the long-term conservation and sustainable use of tuna stocks, reducing by-catch and promoting ecosystem health.”

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17 Uosaki et. al. 2010.
18 The five tuna RFMOs are the Inter-American Tropic Tuna Commission (IATTC), the Western and Central Pacific Fisheries Commission (WCPFC), the International Commission for the Conservation of Atlantic Tunas (ICCAT), the Indian Ocean Tuna Commission (IOTC) and the Commission for the Conservation of Southern Bluefin Tuna (CCBST).
19 ISSF 2010.
Environmental NGOs, particularly Greenpeace, WWF and increasingly, Pew and Oceana are becoming extremely active in advocating for significantly enhanced tuna fisheries conservation and management. Coastal states, notably the Parties to the Nauru Agreement in the WCPO, are also putting in place their own management measures and seeking compatible measures to be adopted at the RFMO level (e.g. high seas area closures, FAD closures, vessel day scheme, full catch retention).

iv) SIDS Aspirations

Developing coastal states are increasingly exercising their legitimate rights to benefit from the domestic development of their tuna fisheries. The issue of how best to accommodate developing countries’ fisheries development aspirations when overcapacity already exists in both the purse seine fishing and canned tuna processing sectors has become a major focal point of discussions and negotiations concerning allocation and capacity.

Distant water fishing nations have begun to acknowledge developing country aspirations, as evidenced for example by the recent Japanese proposal discussed earlier which aims to address the overcapacity issue in the WCPO purse seine fishery, while at the same time accommodating SIDS aspirations to further develop their domestic fleets. In addition, increasing onshore investments are being made by DWFN in PICs (although, securing fisheries access is likely to be the primary motivation for the majority of these investments).

Fulfilling SIDS aspirations, while achieving more effective management of tuna resources, will require both coastal and distant water fishing states to make economic sacrifices. To account for increased fishing capacity linked to domestic development, coastal states will need to reduce the number of licenses issued to foreign vessels (potentially resulting in lower total foreign access fishing fees based on current fee levels), while foreign fleets will need to be willing to accept the need to transfer capacity to coastal states, rather than contributing additional capacity over and above current levels; which of course, will require political will and a strong commitment to reducing overcapacity.

At present, PNA initiatives to derive greater economic benefits from the purse seine fishery are resulting in further capacity expansion in the WCPO. Additional fishing licenses are being issued in conjunction with onshore processing investments. New vessels are being constructed for joint venture fishing partnerships with PNA members. Older vessels are also being transferred into joint ventures while new vessels are being constructed to operate under foreign flag as a replacement for the transferred vessel.

v) Security of Access to Resources

Access to fishing grounds of PNA members is critical to the survival of major foreign purse seine fleets fishing in the WCPO region, since up to 80% of purse seine catch has historically been taken inside PNA EEZs, and likely more since the recent introduction of high seas area closures. Hence, PNA members are actively seeking to limit access to tuna resources within their EEZs as a means of deriving greater economic benefits, in addition to enhancing fisheries management efforts. By creating competition for access, PNA members have the ability to drive up the price of fisheries access to their waters, as well as using access as leverage to encourage foreign fleets to invest in onshore developments.
The level of investment in Pacific Island countries by foreign fishing interests has already started to increase, with plans in place for new processing facilities and joint venture ownership of fishing vessels. However, the major driver for such investments is not unmet market demand for tuna products, or PICs being potentially cost competitive sites of production. Rather, the primary driver for investment is the desire to maintain (or increase) access for fishing vessels, utilizing second-generation licenses (which are often cheaper than foreign fishing licenses) issued in conjunction with onshore investments.

vi) Prices – Fuel & Fish

Fuel is by far the most significant operating cost for tuna fishing businesses; in 2006, on average, fuel cost accounted for 52% and 60% of total operating costs for purse seiner and longline (albacore) vessels, respectively. Hence, the rise in the global crude oil price (and subsequently gasoline and diesel fuel prices) has been one of the most significant issues affecting tuna fishing operations globally. Strong growth in demand in China and India, coupled with the overheating of petroleum commodities by speculative investment funds, was reportedly the impetus for marked increases in fuel prices in 2002-2008. With the collapse of the US bubble economy in late 2008, leading to the recent global economic crisis, oil prices fell from US $140 to US $35 per barrel in January 2009, bringing some relief to the tuna industry.

While canning-grade fish prices increased significantly in conjunction with the rising price of oil in 2007 and 2008, the level of growth in fish prices has not matched the level of growth in oil prices (Figure 2.1). Unless increases in fish price are commensurate with the level of increase in fuel prices, given existing competitive pressures and subsequent low margins on canning grade tuna, the profitability of purse seine vessel operations will continue to be heavily squeezed and may drive some operators out of business. This issue is even more pronounced for longline vessel operations (see Chapter 6).

Canning-grade tuna prices peaked in 2008 in conjunction with the significant hike in fuel price; in mid-2008, the Bangkok skipjack price reached almost US $1,900/mt (Figure 2.2). In 2009, both skipjack and purse-seine caught yellowfin prices reduced by around 30%, as oil prices declined, as well as global food prices. However, canning-grade tuna prices are expected to increase, given supply volumes from the WCPO will tighten, with the introduction of high seas area closures, as well as FAD closures in the WCPO.

20 Krampe 2006.
21 Miyake et. al. 2010: 38.
Figure 2.1  Price Index for Crude Oil, Canning-Grade Frozen Skipjack and Sashimi-Grade Frozen Bigeye, 2000-2011


Figure 2.2  Bangkok Canning-Grade Tuna Prices ($US/mt), 2000-2010

Source: Thai Customs 2010.
2.2 Japan 22, 23

2.2.1 Current fleet status

Historically, Japan has been the most significant distant water fishing fleet operating in the Western and Central Pacific purse seine fishery. With the development of the Korean and Taiwanese fleets during the 1990s, Japan’s dominance in the fishery has in terms of overall catch has been rivalled; however, the fleet still remains one of the most significant.

The Japanese distant water purse fleet has been stable in terms of vessel numbers, catch and economic performance. The number of vessels licensed by the Japan Fisheries Agency (JFA) has been capped at 35 since 1997 and annual catch volumes consistently exceed 200,000 mt. In 2008 and 2009, total Japanese purse seine catch was 263,410 mt and 237,599 mt, respectively. Fishing effort ranges from 7,500-9,500 fishing day per year (around 215-270 fishing days per vessel) and catch is comprised of at least 80% skipjack.24

JFA also regulates vessel size to 1,096 GRT (hold capacity around 700-800 mt), so the Japanese fleet is characterized by vessels around this size. The Japanese purse seine industry has long recognized that their competitiveness with other fleets (notably Taiwan and Korea) is undermined by the government restriction on vessel size. During the past three years they have been successful in lobbying the government for a partial lifting of this restriction with the result that JFA has now permitted selected Japanese fishing companies to trial three new larger 1,800 GRT vessels (1,100-1,200 mt hold capacity) under an experimental scheme.

The Japanese purse seine fleet’s vessels range in age from brand new to almost 30 years old, with the oldest constructed in 1981. Eight vessels are less than ten years old (23% of fleet), fifteen vessels are between 11-20 years (43%) and the remaining twelve vessels are greater than twenty years old (34% of the fleet).

All Japanese vessels are equipped with ultra-low temperature (-60°C) freezers on board for storing a portion of a vessel’s catch (typically yellowfin and bigeye). The resulting product is termed ‘purse seine special’ and is sold in the lower-quality segments of the Japanese sashimi market. The purse seine special technology was pioneered in Japan to boost profitability. In recent very tough operating years, sale of purse seine special catch has been critical to the survival of the fleet.

Four large companies control 16 fishing licences (45%) – Taiyo A & F Co. (5), Kyokuyo Suisan Co. Ltd. (4), Fukuichi Gyogyo Co. (5) and Otoshiro Gyogyo Co. (2). These companies operate either vertically integrated tuna businesses (i.e. fishing, processing, distribution) or have additional diversified business interests outside of the tuna industry (Table 2.1). The remaining 19 licenses are mostly owned by small family-run tuna fishing businesses operating 1-2 vessels.

Japan’s purse seine vessel owners are members of the Japanese Overseas Purse Seine Fisheries Association (Kaigai Makiami Gyogyo or KAIMAKI). KAIMAKI assists with foreign fisheries access negotiations and acts as an interface between its vessel owner members and the Japanese Government and PIC Governments.

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22 Unless otherwise specified, information presented in this section is sourced from multiple interviews with Japanese industry and government representatives (June 2010).
23 A useful discussion of the Japanese tuna industry, including the purse seine sector is also provided in Campling et. al. 2007 (Chapter 16).
24 JFA 2010.
### Table 2.1 Major Japanese Purse Seine Fishing Companies

<table>
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<th>Company</th>
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| **Taiyo A & F Co. (TAFCO)**  | - Parent company is marine products giant Maruha Nichiro – merger established between Maruha & Nichiro in 2007, Maruha & Nichiro both over 100 years old.  
- TAFCO established 1950  
- Own 5 x PS vessels  
- 5 licenses WCPO, 3 x Japan coastal waters (kinkai) licences  
- Pre-2009 – 4 vessels, 24,000 mt/year average catch  
- 2010 – additional new vessel (1,800 GRT), utilizing spare license formerly leased to Eikyu Gyogyo  
- Also operate 5 x LL vessels (WCPO, ATL, EPO), 5 x bluefin farms, processing/trading of other marine, agricultural and food products |
| **Kyokuyo Suisan Co. Ltd.**  | - Parent company is Kyokuyo Co. Ltd. – fishing company established in 1937 (salmon, ocean trout), evolved to become a vertically integrated marine products supplier. Commenced PS tuna fishing in 1973.  
- Kyokuyo Suisan is the largest subsidiary, sits within the Tuna Business Segment.  
- Annual catch 35,000 tonnes  
- 4 x PS vessels  
- 4 x WCPO licenses, 2 x Japan coastal waters (kinkai) licenses.  
- Sashimi tuna processing facility (6,000 mt/year) – own PS-SP catch + purchases from JP LL & PL vessels, wild/farmed imported bluefin.  
- Cold storage 8,000 mt  
- Annual sales US $53.3 million  
- 2010 - Joint venture fishing operation in PNG under islandisation – ‘Yamagawa Project’, transferred vessel Wakaba Maru No. 8. |
| **Fukuichi Gyogyo Co. Ltd**  | - Japan’s oldest fishing company, engaged in fishing for three centuries.  
- Fukuichi Gyogyo Co. Ltd. incorporated in 1964 – core business is fishing  
- Own 5 x PS vessels  
- 5 x WCPO licenses  
- 2009 – new vessel (1,788 GRT, 1,100 mt hold capacity)  
- Also operates 1 x LL (pre-2009 operated 3 X LL)  
- Other fishing related interests – processing (LL, PS-SP products), cold storage facility (12,700 t), retails outlets, mail order sales  
- Diversified business interests – laundromats, internet café, hotel, restaurant  
- 2010 – transferred purse seine vessel (Taijin) to Kiribati for fishing joint venture |
| **Otoshiro Gyogyo Co.**       | - Operate 2 x PS vessels in WCPO  
- Also operate 4 x distant water P&L vessels  
- Processing plant (SKJ tataki, loins, block & saku), ULT cold storage, online/ mail order sales  
- Established PS fishing joint venture with Kiribati Government in 1994 (Kao Fishing Company). |

Source: Multiple industry interviews 2010, company websites.

* As there is no longer a Japanese license available for Eikyo Gyogyo’s vessel, it has been transferred to FSM to operate under a joint venture.
2.2.2 WCPO fishing operations

The Japanese distant water purse seine fishing fleet operates in the equatorial waters of WCPO, as well as northern waters (above 20°N) and near coastal waters of Japan (kinkai). All 35 vessels are licensed to fish in the WCPO, while 11 of the 35 vessels are also licenced to fish in kinkai waters.

As mentioned, total Japanese purse seine catch exceeds 200,000 mt annually. Japanese vessels fish in the WCPO all year, while the Japanese coastal waters (kinkai) season generally runs from May to October (the most productive months usually being June-August) when two-year old skipjack migrate north from southern waters. Catch from Japan’s near coastal waters is usually around 20,000-25,000 mt per year, representing around 10% of Japanese total purse seine catch.

In 2009, however, the kinkai fishing season was poor, with only 3 out of the 11 licensed vessels fishing in these waters, catching around 6,000-7,000 mt. Japanese fishing operators have reported a noticeable decline in larger skipjack migrating north from equatorial waters and have concerns that the stock condition of skipjack is not as healthy as scientists claim. Fishing conditions in 2010 have also been poor.

In WCPO waters, Japanese vessels have traditionally fished in the EEZs of many of the Parties to the Nauru Agreement (PNA), as well as high seas areas. While Japanese vessels owners have fisheries access agreements in place with most, if not all, PNA member countries, the most
important fishing grounds to the Japanese fleet are PNG, FSM and the Solomon Islands. Prior to the recently introduced closure of several high seas areas in the WCPO, some vessels spent up to 30% of their fishing time in high seas areas.

The Japanese purse seine fleet’s mode of operation has differed from that of other fleets. Rather than transhipping catch from the fishing grounds, up until very recently, all Japanese purse seine vessels have returned to Japanese ports to offload catch. As a result, trip lengths vary from other fleets and are typically 5-6 weeks in duration (steaming to/from fishing grounds 7-8 days each way, fishing 2-3 weeks, offloading and re-supply 5-6 days). Japanese vessels may spend up to 100 days per year steaming to and from fishing grounds, which renders them less efficient than competing fleets who engage in transhipment to maximise the time spent in fishing grounds. Yaizu is the major landing port for Japanese purse seiners (around 60% of annual catch). Other notable offloading ports include Makurazaki, Yamagawa and Ishinomaki.

Several factors have influenced Japanese vessels opting to return to home ports to offload rather than tranship. Japanese vessel owners have strong historical relationships with katsuobushi processors, given the majority of the Japanese purse seine catch is sold for katsuobushi production. In the past, the Japanese price for skipjack was higher than the Bangkok market, although nowadays these two markets have converged more. In addition, up until several years ago (likely around 2006), it was a Japanese Fishery Agency requirement that vessels return to Japanese ports to offload. While this requirement has been relaxed, in 2009 vessels still had to return to Japan to offload under a verbal government directive to enable bigeye catch volumes to be quantified and reported to WCPFC. Japanese vessels also enjoyed a duty preference over foreign competitors unloading in Japanese ports who are required to pay 3.5% import duty.

While Japanese vessels are now permitted to tranship, only one company has done so to date. Industry representatives indicated that the decision to tranship (to either Japan or Bangkok) versus returning to port in Japan to offload is governed by fuel prices, fishing conditions and fish prices at the time the vessel finishes fishing.

The Japanese fleet was originally supported by the higher value katsuobushi market, which enabled purse seine fishing businesses to survive, despite being less competitive due to factors such as the Japanese Government imposed restriction on vessel license numbers and vessel size, the long distance between fishing grounds and landing ports and high labour costs. However, the katsuobushi market has contracted, along with the Japanese price premium for skipjack (see Chapter 9). Hence, the Japanese fleet has been forced to adapt its operating model to remain viable (i.e. investment in larger vessels, increased exports to Bangkok, introduction of purse seine special technology, transhipment from fishing grounds).

In 2008, despite high fuel prices, the Japanese purse seine fleet remained profitable due to high fish prices. In 2009, fish price stabilized resulting in lower, but still positive profits. Japanese fishing companies indicate that fish catches in the 2010 fishing year will likely be poor due to recently introduced high seas areas and FAD closures.

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25 In 1987, Japan and PNG broke-off their bilateral fisheries agreement due to Japan's reluctance at the time to increase the access fee from 5% to 6% of total catch value. After a 19 year hiatus of fishing in PNG, Japan regained access in 2006.

26 Katsuobushi is a condiment (either shaved or chunked) which is the main ingredient of dashi (a broth forming the basis of soups and sauces in Japanese cuisine). Katsuobushi is produced from boiled, dried, smoked and fermented skipjack. Campling et. al. 2007.

27 Campling et. al. 2007: 237.
2.2.3 Major markets

There are four major markets for the catch of Japanese purse seiners. The majority of skipjack is sold under auction to katsuobushi processors (60%). ULT (purse seine special) products are generally marketed as lower grade sashimi products (minced sashimi, saku blocks) for sale to supermarkets and sushi-train style restaurants (kaiten-zushiya) (20%). Small volumes of raw material (mostly yellowfin) are sold to Japanese tuna canners and some catch is exported to Bangkok for canning (around 10% respectively).

The katsuobushi market currently requires around 160,000 mt of skipjack annually, 90% (~140,000 mt) of which is sourced from purse seine vessels, with the remainder sourced from the Japanese pole and line fleet and imports from other fleets. Previously, Japanese purse seiners sold 75-80% of their catch for katsuobushi production. However, this market has contracted and now accounts for only 60% of the fleet’s catch, while the volume of sales for the sashimi market has increased from around 10% to 20%.

The Japanese skipjack price is now heavily influenced by the Bangkok price and the differential between the markets is much lower. At times when the Bangkok price is higher than the Japanese price, vessels will often export catch to Bangkok for canning through trading companies (Itochu and FCF). To date, catch exported to Bangkok is generally offloaded in Yaizu and then shipped in refrigerated containers. The cost of doing so is reportedly comparable to transhipping onto carrier vessels in ports adjacent to WCPO fishing grounds (around US $200/tonne).

For purse seine catch offloaded at Yaizu, skipjack and some yellowfin is sold by auction. Processed purse seine special catch (sashimi grade) is sold through direct negotiations with wholesalers, who then on-sell to supermarkets and restaurants. Major fishing companies generally use their own facilities to process and market their purse seine special catches.
2.2.4 Recent developments and future prospects

The two most notable recent developments for the Japanese purse seine fleet have been the relaxation of Japanese Government regulations allowing the construction of three larger vessels and the establishment of several purse seine fishing joint ventures under ‘islandisation’ projects with Pacific Island countries.

As mentioned, the three new vessels are considerably larger in capacity (1,000-1,200 mt) than Japan’s existing fleet and are also equipped with helicopters. While many Korean, Taiwanese and US purse seine vessels have a long history of using helicopters to search for fish, the introduction of these new vessels marks Japan’s foray into this style of operation. The new vessel owners purport that by improving fish finding capability through use of helicopters, there will be less reliance on FADs and hence, reduced fishing impact on juvenile bigeye. Also, use of helicopters will help improve vessel efficiency through reduced time and fuel spent searching for fish. The three new vessels are reportedly performing well and industry representatives feel the fleet could accommodate an additional 2-3 vessels of this size as replacements for existing smaller vessels, subject to Japan Fisheries Agency granting approval to do so.

Given overcapacity concerns in the WCPO purse seine fishery, the Japanese Government is strongly of the view that total fishing capacity in the region should be constrained and the additional capacity of any new vessels entering the fishery should be offset by scrapping existing vessels. Hence, while a firm policy on vessel scrapping is yet to be established, Japan Fisheries Agency instructed the three companies to scrap existing vessels to accommodate the three new purse seiners in the Japanese fleet. To date, two of the companies have scrapped three vessels in total (one FSM and two Philippines-flagged vessels), while the third company is yet to do so.

Three of the large fishing companies have established joint venture purse seine fishing operations in PNG, FSM and Kiribati. According to Japanese industry representatives this serves two purposes: i) transferring three existing vessels out of the Japanese fleet into joint venture arrangements enables the fleet to accommodate the three new vessels and maintain the Japanese Government’s vessel licence cap of 35 purse seiners; ii) Japan is able to establish ‘islandisation’ projects in response to demands from PNA countries for foreign fishing partners to contribute more to domestic tuna fisheries development.

There are also several advantages that can be potentially gained by Japanese companies establishing fishing joint ventures in PICs and domestically flagging their vessels. Fishing operations will no longer be subject to tight Japanese regulations concerning vessel size, crewing, safety, licence limits, offloading etc. In addition, vessels will save on fuel consumption by not steaming back to Japanese ports to offload. Transferring existing vessels to joint ventures will also free up more Japanese licences for new vessels (subject to Japan Fisheries Agency’s vessel scrapping requirements).

The Japanese purse seine industry is concerned about securing fisheries access in PNA members’ waters in the future, as their ability to make major investments in onshore processing facilities is constrained, particularly since over half of the fleet are small, family-run fishing operations. There is also a level of reluctance to make such investments, given the past negative experience of Japanese companies in onshore processing investments in the Pacific region (Solomon Taiyo (now Soltai) in the Solomon Islands and PAFCO in Fiji. As such, Japan’s islandisation efforts will likely be in the area of joint fishing ventures, catch offloading to PNA processing facilities, local fuel and provision purchases, establishment of research and training programs etc., rather than the establishment of processing facilities. There is widespread recognition amongst
industry operators though that some level of increased investment/spending in the region will be necessary to guarantee fisheries access.

Traditionally, Japanese overseas development assistance (ODA) to the Pacific region has been used to help leverage fisheries access. If Japanese companies are forced to invest in major islandisation projects, ODA to the region might be reduced. Japan’s current three-year (2009-2012) ODA commitment to the Pacific Islands under PALM 5 is ¥50 billion ($US 540 million), of which a significant proportion will be used for broader fisheries cooperation. Should Japanese islandisation projects fail in the long-term, Japanese Government officials have warned it could be difficult for PICs original level of ODA to be reinstated to current levels if they are reduced, particularly since Japan’s total ODA budget has been cut by almost 50% over the past ten years.

With the relaxation of the requirement for vessels to return to Japanese ports to offload, the level of transhipment from fishing grounds will potentially increase, particularly if the Bangkok price for skipjack continues to strengthen relative to the Japanese market. If so, PNA members will benefit from increased transhipping activity in the form of transhipment fees, additional local spending etc. A concern was raised by an industry representative that increased transhipment will result in a higher number of days fished by Japanese vessels and hence, increased catch volumes which could flood the Japanese market and place further downward pressure on prices.

Both industry and government representatives voiced concerns regarding the effectiveness of VDS in managing capacity in the WCPO purse seine fishery. Concerns have also been raised that the decision to implement a three-month FAD closure and several high seas areas closures by PNA members has been politically and economically motivated, rather than being in the interest of enhancing fisheries management.

In March 2011, a major earthquake and tsunami hit the Sendai area, which caused severe damage to harbours, vessels, cold storage and processing facilities. All Japanese purse seine vessels were accounted for, given the major purse seine port is further south in Yaizu (Shizuoka Prefecture). However, following the disaster all vessels in the purse seine fleet returned to Japan to assist in relief efforts in the regions hardest hit by the tsunami, which would have resulted in lost fishing time.

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**Key Points: Japan**

- The Japanese purse seine (JP-PS) fleet is stable in terms of vessel numbers and catch volumes – the fleet has been comprised of 35 vessels since 1997 and annual catch volumes consistently exceed 200,000mt; 2009 catch was 237,599 mt. Vessels operate within WCPO and Japanese coastal waters.

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28 Since 1997, Japan and the Pacific Islands Forum Countries (FICs) have met tri-annually in a summit entitled the Pacific Island Leader’s Meeting (PALM), to discuss their mutual interests in the economic development of the Asia-Pacific region. During each PALM meeting, the Japanese Government has made cross-sectoral ODA commitments to the FICs under three-year funding cycles. During the Fifth Pacific Island Leader’s Meeting (PALM 5) held in May 2009, Japan committed ¥50 billion for 2009-2012 for activities relating to economic growth, sustainable development, good governance, security and ‘people-to-people’ exchange. Japan Ministry of Foreign Affairs 2011. www.mofa.go.jp

29 In 1997, Japan’s total ODA budget was ¥ 1,168 billion. In 2009, the budget had declined 42% to ¥ 672 billion. Data provided during interview, Japanese Government Representative 2010.

Key Points: Japan cont.

- A Japan Fisheries Agency regulation limiting PS vessel size to 1,096 GRT has been relaxed, enabling three companies to trial three new larger vessels (1,800 GRT) with helicopters, in an effort to improve the competitiveness of the Japanese fleet relative to other fleets operating larger vessels (notably, Korea and Taiwan).
- While a Government regulation has been relaxed which stipulates that JP PS vessels must return to Japanese ports to offload catch rather than transhipping catch in fishing grounds, most vessels are still opting to return to port at this stage. If the Bangkok skipjack price continues to strengthen relative to the Japanese skipjack market, transhipment volumes will likely increase.
- The majority of the JP PS fleet’s catch is sold to katsuobushi processors (60%); 20% to low-end sashimi markets (ULT-portion of catch); 10% to Japanese tuna canners; 10% to Thailand tuna canners.
- In response to PNA countries’ calls for greater domestic investment from DWFN, several fishing companies have established joint venture PS fishing operations in PNG, FSM and Kiribati. Japanese companies are more likely to invest in ‘islandisation’ projects that centre on joint fishing ventures and/or technical cooperation, rather than investing in processing facilities, given negative experiences of Japanese companies in tuna processing investments in the Pacific region in the past.
- All Japanese purse seine vessels were accounted for following the March 2011 earthquake and tsunami in Sendai Prefecture.

2.3 Taiwan

Taiwan vessels producing tuna for canning fall into two categories based on gear type: purse seine and longline. The former, fishing exclusively in the WCPO, target skipjack and to a lesser extent yellowfin (together described as light meat), while the latter produce primarily albacore (white meat).31

In 2007, the most recent year for which Taiwan government catch data are available on a global basis, the total tuna catch by Taiwan-registered vessels was reported as 558,090mt.32 It is estimated that approximately 280,000 mt (50%) of this total was for canning purposes, consisting of 233,000 mt of skipjack and yellowfin caught by purse seiners33 and 47,000mt of albacore caught by longliners.

In addition to catches by Taiwan flag vessels, a considerable amount of cannery grade tuna is caught by Taiwan-owned vessels registered elsewhere. An undetermined amount of cannery-grade albacore was also produced by non-Taiwan flag but Taiwan-owned longliners operating in the WCPO, Atlantic and Indian Oceans. Most albacore caught in the EPO is caught in the southern portion by longline vessels based in the WCPO. It is estimated that in recent years the combined tuna catches of Taiwan-owned vessels worldwide has been in the range of 650,000-700,000 mt, of which perhaps 60 to 65% or more has been for canning purposes.34

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31 A small (but undetermined) amount of frozen albacore for canning is also produced by some Taiwanese longline fleets targeting sashimi-grade tunas.
32 Taiwan Fisheries Agency 2010 (Table 8); reflects total catch by Taiwan flag vessels only.
33 About 1-2% of the total is estimated to have been bigeye tuna, also used for canning when landed by purse seiners.
34 Author’s estimates based on a variety of RFMO data sources.
2.3.1 Current fleet status

i) Purse seine

The total number of Taiwan-owned distant water tuna purse seiners is estimated to be 55; 33 of which carry the Taiwan flag, while 18 are registered in Vanuatu and 4 in the Marshall Islands. An additional three vessels are operated under joint venture arrangements with Marshall Islands (2) and Tuvalu (1). Hence, there are 58 ‘functionally’35 Taiwanese owned and/or managed purse seiners, all of which operate in the WCPO (Figure 2.3).

Three Taiwan fishing companies have made significant investments in a further 18 purse seiners that operate as US vessels under the US Multilateral Tuna Treaty with the Pacific Islands. All 18 vessels, two-thirds of which were constructed in 2007—2008, were built in Taiwan to Taiwan designs. Two of these companies also own vessels flagged in Taiwan and Vanuatu.

Figure 2.3 Profile of ‘Functionally’ Taiwanese Purse Seine Fleet (2010)

It is notable that the average age of the purse seiners registered in Taiwan is about 19 years, while those flagged in Vanuatu average about 8.5 years and those in the Marshall Islands average about 6 years in age. The newest two vessels are registered in Marshall Islands and Tuvalu and began operations in 2009/2010. The differences in average vessel age among the three categories reflects, in part, the desire of some companies in recent years to build larger vessels, thereby avoiding Taiwan government policy that restricts replacement of Taiwan-flag purse seiners to those of equal or smaller carrying capacity.

Two important factors that have helped shape the composition and operation of the Taiwanese purse seine fleet are: (i) the lack of any significant light meat tuna processing in Taiwan; and (ii) a long-standing government prohibition on the importation of used purse seine vessels. This has resulted in close ties with major tuna trading companies for marketing of the catch, a concentration on the export of the catch through transhipment, and the development of a domestic shipbuilding industry that has been able to refine vessel design and size to best match fishing operations’ needs.

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35 As used here, the term ‘functionally’ denotes Taiwanese management and control over vessel operations and catch disposition, as well as full or partial beneficial ownership.
The fleet expanded rapidly during the late 1980s and early 1990s, but subsequent domestic Taiwan government policy limited the number of Taiwan-flagged vessels to 34. This did not limit fleet growth however, as alternative flagging and means of obtaining fishery access have enabled the Taiwan-owned or controlled fleet to continue to expand during this decade.

Throughout the development of the tuna purse seine industry in Taiwan the focus of most operators has been conservative and inward looking, concerned primarily with fishing operations. This led to a reliance on trading companies to handle the international aspects of their business activities, including marketing.

In recent years, however, a few of the successful fishing companies with larger objectives and possibly greater financial resources than the others have become major participants in the industry. These companies have increased the size of their fleets using non-Taiwan countries of registration and are assisted with ancillary businesses such as refrigerated fish carriers, re-supply vessels, ship building and ship repair. They are also the companies who have engaged with Pacific Island countries, becoming involved in arrangements to supply fish for onshore processing and conceiving and promoting fishing enterprises termed ‘joint ventures’.

ii) Longline

The catches of albacore for canning by Taiwan longline vessels worldwide are categorized by two general classes. Large scale vessels are typically steel-hulled vessels greater than 24 meters and over 100 GT. The category of tuna longline vessels smaller than these sizes are primarily fibreglass reinforced plastic (FRP)-hulled and usually measure less than 24 meters and under 100 GT. Vessels of both size classes may also target sashimi-grade tunas, primarily bigeye, but also yellowfin and in some instances, southern bluefin for the larger vessels.

The ownership of vessels in both the large scale and small scale fleets are normally family-based fishing enterprises. The larger vessels tend to be based in Kaoshiung, while owners of a large proportion of the small scale fleet come from smaller ports in southern Taiwan.

Overall, the number of Taiwan’s large scale longline vessels worldwide is decreasing as high costs of operation, particularly fuel costs and stagnant prices have cut deeply into profitability. According to the Organization for the Promotion of Responsible Tuna Fishing (OPRT) in Japan, two fleet reduction programs and attrition in the fleet have resulted in a decrease in the number of large scale longline vessels worldwide from 562 vessels in 2004 to 359 in 2010. The Taiwan Deep Sea Tuna Boatowners and Exporters Association indicated that in late 2009 about 100 or so of the Taiwanese longline fleet could be considered albacore-targeting vessels, operating primarily in the Atlantic and Indian Oceans.

In contrast, the number of small scale tuna longline vessels is said to have increased as they are more economical to build and operate. In 2007, a total of 40 such vessels between 50 and 100 GT were constructed. Determining the exact number and areas of operation of these vessels is difficult. Vessels may move between the Pacific and Indian Oceans depending upon fishing and market conditions and other factors. According to a Taiwanese Government source there were about 1,900 small scale vessels operating in 2008.

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36 Examples are Fair Well Fishery Company Ltd., Fong Kuo Fishery Company Ltd. and the Wee Lee/Ching Fu group of companies.
37 Taiwan Fisheries Agency and Overseas Fisheries Development Council 2010: 2.
38 OPRT 2010a: 3.
39 Interview with author, 11 December 2009.
40 Taiwan Fisheries Agency 2010: Table 4.
41 Taiwan Fisheries Agency 2008: Para 2.1. Cited in Tolvanen and Currie (undated). It is believed that this number also includes vessels that operate from ports within and outside of Taiwan and deliver fresh yellowfin and bigeye for sashimi markets, as well as some vessels in all oceans that target sharks.
In addition to Taiwan registered vessels, there are also Taiwan-owned but non-Taiwan flag longline vessels operating worldwide. A component of these is the Taiwan-owned, Vanatuflagged fleet of 46 large scale vessels; 39 of which target albacore. An undetermined number of other, small scale longliners believed to be Taiwan-owned are also flagged in Vanatu, Panama, Indonesia, Belize and elsewhere. In some cases such vessels are believed to have dual registration, however, it is unclear how this might influence their operations.

2.3.2 Global fishing operations

i) Longline

The most recent available estimate of global albacore catch of Taiwan-registered longline vessels was approximately 40,000 mt in 2008 (Figure 2.4).

![Figure 2.4 Estimated Global Taiwanese Longline Albacore Catch by Ocean, 2008](image)

Source: Various RFMO reports (2008)

In the Indian Ocean, Port Louis in Mauritius has been a primary unloading, re-supply and transhipment port, primarily due to a cannery presence and the proximity to albacore fishing grounds in the south-western Indian Ocean. In 2008, the last year for which official reports to IOTC are available, 182 large scale vessels primarily targeting bigeye and about 460 small scale vessels targeting both bigeye/yellowfin and albacore operated in the Indian Ocean. The albacore catch of large scale vessels was about 10% of their total tuna catch of around 30,000 mt, while albacore represented a little less than half of the total tuna catch of 25,000 mt by the small scale vessels. Together, the catches of both size classes of Taiwan’s vessels represented around half (~15,000 mt) of the total albacore catch of 32,900mt in the Indian Ocean in 2008.42

According to industry sources in Taiwan, both the catch and the number of vessels from both classes declined in 2009 and 2010, due to poor resource conditions and security problems associated with piracy in the western Indian Ocean.

In 2008, Taiwan’s longline vessels caught about 11,000 mt of albacore in the Atlantic, with about 85% coming from the South Atlantic fishery.43 The Taiwan catch represented about two-thirds of the total albacore longline catch in the Atlantic. Ports utilized by Taiwan longliners include Montevideo (Uruguay)44 and Cape Town (South Africa). Port of Spain (Trinidad and Tobago) in

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44 Montevideo is favoured as it is also a supply base for Taiwan squid vessels fishing in the South Atlantic.
45 Recent industry reports indicate that the Trinidad loining plant is currently non-operational and in the meantime vessels are transhipping catches via container for processing in Colombia.
the Caribbean region is a processing port, with about 30—40 vessels delivering to a Bumble Bee-affiliated loining plant located there. Industry sources indicated there are an additional 30 Taiwan-owned but non-Taiwan flag small scale vessels based in West Africa in Senegal and Ghana.

2.3.3 WCPO fishing operations

i) Purse seine

The total catch of the Taiwanese managed purse seiners in the WCPO was about 416,900 mt in 2009. The breakdown of the 2009 catch by country of vessel registration is presented in Figure 2.5.

There are no major differences in the operational patterns of the Taiwanese managed purse seiners, irrespective of country of registration, with the exception of three smaller Vanuatu-registered vessels fishing primarily in the Solomon Islands which have not been active recently (and are excluded from Figure 2.3 above). The majority of the catch is transhipped in various Pacific island ports, although vessels associated with the SSTC loining plant in Wewak deliver at least a portion of their annual catch directly to that facility. The ports utilized for transhipment have historically been Pohnpei, Majuro, Rabaul, Wewak, and Honiara, with Tarawa used occasionally when the fishery moves eastward.

As with other major purse seine fleets, the Taiwan fleet has shown an increased reliance on drifting FAD sets in recent years, with reductions in both unassociated and log sets since 2007. In 2009, drifting FAD sets accounted for about 25% of total sets.

Figure 2.5 Estimated WCPO Catch by Taiwanese Purse Seiners by Country of Registration (2009)

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46 From total catches reported to the WCPFC Scientific Committee by Taiwan, Vanuatu, Tuvalu and Marshall Islands in August, 2010, adjusted for non-Taiwan vessel affiliation and rounded off for ease of presentation.

47 Williams and Terawasi 2010: 5.
ii) Longline

Most of the Taiwan albacore fleet operating in the WCPO and southern EPO utilizes Pago Pago in American Samoa and Suva and Levuka in Fiji as primary unloading and re-supply ports.

Large scale vessels enter port twice per year to unload and obtain supplies, while small scale vessels must unload more frequently. In recent years a few large scale vessels have participated only in the seasonal northern albacore fishery from their home base in Kaohsiung to save on fuel and operating costs. The northern albacore fishery occurs primarily east of Japan, and the southern albacore fishery in the EPO occurs mainly to the east of French Polynesia.

According to knowledgeable industry sources there were 38 large scale vessels and 60-80 small scale vessels targeting albacore in the Pacific in 2009. The combined catch of these vessels, plus that from Taiwanese vessels targeting bigeye in the WCPO in 2009 was about 15,500 mt, an increase of around 4,500 mt from 2008 catch levels, but still only 18% of the provisional total WCPO albacore longline catch of 87,000 mt in 2009.

2.3.4 Major markets

It is estimated that around 90-95% of the total purse seine catch is marketed to trading companies, with the remainder being some of the catch from Marshall Islands-registered vessels marketed directly in Japan for katsuobushi production. The primary buyer for Taiwanese-caught purse seine fish is FCF, however, sales are also made to the other two major trading companies, Tri Marine and Itochu. The major market for Taiwan's purse seine-caught skipjack and yellowfin is Bangkok, but as a world-traded commodity some of the catch is also likely to be sold onward to processors in Europe, South America, and elsewhere.

A relatively small volume of purse seine catch (likely in the order of 10,000-15,000 mt) is unloaded and processed at South Sea Tuna Corporation’s (SSTC) loining facility in Wewak, PNG. Another 20,000 mt or so is estimated to be transhipped and marketed in Japan, primarily for the
production of katsuobushi.

Canning-grade albacore is also marketed primarily to trading companies, even when delivery is directly to canneries, as is the case in Fiji and American Samoa. In the past, the Taiwan Deep Sea Tuna Boatowners and Exporters Association played a significant role in negotiating pricing with the American Samoa canneries through their Pacific Operating Committee, but according to Association officials those activities have now ceased with the closure of the Chicken of the Sea plant and downsizing of Starkist.

The incidental catch of yellowfin, bigeye, and billfish (including swordfish) from Taiwanese longliners unloading albacore at the canneries in American Samoa and Fiji is transhipped by container back to Taiwan. Such incidental catch transhipped from Fiji can include sharks. However, US regulatory measures discourage the landing of sharks in American Samoa and provide a disincentive for longline vessels to call there.

2.3.5 Recent developments and future prospects

The purse seine industry in Taiwan has undergone a major transformation in the past 10-15 years, with a few dominant companies emerging as major participants and operators of predominantly non-Taiwan flag vessels, while other operators of Taiwan-flag vessels have maintained their historically conservative outlook. The success of the Taiwan and Taiwan-associated tuna purse seine fleet over the years has meant that financing new vessels and operations has not been difficult for experienced operators.

Taiwan has been successful in developing the size and type of vessel well suited to the economics of purse seine fishing and transhipping in the WCPO. The cost of building these vessels has increased by nearly 50% in the past 5 years to about $14 million in 2009, due to increased material costs and in alignment with earning potential. At least two new vessels were built in China from equipment and pre-built materials supplied from Taiwan. The resultant transfer of technology may result in accelerating Chinese capabilities and increase competition in the fishery.

The main concern for Taiwanese operators is secure access to resources. Prospects for both segments of the purse seine industry will depend to a large degree on future policies that may be adopted and enforced by the Parties to the Nauru Agreement. Some vessel operators are forming strategic alliances with processors that may prove beneficial, as well as necessary to ensure such access.

The lack of investment in new vessels for the Taiwan flag purse seine fleet has been mirrored by the promotion and encouragement of ‘joint ventures’ with Pacific Island countries by some operators. This is being undertaken by Taiwanese vessel owners as a means of increasing their fleets and obtaining or enhancing income streams from activities such as shipbuilding and ship repair, transhipping, supply of provisions and fuel and vessel management.

The major challenge to profitability of the large scale albacore-targeting longliners will continue to be their high operational costs, primarily the price of fuel. The continued attrition in the large scale fleet reflects their inability to maintain profitability in the face of stagnating prices and increasing costs. Even though these vessels can stay at sea longer than the small scale vessels and fish in higher latitudes as a result of their size, these advantages do not offset their high cost of operation. Some operators, mainly in the Pacific Ocean, have enhanced the value of a portion of their albacore catch through use of -35°C freezers onboard to enable them to market catch
in Japan as a lesser value sashimi. The small scale albacore longliners are able to compete and survive, partly as a result of their smaller size and hence, lower operational costs and also because of their ability to move between the Pacific and Indian Oceans unimpeded by national regulations. As smaller vessels, their need to return to port more often than the large scale vessels also provides an opportunity to sell at least a portion of the catch as sashimi-grade and further enhance revenue. A problem affecting both large scale and small scale vessels in the Indian Ocean has been the deteriorating security situation in relation to piracy that has resulted in the loss of significant fishing grounds in the western Indian Ocean.

**Key Points: Taiwan**

- The Taiwanese purse seine fleet expanded rapidly during the late 1980's and early 1990's. Despite the introduction of a Taiwan Government regulation limiting the number of Taiwan-flagged vessels to 34, the fleet has continued to expand through alternative flagging arrangements.

- In 2010, there were an estimated 58 Taiwanese-owned purse seine vessels operating exclusively in the WCPO - 33 Taiwan-flagged; 18 Vanuatu-flagged; 4 Marshall Islands-flagged; 3 joint ventures (Marshall Islands, Tuvalu). A further 18 Taiwanese-owned vessels operated as US vessels under the US Multilateral Treaty.

- A long-standing Government prohibition on the importation of used purse seine vessels resulted in the development of a domestic shipbuilding industry in Taiwan that has been able to carefully refine vessel design and size to be economically efficient in purse seine fishing and transhipping in the WCPO. The ongoing success of the Taiwanese purse seine fleet has meant that financing new vessels and operations has not been difficult for experienced operators.

- Total estimated catch of Taiwanese-owned/controlled vessels was 416,900 mt in 2009 (excluding US-flagged vessels). The majority of catch (90-95%) is marketed to trading companies and transhipped to Bangkok.

- To ensure ongoing fisheries access in WCPO waters, some Taiwanese vessels owners are forming strategic alliances with PIC-based processors and/or establishing joint fishing ventures in a several PICs.

- Taiwanese-owned longline vessels targeting albacore for canning operate in the WCPO, Atlantic and Indian Oceans (estimated total catch of 40,000 mt in 2008). The number of Taiwan’s large-scale longliners has decreased worldwide (359 in 2010), largely due to high operational costs, particularly fuel. Conversely, the number of small-scale longliners has increased (over 1,900 in 2008), as they are more fuel efficient and less impeded by Government regulations. An estimated 38 large-scale and 60-80 small-scale longliners targeted albacore in the Pacific in 2009. These vessels utilise port facilities in American Samoa and Fiji for unloading and re-supply, with the majority of catch marketed through trading companies.
2.4 Korea

2.4.1 Current fleet status

The Korean purse seine fleet, which became a significant player in the WCPO fishery in the late 1980’s, \(^{50}\) comprises 28 large vessels owned and operated for the most part by three large diversified companies: Dongwon Industry (15), Sajo/Oyang (6) and Silla Co. Ltd. (6). \(^{51}\) Dongwon and Sajo are also vertically integrated into fish processing.

The vessels are mostly of US origin (22 of 28), ranging in size from around 600-1,350 GRT. The fleet is ageing, with 20 of the vessels more than 20 years old and two vessels being 19 years old. \(^{52}\) Four new larger vessels have been constructed in Taiwan since 2006, the most recent being launched this year as a replacement for a vessel that sank in May 2008. \(^{53}\) Three of these vessels are 2,023 GRT in size, while the fourth and newest is 1,061 GRT. The fleet size peaked at 39 vessels in 1990, but has remained at 28 since 2004. \(^{54}\)

Overseas fishing operations and arrangements are mediated with the support of the Korean Overseas Fisheries Association (KOFA), formerly the Korean Deep Sea Fisheries Association (KDSFA). KOFA is funded by member levies with minimal financial Government support, but works closely with Government in fisheries policy formulation and delivery.

2.4.2 Global fishing operations

Korean companies are involved in both purse seine fishing and longline tuna fishing.

Purse seine fishing operations by Korean companies are carried out almost entirely in the WCPO, with the following exceptions. A small joint venture purse seiner operated by Sajo supplies Atlantic bluefin culture operations in Malta (Mediterranean). Six of Silla Company’s purse seine vessels (∼750 t hold capacity) have been involved in a joint-venture operation in Ghana since 2002 and supply fish canneries in Ghana and overseas. \(^{56}\)

Longline tuna fishing is carried out by Korean vessels in the WCPO, Atlantic and Indian Oceans (see Section 6.4).

Korean companies also have vessels operating in trawl, squid, saury and Antarctic fisheries, with 24 foreign fishing bases (including 11 in the Pacific) maintained in 20 coastal states globally in 2008. \(^{57}\)

\(^{50}\) SPC 2008: 61.
\(^{51}\) One vessel is owned and operated by Hansung Enterprises.
\(^{52}\) FFA Regional Vessel Register 2010.
\(^{53}\) Sajo Victoria sank in 2008 and was replaced by Sajo Potentia.
\(^{54}\) Kim et. al. 2010: 6.
\(^{56}\) Silla Co. 2010.
\(^{57}\) Information on fleet sizes is available from KOFA website - http://www.kosfa.org/english/
Korean purse seine vessel making a net set with speedboats scaring fish away from the net opening. Photograph: Dongwon Industries.

2.4.3 WCPO fishing operations

The Korean fleet is recognized as being productive, well organized and compliant. Fleet size has been stable at 28 vessels for some years and the Korean WCPO purse seine catch was around 250,000 mt between 2006 and 2008. In 2009, the catch increased to a record of over 280,000 mt, with the average catch per vessel reaching 10,000 mt, making Korea the top distant water flag fishing fleet by volume for the first time. Catch rates in 2010 have declined markedly from 2009 levels, reportedly due in part to the closure of two WCPO high seas pockets since 1 January 2010, as well as a lower abundance of free-swimming schools.

The Korean fleet makes the highest proportion of sets on unassociated schools (currently around 65%). As a result, the fleet may have been less impacted by the 3-month FAD closure introduced in 2009. The stability of vessel numbers also suggests the fleet has not been unduly constrained to date by WCPFC effort limitation requirements under CMM 2008-01 either.

Korean vessels fishing in the WCPO currently have purse seine access agreements with all PNA members except Palau. Fishing occurs widely throughout the region in both high sea areas and within PNA EEZs, although the relative proportions are unknown and likely vary year by year.

Two Dongwon-owned vessels have been US-flagged and operated in WCPO waters under the US Multilateral treaty, although one of these vessels sunk recently.

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59 The Philippines-owned fleet overall has a larger annual catch (see Section 2.6) but is part domestic, part foreign flag and part overseas-based, as well as operating as a DWFN; the diverse Taiwan-owned fleet may take a similar annual catch.
60 Views expressed during industry consultation with KOFA members, Seoul, 18 May 2010.
61 Peter Williams (SPC) 2010, pers.comm.
62 Industry representative, pers. comm. 2010.
Transhipment occurs in a range of ports including Pohnpei, Majuro, Tarawa and Honiara, with carriers transporting fish either to Korean ports for domestic processing or to export markets, particularly Thailand. A range of carrier vessels are used including Korean-owned carriers (Dongwon), those of the major trading companies (notably Itochu) and other carriers often operated by Korean companies.

2.4.4 Major markets

The Korean purse seine fleet supplies raw material to domestic processing facilities and is also a major exporter to other processors outside Korea. Recently, approximately equal amounts of the purse seine catch have been supplied to Korean canning plants (to supply the domestic canned fish market) and exported elsewhere for processing.

Approximately 120,000-130,000 mt is unloaded annually from carriers at Korean ports (Masan (39,300 mt), Tong Yeon (4,700 mt), Busan (16,800 mt) and Mokpo (26,700 mt), destined for the five major canneries adjacent to these ports.

Cannery raw material is supplied entirely by Korean vessels and, as mentioned, two of the main companies are vertically integrated (Dungeon, Sajo), supplying fish to their own canneries. Silla supplies product to Ottogi SF’s two canneries.

Preliminary figures for 2009 indicate that 159,000 mt of purse seine catch was exported, with over 80% (130,000 mt) going to Thailand, around 5,000 mt to Japan, 4,140 mt to Philippines and the remainder (20,000 mt) to a range of countries including Ecuador, Spain, China, Iran, Indonesia and Seychelles. Only Taiwan (and the recently expanded US fleet in 2009) has supplied more frozen round light meat tuna to Thailand than Korea. According to industry sources, demand for Korean light meat tuna exports is strong and increasing, in line with increasing demand for raw materials from processing facilities in a range of countries (see Chapter 4).

2.4.5 Recent developments and future prospects

There appear to be no immediate plans to increase the Korean fleet given its long term stability, though some ‘islandisation’ of older vessels is a possibility that has been raised, if it were to occur outside current Korean voluntary vessel limits. A non-Korean industry representative indicated that two Sajo vessels are in the process of establishing a joint venture with Kiribati.

Discussions with industry representatives regarding the future of the Korean purse seine fishery in the WCPO revealed that there are concerns with the current management of WCPO tuna resources and the apparent inability to limit vessel numbers/effort despite the VDS and WCPFC CMM 2008-01, particularly since Korea has had in place a policy limiting vessels numbers for some years. There is also some confusion regarding which agency determines and implements management policy in the region (i.e. WCPFC, FFA or PNA Office) and whether recent measures introduced by PNA and under WCPFC CMM 2008-01 are related solely to resource sustainability. Korean industry acknowledges that PNA development aspirations need to be accommodated, but are not entirely clear about how these might be met in a useful way. The proposed Dongwon
onshore investment in a processing facility in the Solomon Islands signals a Korean recognition of PICs’ desire for enhanced domestic development of their tuna industries (see Section 4.8).

There is awareness that access to PNG, historically an important fishing area for Korean purse seine vessels, may be at some risk in view of there being no second generation access agreements with PNG currently in place, coupled with the risk of PNG giving first priority for fisheries access in the near future to fishing fleets with existing and proposed future onshore investments in the region.

There has been interest expressed in Korean vessels undertaking more seasonal trans-shipment in Honiara to be closer to fishing grounds where good catches have been made in recent years. Solomon Islands crew members have also increasingly been recruited to work on Korean purse seiners in recent years.

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**Key Points: Korea**

- The Korean purse seine fleet is comprised of 28 vessels, owned predominantly by three large diversified companies. The fleet peaked at 39 vessels in 1990, but has remained stable at 28 since 2004.

- The Korean fleet operates almost entirely in the WCPO; in 2009, total catch was a record 280,000 mt – the first year in which Korea has been the highest catching fleet in the WCPO. Catch volumes in 2010 (and in future) have been affected by high seas closures, while the impact of FAD closures has been less severe than for other fleets, as Korean vessels fish more on free-swimming schools.

- Catch is transhipped to Korean ports for domestic processing or to export markets. Annually, around 120,000-130,000 mt is unloaded in Korea. In 2009, 160,000 mt was exported; 80% of which was destined for Thailand.

- Several ‘islandisation’ projects are underway with PICs – two vessels are reported to be commencing a joint fishing venture with Kiribati; Dongwon (owner of 15 PS vessels and major US tuna brand, StarKist) is establishing a canned tuna processing facility in the Solomon Islands.

- Some industry operators are nervous about ongoing access to PNG waters, an historically important fishing ground for Korean purse seine vessels, as Korea has no existing onshore investments in PNG, with related second-generation access arrangements for vessels. In terms of broader fisheries access in WCPO waters, Korea is potentially vulnerable due to the lack of absence of any significant aid programme and a lack of close diplomatic ties with most PICs.
2.5 United States

2.5.1 Current fleet status

After maintaining a fleet of between 30 and 50 purse seine vessels in the 1980's and 1990's, in the early 2000's, the US fleet underwent a precipitous decline, bottoming out at ~11 vessels in 2007 due to international competition and declining fish prices.\textsuperscript{67} Since 2007, however, external investors (mostly with ties to the tuna industry) have taken interest in the fleet; interest that has resulted in growth and revitalization of the fleet. In late-2010, the US fleet had 37 active fishing vessels in the WCPO and two vessels in the EPO. Of the 37 vessels fishing in the WCPO, vessels were often referred to in two categories: i) the ‘old fleet’ which are the historical actors; and ii) the ‘new fleet’ which are vessels that have come under the US flag since 2007. All vessels are members of the American Tunaboat Association (ATA) which facilitates licensing, registration logistics and represents the fleet in international negotiations.

\textsuperscript{67} Havice 2009: 141-189.
The ‘old fleet’ is comprised of approximately 18 vessels. Nearly all vessels were built in the United States over 30 years ago. Average gross registered tonnage of vessels in this group is approximately 1,500 GRT and vessels are primarily based out of Pago Pago, American Samoa. Vessels in this group are owned by individuals who manage and operate the vessels directly.

The ‘new fleet’ is comprised of approximately 19 vessels. All of the vessels in this group were built in Taiwan between 2002 and 2008 and have gross registered tonnage of between 1,400 GRT and 2,310 GRT. Average GRT is 1,625. At present, nearly all vessels in this group designate their home port as Pago Pago, American Samoa. However, in reality, these vessels rarely, if ever, go to Pago Pago. The ownership model for the majority of the ‘new’ segment of the fleet is dramatically different from the old. The ‘new’ vessels are joint ventures between US nationals (often with links to the US-based processors) and foreign investors. The US investors hold at least 51% ownership required to fly the US flag. The remaining investments are from foreign partners, the majority of which are Taiwanese. Other investors are Korean and Dutch.

In addition to WCPO vessels, two small US-flagged purse seine vessels were registered in the Eastern Pacific Ocean, one with carrying capacity of 340 mt and a second with carrying capacity of 854 mt.

According to industry officials, the US fleet size was relatively stable in late 2010. Reportedly, the Taiwanese investors in the new segment of the fleet operating in the WCPO initially incurred difficulty in complying with the strict and costly US safety, labour and operating regulations, but are now in compliance. One factor that facilitated the arrival of Taiwan-managed vessels under the US Treaty was the relaxation of a rule that at least three of each vessel’s officers (Fishing Master, Navigator and Chief Engineer) had to be USA citizens, with the appropriate certification. For vessels operating under the US Treaty, the rule was relaxed and required only one officer-level US national (Fishing Master).

Despite high operating costs, at the time of consultation in mid-2010, foreign investors were reportedly committed to their investment in the US fleet. In 2010, there were some enquiries into the remaining three regular licenses, as well as the five joint venture licenses, available under the US Treaty (see below). However, industry suggested that increasing uncertainty over operating rules in the WCPO, including how the US Treaty and the Vessel Day Scheme interact is making potential entrants wary of investing. In addition, recently announced US Coast Guard regulations concerning the Foreign Officer provision, may present difficulties (further discussed in 2.5.4).

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68 Numbers are approximate as the fleet composition is often in flux (e.g. between 2009 and 2010, two vessels left the fleet because one sank and another was sold). Interview, US industry representative 2010.
70 Historically, in order to fly the US flag, vessels were required to be built in the US. An exemption from the Jones Act has made it possible for non-US built vessels to fly the US flag. Notably, however, vessels that are built outside of the US do not qualify for Rules of Origin for duty free access for tuna pouches to the US through the Andean Trade Preferences Act (ATPA), even if the vessel flies the US flag (see Section 4.6).
71 WCPFC record of fishing vessels 2010. Note that there can be discrepancies between gross tonnage (GT) (the international measure of spaces laid out in the 1969 International Tonnage Convention) and gross registered tonnage (GRT), the measure required in the WCPFC.
74 Interviews, US industry representatives 2010.
75 The five joint-venture licenses offered through the US Treaty have never been used, so there is no precedent for what the ‘joint-ventures’ might look like. The US National Marine Fisheries Service has guidelines that speak to how the joint-ventures would work.
76 Interview, US industry representative 2010.
2.5.2 WCPO and global fishing operations

The vessels in the US purse fleet were among the first entrants into the WCPO fishing industry. Prior to the 1980’s, the US fleet operated primarily in the Eastern Tropical Pacific, but since then the US has spent the vast majority of its time in the WCPO, with occasional activity in the EPO.77 Currently, the US purse seine fleet fishes exclusively in the WCPO, with the exception of two vessels operating in the EPO.78

Since 1988, the US fleet’s fishing licenses in the WCPO have been governed by a multilateral treaty between the United States Government and the members of the Pacific Islands Forum Fisheries Agency.79 The only agreement of its kind, the US Treaty, grants US flagged vessels 40 purse seine licenses with access to the exclusive economic zones of all of the Pacific Island Parties (PIPs) to the agreement.80 There is an option for another five ‘joint venture’ licenses, though this class of license has not been used in the history of the US Treaty. In exchange for the licenses, the US government pays a US$ 18 million sum for broader cooperation and the US fleet pays US$ 3 million in licensing fees annually.81 The payments are distributed to Pacific Island Parties according to a formula documented in an agreement among the contracting parties.82

Since 2000, the US purse seine fleet has caught between 4% and 14.6% of total purse seine catch in the WCPFC statistical area. Notably, from 2007 to 2008, the US fleet catch more than doubled from 88,736 mt and 4.9% of total WCPFC catch) to its highest share since 2000 (209,374 mt and 11.2% of total WCPFC catch) (see Figure 2.6). In 2009, the US fleet catch continued to increase markedly to 281,589 mt (representing 14.6% of WCPFC catch).83

The industry does not talk about the fleet as having ‘expanded’ or ‘grown’ since 2007. Instead, since the fleet and the State Department have been paying to support 45 licenses during the entire course of the US Treaty, the industry indicates that it is simply using the licenses that it has been paying for all along.84

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77 This occasional activity is why US Treaty observers are certified for the EPO/ IATTC, as well as the WCPFC.
78 This transition occurred in the 1980’s when the US government began to require ‘dolphin safe’ tuna. The US fleet caught tuna on dolphins in the Eastern Tropical Pacific. In the 1980’s the fleet moved to the WCPO where tuna and dolphin do not school together or re-flagged into Central and South American fleets. See: Joseph 1994, Havice 2009.
80 The ‘Pacific Island Parties’ are: Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, Niue, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu and Vanuatu.
81 When skipjack prices landed in American Samoa exceed US $850/short tonne, vessel owners also pay additional fees to PIPs under the ‘Indexing Scheme’.
82 Havice 2010: 983.
83 FFA 2011.
84 Interview, US industry representative 2010.
In addition to fishing in the WCPO, under the Inter American Tropical Tuna Convention (IATTC), the US is authorized to have a fleet capacity of total well volume of 39,000 cubic metres. In 2005, the US adopted a voluntary lower capacity of 9,000 cubic metres as a diplomatic measure. However, a US National Marine Fisheries Service (NMFS) proposal will drop the self-imposed limit and allow fleet capacity to rise to 31,000 cubic metres.\textsuperscript{85} It is unclear if the US fleet is interested in utilising the capacity expansion; instead, the move has been seen as recognition from the US government that its effort to encourage IATTC members to curb capacity has not been successful.\textsuperscript{86} However, even without retracting the voluntary ban, the two US vessels operating in the EPO had capacity of only 1,200 cubic metres, leaving room for a seven-fold increase in fleet capacity. Even if the US fleet were to grow in the EPO, it would face the challenge of meeting the ‘dolphin safe’ requirements for the US market.

### 2.5.3 Major markets

The US fleet has three major market outlets. The ‘old’ fleet is based in Pago Pago and many of the vessels continue to offload directly to the StarKist plant in American Samoa. According to industry officials, as of 2010, American Samoa was procuring approximately 20-30% of the US fleet’s fish,\textsuperscript{87} though it is unclear how this ratio was been impacted by the closure of COSI in American Samoa. Nearly all product processed in American Samoa is intended for the US market. Production in American Samoa is eligible for duty free access to the mainland US market through a special provision in the US Harmonised Tariff System (see Section 4.4 for more on American Samoa).\textsuperscript{88}

\textsuperscript{85} Courthouse News Service 2010.
\textsuperscript{86} Interviews, US and fisheries management representatives 2010.
\textsuperscript{87} Interview, US industry representative 2010.
\textsuperscript{88} This provision is known as Headnote 3A of Section 936. Full US HTS is available at: http://www.usitc.gov
The vast majority of the fleet’s catch is transshipped to canning and loining destinations primarily in Bangkok and Latin America.\(^9\) During the 2008-2009 licensing period, the US fleet increased transshipping activities in Pacific Island Parties ports (including Majuro and Pohnpei).\(^9\) For fishing trips during the 12 month licensing period ending 16 June 2009, the US fleet unloaded approximately 71% (174,179 mt) of its catch in Pacific Island Party ports to carriers. This increased to 80% during the last six months of the 2009 licensing period. The US fleet indicated that because transshipment has become an important component of the business model for many of the US vessels, it is likely that US vessels will continue to offload large quantities in Pacific Island Ports.\(^9\) Occasionally, a vessel will unload directly in Bangkok in coordination with a visit to a shipyard in Singapore.

Some of the new US vessels have been criticized for not offloading in American Samoa and supporting the American Samoan economy, despite claiming that they are ‘home ported’ at Pago Pago. However, according to one industry official, if all of the new vessels began offloading in American Samoa:\(^9\)

> It would be a total disaster - the cannery can only handle so much, especially after the closure of COSI.

Another contributing factor to the new US fleet not offloading in Pago Pago is that the ‘oriental’ business model calls for vessels to transship to carriers at the closest possible port and in the shortest possible time. Unloading at Pago Pago typically involves additional steaming time and delays waiting to be unloaded. In the long run, higher fish prices offered at Pago Pago (relative to the Bangkok market) do not offset financial losses incurred from reduced catches due to lost fishing opportunities.\(^9\)

Several industry contacts suggest that there are supply arrangements between some of the expanded US fleet vessels and the US processors (Bumble Bee, Chicken of the Sea and StarKist), whereas when the US fleet had declined to only a handful of vessels, US processors necessarily sourced fish from foreign flagged vessels. The details of any such supply arrangements between the US fleet and US processors are not publicly available. Other sources suggest that most of the fish is sold to Bangkok tuna processors and although not packed by US processors, the canned tuna is eventually exported to the US market and sold to some of the brands which are indirectly linked to the vessels. Given the potential existence of such arrangements and the fact that several of the US investors in the new vessels are linked to US-based processors (though the investments are not directly from the processors), the arrangements reflect a very loose form of vertical integration between the fishing and processing sectors; one that offers vessels a consistent sales outlet and processors a stable source of supply as access conditions to WCPO resources are in regulatory flux and demand for WCPO fish (including in EPO processing sector, see Sections 4.6 and 4.16) is increasing. Industry officials indicated that supply arrangements are likely conducted at an arm’s length (including via trading companies) to ensure that both the vessels and the processors are making efficient production decisions.\(^9\) According to one industry representative:

The US Treaty is very important for the processors. They want their own sources of fish, and they want the US boats because these are sources that they can count on...without the fleet,

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\(^9\) As American Samoa is a US Territory, it is not included as a Pacific Island Party to the US Treaty.
\(^9\) Interview, US industry representative 2010.
\(^9\) Industry representative, pers.comm. 2011.
they would have to depend on foreign sources and there would be less security. Having the fleet helps them to keep the price more stable.

2.5.4 Recent developments and future prospects

The most notable recent development for the US Treaty has been the rapid expansion and growth of the fleet; a development that has shaped the future prospects for the US fleet in the WCPO region. The third phase of the US Treaty is set to expire in 2013 and the US Government and industry and Pacific Island Parties have been re-negotiating the terms of Treaty for over two years. Several important issues that have been under negotiation include:

- **Application of the Vessel Day Scheme to the US Treaty**: In the original text of the Vessel Day Scheme (VDS), US Treaty vessels are exempted from a limit on fishing days, unlike other fleets operating under bilateral access arrangements. PNA countries are now keen to include US vessels under the VDS, particularly since their fishing effort has increased dramatically with the revitalisation of the fleet. However, a fishing day cap cannot be placed on the US fleet until a new Treaty is signed, because the existing US Treaty assures the US fleet unlimited fishing days. Negotiations have been underway between PIPs and the US to determine how the US Treaty and the VDS will operate in conjunction with each other. The US actors are concerned that they will be allocated days based on their 2004 effort levels, despite the fact that the fleet has grown significantly since 2004. The US delegation has indicated that it is willing to comply with the Vessel Day Scheme, but that it requires clear definitions of how the VDS will function and be applied to US vessels. Further, the US indicates that in order for the Treaty to be viable post-2013, the number of fishing days allocated to the US fleet must be commensurate with the total number of licenses paid for under the US Treaty (i.e. 40).

- **US Treaty and Market Access**: Pacific Island Parties have requested that preferential access to the US market for tuna products be included as an element of the post-2013 US Treaty. The US generally does not offer market access on a product-by-product basis and any market access negotiation is likely to have to be facilitated by the US Trade Representative and/or to be a Congressional Act. Directly linking the US Treaty and market access seems unlikely, though market access could potentially be negotiated through other avenues. The effort, however, demonstrates Pacific island countries’ interest in utilising their control over fisheries access as a way to further engage in the broader tuna production chain.

- **Broader Cooperation**: Pacific Island Parties indicated interest in the US expanding its investments and development cooperation in the region. In response, the US developed a list of the current contributions that US government and US industry make in the region, including, among other things, US development assistance, support programmes from National Marine Fisheries Service (NMFS) and National Oceanic and Atmospheric Administration (NOAA), the US Treaty Indexing Scheme, as well as Bumble Bee involvement in PAFCO (Fiji). In late 2010, the US indicated willingness to entertain further proposals for broader cooperation and was waiting for specific requests from the Pacific Island Parties.

95 Interview, US industry representative, 2010. Another notable industry representative has indicated that it is debateable as to the influence the US fleet has on stabilising prices for US processors.

96 Beginning in 2008, the Parties to the Nauru Agreement switched their management structure from a cap on vessel number to a cap on vessel fishing days, creating the Vessel Day Scheme. The Palau Arrangement for the Management of the Western Pacific Purse Seine Fishery - Management Scheme (Vessel Day Scheme) 2005.

97 The so-called ‘indexing Scheme’ is intended to increase the benefits to the Pacific Island Parties through revenue-sharing when skipjack prices to tuna landed in American Samoa exceed US$850 per short ton, which they have done regularly in the two year prior to the publication of this document. Notably, the closure of COSI in American Samoa (see Section 4.4) has reduced the quantity of fish offloaded by the US fleet at American Samoa and stands to reduce the revenues of the indexing scheme.
While both parties had expressed strong interest in the continuation in the Treaty during negotiations, in May 2011 PNG announced its intention to withdraw. Hence, after 25 years, the US Treaty looks set to end in June 2012.

The US fleet has had a strong and rejuvenated presence in the WCPO and the region is the primary fishing grounds for the US fleet. The US Treaty has also been the primary source of international diplomacy in the region. The US government had expressed interest in maintaining the Treaty, which provides an important source of supply for US-based processing firms and keep the high operating cost US fleet competitive against lower-cost competition. Also, the security of licenses through the US Treaty has strengthened the commercial links between the US processors and the US fleet and also attracted foreign investment.

Unless a new multilateral treaty is negotiated between the US and PIPs which more adequately addresses PIP’s demands (i.e. inclusion of stronger fisheries management provisions and better reflects PIP’s development aspirations (in terms of onshore development, broader cooperation and market access), the US purse seine fleet will likely have to annually negotiate bilateral fisheries access arrangements like other distant water fishing fleets, if it wishes to continue fishing in PIP waters, post June-2012. The end of the US Treaty will also eliminate the US government’s main diplomatic activity in the region.

The increased investment in the US fleet and the closure of the Chicken of the Sea plant in American Samoa in 2009 have partially altered the operational strategies of the US fleet. While some vessels still offload at American Samoa, the StarKist plant can absorb only so much product, particularly since it has also endured ongoing operational difficulties and has been reducing its total daily throughput. The majority of US fleet catch is transhipped from PIC ports to processing plants in Bangkok and Latin America.

The purchase of the ex-Samoa Packing (Chicken of the Sea) plant at Pago Pago by Tri Marine in late 2010 will change the situation, but it is too early to determine the extent of any changes. The plant is being refurbished, and is unlikely to reach full scale production until 2012. Certainly, there will be increased opportunities for vessels to unload at Pago Pago in future.

Historically, the US Treaty has been highly profitable for the WCPO, particularly because when the fleet was paying for 45 licenses, but only using ~10, PIPs were able to re-sell the unused licenses. With the expansion of the operational US fleet, some PIPs have sought to increase the profits associated with the Treaty. The US Government and industry are highly invested in the US presence in the WCPO and the US Treaty is the critical link for their engagement in the region.

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98 Under US Treaty provisions, if one of four key members of the Treaty withdraws (US, PNG, FSM or Kiribati), then the Treaty ceases one year after lodging of the notice of intention to withdraw.
The ‘new’ fleet will be placed under additional regulation and scrutiny, with the implementation of recently announced US Coast Guard regulations concerning foreign officers. A two-year exemption was originally granted for US Treaty vessels that are ‘home ported’ in American Samoa. However, this exemption expired in July 2010. Strong lobbying by the ATA resulted in renewal of the exemption, but the USCG has exercised its right to set implementing regulations. Under these regulations, each vessel will be required to make at least one port called in Pago Pago per annum for inspection. Taiwanese-managed vessels with Taiwanese officers may experience difficulties complying, because Taiwan is not a party to the International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW).101

**Key Points: US**

- In the 1980’s and 1990’s, the US purse seine fleet was comprised of 30-50 vessels. The fleet was deeply affected by international competition and declining fish prices in the early 2000’s and contracted significantly to 11 vessels. Since 2007, the fleet has burgeoned again as a result of external investment, with 37 vessels active in the WCPO in 2010.
- The US fleet is now characterised by two vessel groups – the ‘old fleet’, being US-built and owned vessels which have been historical players in the fleet (18 vessels in 2010); and, the ‘new fleet’ (18-19 vessels in 2010), being Taiwanese-built vessels which have come under US flag since 2007, under joint venture arrangements between US nationals and foreign investors.
- US vessels spend the majority of their time fishing in the WCPO, with 40 licences available under the US Multilateral Treaty. Occasionally, US vessels will fish in EPO waters. With fleet re-expansion in 2007, total catch volumes in the WCPO expanded rapidly from 88,736 mt to 209,374 mt in 2008. In 2009, total catch was 281,589 mt.
- Around 20% of the US fleet’s catch is offloaded in American Samoa for processing, mostly by the ‘old fleet’ which is based in Pago Pago. The majority of catch (80%) is transhipped from WCPO fishing grounds to tuna processors in Thailand and Latin America, largely due the ‘new fleet’ utilising the Taiwanese operational model.
- The US Treaty is set to expire in 2013 and negotiations have been ongoing between the US Government, US industry and Pacific Island Parties for the Treaty’s renewal since 2009. In light of overcapacity in the WCPO purse seine fishery and related sustainability concerns, PIPs have been seeking to apply fishing effort restrictions to US vessels under the Vessel Day Scheme. In addition, PNA members in particular, are seeking greater economic returns in the form of domestic development, increased broader cooperation and preferential market access to the US.
- In May 2011, PNG tabled its intention to withdraw from the US Treaty, which means from June 2012, US vessels will need to negotiate bilaterally for fisheries access, unless a new multilateral treaty can be negotiated.

102 Thomas 1999.
103 Lewis 2004.
104 Babaran 2007: 9 – Figure 7.
2.6 Philippines

2.6.1 Current fleet status

Philippine tuna fisheries were amongst the first to develop on a large scale in the WCPO, starting in the 1970's with development of purse seine and ring net fishing around FADs (payaos). The fishery grew rapidly, initially within Philippines waters, then steadily expanding during the 1980's to Indonesia, PNG and other adjacent WCPO waters.\(^{102, 103}\) Total purse seine fishery production (all areas) may have peaked at over 500,000 mt in the early 1990's but has declined slightly since that time.\(^{104}\) The ring net fishery, which also catches oceanic tunas and smaller pelagic species with a similar surround net, developed slightly later and continues to operate at a lower level of catch. There is no pole and line fishing in the Philippines. Despite the reported decline in the number of purse seine vessels since the 1990's, the Philippines still has one of the largest fleet of purse seiners in the WCPO. Forty tuna purse seine vessels greater than 250 GRT were registered to fish in the WCPFC Convention area in 2009,\(^{105}\) as well as 55 smaller purse seine vessels (< 250 GRT). This does not include ring net vessels and some of the small purse seiners (the so-called ‘baby purse seiners’) which do not generally fish far beyond Philippines waters and are not usually registered to operate in the WCPFC area.

Over 20 of the larger purse seine vessels currently fish in PNG waters under bilateral access agreements, a further eighteen are fishing under charter arrangements in PNG and are regarded as part of the PNG fleet, whilst eight have re-flagged to PNG.\(^{106}\) Nearly all of the vessels are second or third hand and mostly more than 20 years old. Catch rates are significantly lower than those of the larger and more modern DWFN vessels operated by Japan, Taiwan, Korea, USA etc. The smaller Philippine vessels typically operate with carrier vessels to tranship catch and prolong time spent at sea.

Around ten private companies dominate Philippines purse seine vessel ownership, several of which have diverse interests extending beyond the fisheries sector.\(^{107}\) Some of the companies are vertically integrated, operating tuna processing facilities as well. The remaining companies solely operating fishing vessels are generally the smaller vessel owners. General Santos, in southern Mindanao, remains the centre of the Philippines tuna industry, the so-called ‘tuna capital of the Philippines’, with most of the major fishing and processing companies based there.

The primary tuna industry association is the Soksargen\(^{108}\) Association of Fishing and Allied Industries Inc. (SAFAII), based in General Santos. There is also a National Tuna Council which meets regularly to consider national policy issues in the tuna fishery. The Philippines Government, through the Bureau of Fisheries and Aquatic Resources (BFAR)\(^{109}\) has played an active role in national tuna resource management and securing the interests of Philippines overseas operations. A Tuna Fishery Management Plan has been in place since the mid-2000s and Philippines has been a cooperating member of WCPFC since the commission was first established.

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\(^{102}\) Barut and Garvilles 2010. WCPFC lists generally exclude vessels not authorized to fish beyond Philippine waters, so the total number of Philippine flag vessels is even larger.

\(^{103}\) PNG vessel register. National Fisheries Authority 2010.

\(^{104}\) Including RD Fishing Industry, Frabelle FC, Amadeo, TPJ Corp., TSP Marine Industries, Celebes TFC, DFC TVC, Damalerio FE, San Lorenzo FI, NH Agro Industrial Inc., RCRS Marine and Industrial.

\(^{105}\) Acronym for the provinces of South Cotabato, Sultan Kudarat and Sarangani in southern Mindanao, plus the General Santos municipality.

\(^{106}\) The Bureau of Fisheries and Aquatic Resources sits within the Department of Agriculture and is the primary fisheries agency within Philippines Government.
2.6.2 Global fishing operations

All Philippines purse seine fishing activity is believed to take place in the WCPO, although there may have been limited fishing in the north-east Indian Ocean in the past. Philippines has a bilateral agreement with Timor Leste and is reportedly looking at extending operations to that area.\(^\text{110}\)

Fishing by less than twenty Philippine longline vessels occurs in all oceans, but more so in the Indian and Atlantic Oceans and rarely in the WCPO.

2.6.3 WCPO fishing operations

The total Philippines oceanic tuna catch by domestically-based vessels in 2009 was estimated to be 266,000 mt, with 148,000 mt caught by domestically-based purse seiners, 37,500 mt by ring net vessels (these two gears accounting for 70% of total catch) and the remainder by other gears. An amount of 71,400 mt was taken by Philippines-based vessels fishing in PNG waters and is included above, whereas a similar amount (~70,000 mt) caught by Philippines chartered vessels based in PNG is not. Hence, the total catch of oceanic tunas by Philippines-owned and flagged vessels was in the order of 336,000 mt in 2009.\(^\text{111}\)

Tuna production estimation for the Philippines has been problematic in the past (and similarly for Indonesia) due to incomplete and uncoordinated data collection and monitoring. However, improvements in data quality have been made in recent years to produce increasingly more reliable estimates. The official oceanic tuna catch estimate for 2009 (409,000 mt)\(^\text{112}\) does not provide a catch breakdown by gear, but around one-quarter of the catch is attributed to municipal landings by small vessels (< 3 GT) fishing in inshore areas. There other issues with the estimate (e.g. double counting) and hence, the estimate listed above (336,000 mt) is considered more reliable.

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\(^{110}\) Sarmiento 2010.


Domestically-based fishing operations have become increasingly constrained by the cessation of activities in Indonesian waters at the end of 2007, when the access agreement with Indonesia lapsed and was not renewed. An estimated 100,000 mt per annum of tuna had possibly been taken in Indonesia waters prior to that. Some Philippine vessels have recently re-flagged to Indonesia as a result (discussed below).

Most recently, the Philippines domestic fishery has reportedly been hard hit by the closure of the two high seas pockets in the WCPO at the beginning of 2010, with sharp declines in production claimed and staff lay-offs. Philippines introduced a voluntary FAD closure for two months during 2009, aligning with the WCPFC initiative, but has since relaxed that measure for the current closure period (July–September 2010) provided net dimensions meet certain requirements.

The cumulative effect of these restrictive measures has created pressure to expand fishing opportunities available to the Philippines fleet to alternative areas and the possibility of additional fishing in PIC waters continue to be explored. Solomon Islands appears to be the highest recent priority, with Frabelle (and Dongwon of Korea) announcing plans to establish onshore processing facilities there, which will presumably also involve licensing vessels to fish in Solomon Islands’ waters. Nine new Philippine vessels also began fishing in PNG during 2008-09 under expanded bilateral access agreements, in addition to the large number of vessels already operating there. Philippines has also made repeated attempts to conclude a fisheries access arrangement with Palau, but in line with efforts by Palau to limit purse seine fishing activity in its EEZ, these have been unsuccessful to date. There has been bilateral access fishing in FSM waters in the past and at least one Philippine company is considering operations there in the future.

2.6.4 Major markets

Catch from Philippine domestic purse seine vessels is largely processed by Philippines canneries. Most of the domestic Philippines purse seine catch, an estimated 130,000 mt, is directed to the seven domestic canneries. Part of the catch of Philippine chartered vessels operating in PNG supplies PNG canning facilities, with the remaining catch generally exported to the Philippine domestic processing facilities. Ring net vessels also contribute an estimated 25% of their catch (around 9,000 t in 2009) to domestic cannery production.

Much of the large municipal catch by small artisanal vessels, ring net and ‘baby seiners’ is supplied to local fresh/frozen fish markets (possibly 130,000 mt in total). With a population of over 90 million, the local market for fresh/frozen tunas (both neritic and oceanic) is large.

There are nonetheless considerable amounts of frozen whole round fish exported from Philippines, notably to Thailand (23,000 mt in 2009) and probably Vietnam, by both domestic and PNG-based fleets. Some was exported to Indonesia in the past to supply raw material to joint venture canneries in Bitung, but these are now locally supplied, in part by Philippine vessels that have re-flagged to Indonesia.

113 Lewis 2004a. Includes an unknown proportion in adjacent high seas areas.
114 Atuna 2010a.
115 Atuna 2010b.
116 Sarmiento 2008.
117 Philippines industry source, September 2010.
118 Thai Customs 2010.
While canned tuna is mostly exported to the EU and US markets (see Chapter 5), there have been increasing volumes of exports of frozen tuna to the EU in recent years (almost 7,000t in 2009), which may include both large yellowfin for canning, as well as processed sashimi-grade tuna. Philippines is approved under the recently introduced EU-IUU Fishing Regulation to supply fish to the EU market. Following the collapse of the EU/ASEAN Free Trade Agreement (FTA) negotiations (see Section 12.5), Philippines is reportedly pursuing a bilateral FTA with the EU.

2.6.5 Recent developments and future prospects

It is generally recognized by industry that there is no potential to increase the oceanic tuna catch within the Philippines EEZ, with the resource believed to be fully exploited or even over-exploited. In addition, fleet activity has been squeezed by reduced access to Indonesian waters, coupled with the impact of recently introduced WCPFC/PNA initiatives (i.e. FAD closures, high seas closures). Philippines had considerably underplayed its reliance on fishing in high seas pockets initially and has likely been the country most impacted by these initiatives.

Relocation of larger vessels in the purse seine fleet, primarily to PNG under access agreements, has been an ongoing response by Philippine industry, as well as re-flagging vessels in Indonesia and earlier, PNG. This vessel relocation is likely to continue in the case of PNG and also be extended to the Solomon Islands, but there will eventually be a ceiling to this if effort limitation under CMM 2008-01 and the Vessel Day Scheme proves effective. Some relief has also been afforded by the exclusion of effort in archipelagic waters from the VDS and other purse seine fishery-related WCPFC conservation and management measures, which applies to both PNG and the Solomon Islands. The smaller Philippines vessels primarily fishing on FADs have been particularly suited to fishing in archipelagic waters and there is some optimism that smaller vessels may also be able to successfully fish free schools in these inshore waters. But again, there will eventually be a limit to the amount of fishing that can be sustained in archipelagic waters. Catch in PNG’s archipelagic waters reached a record level of almost 100,000 mt in 2009 and it is unlikely that these waters could sustain catches much beyond this level.

The reducing domestic supply in Philippines has also impacted Philippines domestic canners, with the second largest capacity and production in the WCPO after Thailand. Two of the seven canneries are facing some serious supply problems. Until now, this shortfall has increasingly been covered by sourcing more fish from foreign vessels and from an expanded bilateral access fleet in PNG waters. This external sourcing is likely to continue to grow just to maintain production at the present capacity, let alone some planned expansion in capacity (see Section 4.7).

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119 Eurostat 2010.
120 Atuna 2010c.
121 Atuna 2010d.
122 A revised industry estimate of the catch by Philippine vessels in high seas areas during 2004 was 107,429t by 41 vessels, involving 4,659 fishing days (WCPFC-5 2008-13, Attachment B) which differs vastly from an initial estimate of 459 days.
123 Two Philippines vessels (Damañero FC) are already listed as Solomon Islands-flagged vessels on the FFA Regional Vessel Register, with more expected in association with the planned Frabelle Fishing Company processing plant for Solomon Islands (Guadalcanal Province).
124 Author’s opinion based on area of archipelagic waters and average productivity. Total EEZ catch now exceeds 500,000 mt in most years and there seems little prospect of further increasing this on a sustainable basis.
125 One Philippine source says 80% of supply may have been sourced from foreign vessels in 2010, compared with 425 mt in 2009.
126 There is also a report of plans to develop a tuna cannery in Surigao (north-east Mindanao) in 2011. Atuna 2010e.
Philippine processors are also aggressively expanding into the construction of overseas plants, with additional plants with Philippine involvement planned for PNG (Lae, Madang) and Solomon Islands, in addition to the existing plants (loining and canning) in PNG (Madang, Lae) and Indonesia (Bitung). Supply to these new operations will no doubt come from existing Philippine vessels that are either relocated or re-flagged, or additional vessels that will be purchased second hand or even constructed.\textsuperscript{130}

Philippine purse seine vessels will continue to be a key supplier of product to both their domestic processing plants and plants in PICs, notably PNG and potentially, Solomon Islands, but this will increasingly likely be under a variety of mostly second generation access arrangements allowing Philippine-owned vessels, re-flagged or not, to fish in PIC EEZs, in return for landing some, if not most of their catch there for processing.

Key Points: Philippines

- The Philippines has one of the largest purse seine fleets operating in the WCPO – in 2009, 40 large vessels (>250 GRT) and 55 smaller vessels (<250 GRT) were on the WCPFC vessel register.

- Twenty-two large PS vessels currently fish in PNG waters under bilateral access arrangements; a further 18 operate under charter arrangements in PNG (and are regarded as part of the PNG fleet) and eight vessels have re-flagged to PNG.

- Catch rates of Philippines vessels are significantly lower than those of the larger and more modern vessels operated by other DWF fleets operating in the WCPO (e.g. Japan, Taiwan, Korea). Total catch by domestic vessels in Philippines waters in 2009 was estimated at around 148,000 mt, with a further 71,400 mt caught in PNG waters by foreign access vessels. Philippines chartered vessels operating in PNG caught around 70,000 mt (although this catch is attributed to PNG).

- Catch from Philippines domestic vessels is largely processed by Philippines canneries (around 130,000 mt), with the remaining catch exported to Thailand and possibly, Vietnam. A portion of catch by PNG-based vessels is processed by PNG processors (owned by Philippines investors), with the rest either exported to Philippines domestic canneries and Thailand.

- The Philippines domestic fleet has been significantly hampered by the loss of access to Indonesia waters in 2007, as well as the recent closure of several WCPO high seas areas. To maintain catch levels, the Philippines fleet is under pressure to find alternative fishing grounds, which will likely see increased fishing in PIC EEZs by existing vessels, as well as additional vessels seeking licences in association with new processing plants (in PNG and the Solomon Islands).

\textsuperscript{130} One new vessel has been constructed for the PMIZ joint venture cannery (Niugini Tuna) and will begin fishing before the end of 2010, PNG industry source 2010.
2.7 China

Most of the impetus for China’s entry and expansion in the tuna industry worldwide has come from state-owned enterprises (SOEs). SOEs may operate companies outright or have subsidiary or ‘sister’ companies that function as stock companies. In the latter case the government typically retains the majority ownership and provides the management. Officials of both types insist that their companies are operated on a fully commercial footing. SOEs may be national or provincially-based. There may be some cross-investment between the two in the tuna fishery sector, but this is not well understood.

An example of an SOE active in tuna fishing is the China National Fisheries Corporation (CNFC). CNFC engages in oceanic tuna fishing with three purse seiners and three ULT longliners. The company has several branches in China as well as 270 vessels in other fisheries worldwide, including trawlers, longliners, purse seiners and oil tankers. CNFC is also the major shareholder in a ‘sister’ company, CNFC Overseas Fishery Company Ltd. that owns and operates albacore longliners based in Fiji, as well as squid vessels operating in the Atlantic and Pacific Oceans.

CNFC is in turn a part of the China National Agricultural Development Group Corporation (CNADGC), a large SOE created in 2004 through a merger between CNFC and an agriculture-based SOE that resulted in ‘the largest internationalized state-owned central agricultural enterprise in China’ with 80,000 employees and 15 wholly-owned or share-controlled subsidiaries and 3 publicly listed companies. Governance of this and other national SOEs comes under a State-owned holding company, the Assets Supervision and Administration Commission.

A Chinese government policy encourages the building and export of fishing vessels by providing tax incentives to shipyards in China for vessels that are exported. Since the shipyards in China building such vessels typically have ties to the operating SOEs, the savings can be passed along in the form of less expensive vessels. Other incentives include a fuel subsidy paid retrospectively, which is based on annual fluctuations in oil prices. It is not known if this latter subsidy is available to Chinese-owned, but non-Chinese-flagged vessels operating in the WCPO.

Chinese Government license authorization for tuna vessels is by ocean area. These areas can be general, such as ‘Pacific Ocean’ or specific, such as WCPO. If a vessel is intending to fish within the EEZ of a coastal state evidence of a licence or opportunity for a license and coastal state approval must be obtained. There is no government limit on the number vessels that may be authorized, other than what is practical given specific RFMO quotas or restrictions.

All companies fishing outside of China, whether in high seas areas or coastal state EEZs, are members of the China Fisheries Association. The Association’s Distant Water Fisheries Branch is in charge of coordination and support to China’s distant water and overseas-based tuna fleets, including assistance with bilateral access agreements.

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131 One official of an SOE stock company engaged in tuna fisheries noted that since he had the same standing as a civil servant there was more responsibility and obligation to consider the welfare of the State in business decisions and not act as one might expect in a purely private enterprise.
2.7.1 Current fleet status

Vessels in two fisheries provide raw material for canned tuna: purse seiners operating in the WCPO produce skipjack and yellowfin (light meat) and albacore freezer longliners produce primarily albacore (white meat).

i) Purse seine

China began to develop its WCPO tuna purse seine fleet in 2001 with one older vessel obtained from Taiwan. By 2003, there were six vessels active in the fleet. There are now a total of 16 tuna purse seiners controlled by Chinese firms. Twelve are registered in China, three in the Marshall Islands and one in FSM. Of the 16 vessels, 14 were bought as second-hand (or even third-hand). Two are new vessels that were pre-fabricated in Taiwan and assembled in China in 2009-2010. All vessels operate in the WCPO purse seine fishery. Table 2.2 summarises the ownership arrangements of China’s purse seine fleet.134

Table 2.2 Number and Ownership of Functionally Chinese Purse Seiners (2010)

<table>
<thead>
<tr>
<th>Parent company in China</th>
<th>Subsidiary or owning entities in China</th>
<th>Number of vessels</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wanxiang Group</td>
<td>Zhejiang Ocean Fisheries Group Co. Ltd.</td>
<td>2</td>
</tr>
<tr>
<td>Shanghai Fisheries General Group Corporation</td>
<td>Shanghai Kaichuang Deep Sea Fisheries Co. Ltd.; Shanghai Deep Sea Fishing Co.</td>
<td>9</td>
</tr>
<tr>
<td>Shandong Group Corporation of Fishing Enterprises</td>
<td>Shandong Zhonglu Oceanic Fisheries Co. Ltd.</td>
<td>2</td>
</tr>
<tr>
<td>China National Agricultural Development Group Corporation</td>
<td>China National Fisheries Corporation (CNFC)</td>
<td>3</td>
</tr>
</tbody>
</table>

In addition to these 16 vessels, officials of CNFC confirmed that their company also holds a substantial interest in two Taiwan-registered purse seiners active in the WCPO tuna fishery.

ii) Longline

Although China operates longline vessels in the Atlantic and Indian Oceans, as well as the Pacific, its albacore-targeting fleet operates exclusively in the WCPO using Suva as a primary base of operations. Ownership and investment in the Fiji-based albacore longline fleet is not entirely clear. The total number of authorized longline vessels of all flags based in Fiji during 2009 was reported as 99, consisting of vessels licensed to fish in Fiji waters (including chartered vessels), plus unlicensed, but Fiji-flagged vessels operating principally outside Fiji waters that use Fiji as a base for unloading bunkering and provisioning.135

134 Three of the four parent companies are SOEs. In 1999, Zhejiang provincial government created Zhejiang Ocean Fisheries Company. In 2004 the Wanxiang Group, a large privately-held holding company for diversified industrial companies in China and North America, purchased majority shares in the company http://www.zheyu.cn/access_en/about2.htm.

135 Amoe 2010: Table 2.
One industry participant in China estimated there were up to 80 functionally Chinese longline vessels operating in and from Fiji in 2009. The functionally Chinese vessels are owned and controlled by several Chinese operators, including CNFC Overseas Fishery Company Ltd., with 27 vessels under its Seafresh subsidiary (about one-third of the total). Three other SOEs, including some from the provincial level, are also thought to have vessels engaged in the fishery. These vessels typically are supported by local operators such as the Golden Ocean company that provide the various services required, including purchase and/or marketing of the catch.

2.7.2 Global fishing operations

i) Longline

China's production of albacore for canning comes primarily from the albacore-targeting longline fleet in the WCPO. The albacore catch by China-flag longliners has grown in recent years to a point where China now catches the largest volumes in the WCPO. The total reported catch of nearly 20,000 mt in 2009 is an increase of 5,000 mt from 2008; at least partly the result of the expansion of the fleet by around 20 vessels. 136

The incidental catch of albacore from bigeye-targeting ULT longline vessels operating in the Atlantic and Indian Oceans is reportedly small. In 2008, albacore by-catch was less than 100 mt from the Atlantic137 and 158 mt from the Indian Ocean.138

2.7.3 WCPO fishing operations

i) Purse seine

In 2009, China's twelve registered purse seiners reported a total catch of about 77,000 mt; about 88% of which was skipjack. The 2009 catch represented a 39% increase from the 2008 catch of 55,500 mt. The catch per vessel for the twelve vessel fleet increased from around 4,600 mt in 2008 to almost 6,400 mt in 2009.139 The increase came almost entirely from higher catches of skipjack which is consistent with the results of other purse seine fleets where skipjack catches for all set types increased to record levels in 2009.140 Most vessels transhipped their catch in ports utilized by other transhipping purse seine fleets in the WCPO, including Pohnpei and Majuro.

In 2009, one vessel associated with Shanghai Kaichuang Deep Sea Fisheries Co. Ltd. began delivering to the company's newly-opened loining plant in Majuro (Pan Pacific Foods (RMI) Ltd.). Direct deliveries to this facility by the company's vessels are expected to increase during 2010 to around 8,000-10,000 mt.141

The overall age of the functionally Chinese purse seine fleet is about 18 years, with vessels built from 9 to 27 years ago. Nine of the 16 vessels were built in Taiwan and are approximately 1,000 GRT with an average age of about 20 years. Four larger vessels built in Europe average about 22 years in age and 1,750 GRT. The two newest vessels built in 2010 were added to the non-Chinese flag fleet.

137 ICCAT 2009: Table 1.
138 Xu et. al. 2008: 3.
139 Dai et. al. 2010: 7.
140 Williams and Terawasi 2010: 12.
141 Four purse seine fishing licences have been granted in conjunction with the Pan Pacific Foods (RMI) Ltd. loining plant. In late 2010, three vessels have commenced fishing and one vessel was still under construction in China, due for completion in 2011.
Chinese owned and registered purse seiner registered and flagged in Marshall Islands. Photograph: WCPFC.

### ii) Longline

Fishing activities by the Chinese owned and managed fleet based in Fiji take place in high seas areas to the west of Fiji and the EEZs of Vanuatu, Solomon Islands and Fiji. It is not clear how many vessels have access to the Fiji EEZ or archipelagic waters, but the numbers are believed to be less than the number fishing in the other areas. The Fiji government’s notification to the WCPFC pursuant to Conservation and Management Measure CMM 2009-08 (Charter Notification Scheme) indicated a total of thirteen China-registered longliners on charter to companies in Fiji. Owners of the vessels included SOEs from Guangdong Province, Shanghai, Shenzen and Guanzhou cities.

Depending on vessel capabilities and configuration, vessels deliver primarily cannery-grade albacore, as well as some fresh bigeye and yellowfin for export and wahoo, mahi mahi, opah and other marketable incidental catch for the local market. The company with the largest number of vessels in the fishery estimates that 60-65% of their total catch is cannery-grade albacore.

Total albacore catch of the entire functionally Chinese longline fleet operating in the WCPO is difficult to estimate due to the fragmented manner of presentation of data available in the public domain. Given the reported catch by China-flag vessels of nearly 20,000 mt, it is estimated that the total catch is on the order of 22,000-27,000 mt.
2.7.4 Major markets

Purse seine-caught fish of the functionally Chinese fleet can find different markets depending upon the business arrangements of the SOEs involved. Those without any direct processing ties usually market their entire catch to one or more of the three major trading companies active in the WCPO, resulting in most of their catch being sent to Thailand (see Chapter 3). At least some of the catch, possibly in the order of 15,000-20,000 mt or more, is believed to be sent to China for processing. This is most likely the case for companies with a financial interest in processing facilities in China (see Section 4.10). Beginning in 2009, some of the catch was landed in Majuro for processing by vessels associated with the recently-opened Chinese loining plant, PPF (RMI) Inc. Loins produced by the Majuro loining plant are marketed by Tri Marine.

The WCPO longline fleet is geared towards providing albacore to the canneries in Levuka and American Samoa, with most of the catch transhipped in Suva by container. Even though shipping costs are less to Levuka than American Samoa, the alternative market (Samoa) is preferred. This market option not only increases buyer competition, but is useful when large unloading volumes delay Suva-Levuka container shipments, which typically occurs during and immediately following the peak fishing season of June-September. From a geographic/logistics standpoint, container shipments to American Samoa are necessary because of its location 800 miles to the east of Suva, while most fishing takes place to the west.146 The cessation of albacore processing in American Samoa, if it transpires, would require a major re-thinking of the marketing arrangements for a substantial component of the Chinese fleet operating from Fiji.

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146 Chinese vessels are also hesitant about entering American Samoa because of the environmental requirements placed on vessels unloading there that are generally more stringent than those in Fiji, as well as enforcement of regulations by the US Coast Guard.
2.7.5 Recent developments and future prospects

Government policy in China strongly supports expansion of the agriculture sector, of which fisheries, including overseas tuna fisheries, is a part. As such, China considers itself in ‘developmental’ mode when it comes to WCPO tuna fisheries, particularly the purse seine and albacore longline fisheries. To China, these fisheries represent significant opportunities for expansion and increases in fishing capacity and overall catch. The dominant role of SOEs ensures that there is capital available for expansion and favourable government subsidies, such as that for fuel and shipbuilding can assist new or existing enterprises.

One enterprise intended to benefit longline operations is a base in Vanuatu being developed by CNFC Overseas Fishery Co Ltd. that will reportedly enable vessels to operate more efficiently due to its closer location to albacore fishing grounds. Some facilities have been constructed; however, it is not clear what processing will be undertaken or how this might affect the operations of the vessels.

On the technical level, two recent advancements are the building of purse seiners in China to be operated in conjunction with the Majuro loining facility and the introduction of a newer class of Chinese-built albacore longliners for the CNFC subsidiary in Fiji. Although the first purse seiners built in China were pre-fabricated from Taiwan, the newest one is being built completely in China. The new class of longliner will have larger fish holds (up to 100 mt) and enable more deep freezing of incidental bigeye and yellowfin to enable longer periods at sea.

China’s canned tuna fishing industry is still trying to determine the best developmental strategies suitable to each fishery sector. Fleet expansion, as well as increased vessel registration in Pacific island countries (with or without joint venture status) is one strategy currently employed. The development of processing facilities and shore bases in Pacific island countries coupled with fishery access is another. Depending on the success or failure of these ventures, the evolving economics of each fishery and the regulatory requirements enacted by the WCPFC, these strategies may continue to be employed or new ones devised and introduced. One thing is clear: China has entered the WCPO tuna fishery in a significant manner and intends to stay and expand.

Key points: China

- As China only began to develop its WCPO purse seine fleet in 2001, it is a relatively new player in the fishery. In 2010, Chinese firms owned 16 purse seiners, with twelve registered in China, three in Marshall Islands (with a fourth to commence operations in 2011) and one in FSM.
- In 2009, total catch by Chinese-flagged PS vessels was 77,000 mt.
- PS fishing companies without direct ties to processing facilities market their catch to the three major trading companies, the majority of which is sent to Thailand. Some catch (~15,000-20,000 mt) is likely sent to China for processing. The Marshall Islands registered vessels will offload a portion of their catch to the newly-opened Chinese loining plant in Majuro, with the remaining catch sold to a trading company.
- While China operates longline vessels in the Atlantic, Indian and Pacific oceans; vessels targeting albacore specifically for canning operate exclusively in the WCPO, using Fiji (Suva) as a primary operating base. An estimated 80 or so Chinese-owned vessels operated from Fiji in 2008, with some fishing in Fiji waters, while others operated outside of Fiji waters (in adjacent high seas areas, as well as Vanuatu and Solomon Islands EEZs), while using Fiji as a base. Total reported catch in 2009 was almost 20,000 mt, with albacore supplied to canneries in Levuka (Fiji) and American Samoa.
Key points: China

- Most of the impetus for China’s entry and expansion in the tuna industry, both in the WCPO and globally, has come from state-owned enterprises. Government policy is strongly supporting expansion in the agriculture sector, which includes overseas tuna fisheries. Hence, China is a ‘developmental’ mode in terms of the WCPO purse seine and longline albacore fisheries. Given the dominant role of SOE’s, there is adequate capital available for expansion and government subsidies (i.e. fuel, shipbuilding) to assist new and existing operations. Fleet expansion, including increased vessel registration in PICs, in some cases in association with joint fishing ventures and processing investments, is inevitable.

2.8 Papua New Guinea

2.8.1 Current fleet status

Papua New Guinea (PNG) has an extensive and very productive EEZ (2.5 million km²), over one quarter of which is comprised of archipelagic waters (0.64 million km²). The total catch of oceanic tunas from the PNG EEZ by all fleets has been over 500,000 mt in two of the last four years, accounting for 20-25% of the total WCPO catch. Virtually all the catch is taken by purse seine vessels, with only a small domestic longline and handline fleet. A domestic large pole and line fleet operated in PNG in the past, catching up to 50,000 mt per year, but operations ceased initially in 1981, then after a short-lived revival, definitively in 1985.

The purse seine fishery in PNG began with the arrival of Philippine vessels in 1981, fishing under access agreements and exporting fish to Philippines. This fleet increased steadily during the 1980’s and was augmented with other locally-based foreign vessels, often Vanuatu-flag. The PNG-based fleet, previously consisting of several PNG flag vessels, increased in size in conjunction with the opening of the RD tuna cannery in 1997. Similarly, the fleet expanded once again when the SSTC and Frabelle processing plants came on line during 2004-2006.

As of late 2010, the composition of the PNG purse seine fleet, whose catch is attributed to PNG, was generally understood to include the following components:

- PNG-flagged vessels that fish solely in the PNG EEZ and archipelagic waters and generally unload their catch in PNG ports for processing in PNG plants (8-9 vessels).

- Non-PNG flagged chartered/locally-based foreign vessels (Philippines flag) operated by PNG-based processors under agreements with PNG Government and land a portion of their catch in PNG for processing in PNG plants (this currently includes RDTC and Frabelle (17 vessels) (see Section 4.13).

- PNG home party vessels operating under the FSM Arrangement (FSMA) of several flags (Vanuatu (13), Taiwan (4), China (2), fishing within the PNG EEZ and in other PNA members’ EEZs (19 vessels in total). These vessels also have access to archipelagic waters but generally choose to fish in PNG EEZ waters and beyond, where fish may be more abundant and subject to less intensive competition.

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147 SPC catch & effort database (raised logsheet data) 2010.
148 SPC 2003: 73.
149 Also known as DFZ (Declared Fishing Zone) under PNG legislation. These vessels occasionally take a minor amount of catch outside the PNG EEZ in adjacent high seas waters.
150 A new joint-venture Philippines-flag vessel (Discovery 101) will supply the recently launched PMIZ-based ‘Niugini Tuna’ joint venture processing facility (JV with RDTC, Tri Marine & Fairwell Fishing Company) and is scheduled to begin fishing before the end of 2010; it will likely eventually accede to the FSMA. PNG industry source 2010.
151 Also referred to as chartered or locally-based foreign vessels.
PNG does not strictly regulate the chartered vessels. It reports on their details and the charter arrangements to WCPFC under CMM 2009-08, but the vessels currently remain the primary responsibility of the flag state.

In addition to the PNG fleet, there are 22 Philippine vessels which fish solely in PNG waters, but are not regarded as part of the PNG fleet. These vessels are classified as foreign fishing vessels and operate under bilateral access agreements. Reportedly, PNG's National Fisheries Authority (NFA) may grant some access to archipelagic waters in exchange for an unspecified portion of their catch being landed or processed in PNG. Generally, the vessels are only permitted to fish in EEZ waters (i.e. beyond 12 nm and not in archipelagic waters) (see Section 2.6). All other foreign purse seine vessels of various flags fishing in PNG's EEZ under bilateral access agreements can only fish in waters beyond 12 nm (~140 vessels) and not in archipelagic waters. Foreign purse seine vessels account for around 60% of the total tuna catch in PNG waters.

All purse seine vessels in the PNG fleet are privately-owned, mostly by Philippine and Taiwanese companies. The FSMA vessels are associated either with South Seas Tuna Corporation's (SSTC) loining plant in Wewak (14 vessels - Taiwanese, Vanuatu and Chinese flagged), or Fair Well Fisheries existing net repair facility in Manus Island (5 vessels - Vanuatu flagged, Taiwan-owned).

PNG has had a National Tuna Fisheries Management Plan in place since 2001 and plays an active role in PNA affairs. The PNG Fisheries Industry Association is an active player in the tuna industry and enjoys membership of the National Fisheries Authority Board (two positions).
2.8.2 Global fishing operations

Most components of the PNG fleet are part of global operations, with links to parent companies elsewhere (i.e. RDTC and Frabelle to Philippine parent companies and fleets or plants operating there; Taiwan, Vanuatu and China flagged vessels to parent companies elsewhere). Licenses are issued or charter arrangements made to supply the PNG plants although the vessel capacity and catch currently exceeds that of the associated plants.

2.8.3 WCPO fishing operations

The total catch of tunas in the PNG EEZ in the last four years has been over 450,000 mt, and over 500,000 mt in two of those years (Table 2.3). PNG-flagged and PNG-chartered vessels accounted for around one quarter of this catch, with foreign vessels fishing under bilateral access arrangements taking around two thirds of the total PNG EEZ catch in all recent years.

The total catch of the PNG fleet, as defined above, was estimated at around 200,000 mt in 2009, with about two-thirds of this taken in PNG waters and the remainder taken by FSMA vessels over a wide area of the WCPO (Table 2.4). The estimated catch in archipelagic waters reached record levels in 2009 at close to 100,000 mt.

Table 2.3 Total purse seine catch ('000 tonnes) in PNG waters (2005-2009)

<table>
<thead>
<tr>
<th>Fleet</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNG flagged vessels – EEZ a</td>
<td>22</td>
<td>19</td>
<td>21</td>
<td>25</td>
<td>34</td>
</tr>
<tr>
<td>PNG chartered vessels – EEZ a</td>
<td>90</td>
<td>126</td>
<td>124</td>
<td>112</td>
<td>95</td>
</tr>
<tr>
<td>Foreign bilateral access vessels – EEZ a</td>
<td>175</td>
<td>276</td>
<td>320</td>
<td>354</td>
<td>323</td>
</tr>
<tr>
<td>Various fleets – archipelagic waters b</td>
<td>61</td>
<td>51</td>
<td>69</td>
<td>84</td>
<td>97</td>
</tr>
<tr>
<td>Total catch in PNG waters a,c</td>
<td>325</td>
<td>458</td>
<td>501</td>
<td>517</td>
<td>453</td>
</tr>
</tbody>
</table>

a SPC catch and effort database (raised data).
b WCPFC-SC6-AR/CCM-18. Includes PNG flagged, PNG chartered and selected foreign access vessels permitted to fish in AW.
c PNG EEZ catch components may not sum to total EEZ catch due to use of unraised data in some cells.

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Kumoru 2010.
Peter Williams (SPC) 2010, pers. comm.
PNG fleet catch (within and outside EEZ) estimated at 200,000 mt. Raw material locally processed estimated 65,000t (29.5%). 65,000 mt (author’s estimate) loined/canned by PNG processing facilities (located in Madang, Lae, Wewak) with the majority of raw material supplied by PNG vessels. Exports of frozen tuna do not include fish transhipped and exported by PNG home-party vessels under the FSMA (possibly up to 80,000 mt).

Table 2.4 Total purse seine catch (’000 tonnes) by PNG fleet in WCPO (2005-2009)

<table>
<thead>
<tr>
<th>Fleet</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
</tr>
</thead>
<tbody>
<tr>
<td>PNG flagged vessels – PNG EEZ a</td>
<td>22</td>
<td>19</td>
<td>21</td>
<td>25</td>
<td>34</td>
</tr>
<tr>
<td>PNG chartered vessels – PNG EEZ a</td>
<td>90</td>
<td>126</td>
<td>124</td>
<td>112</td>
<td>95</td>
</tr>
<tr>
<td>PNG chartered fleet – outside PNG EEZ b</td>
<td>105</td>
<td>79</td>
<td>80</td>
<td>66</td>
<td>70</td>
</tr>
<tr>
<td>Total WCPO catch c</td>
<td>217</td>
<td>224</td>
<td>225</td>
<td>203</td>
<td>199</td>
</tr>
</tbody>
</table>

a SPC catch and effort database (raised data).
b Kumoru 2010.
c Total WCPO catch is under-estimated as catch in PNG archipelagic waters is not included and catch data for the PNG chartered fleet fishing outside PNG’s EEZ is unraised.

The decline in total catch in PNG’s EEZ in 2009 may have stemmed from the development of El Nino conditions in the second half of the year, which saw chartered vessel and foreign vessel fleet activity transfer to more eastern areas of the WCPO where good free school catches were taken. PNG’s home party vessels licensed under the FSMA have fished mainly in waters east of PNG in recent years, but are able to fish over a wide areas of the WCPO. The introduction of a two-month FAD closure (August – September 2009) in line with the Third Implementing Arrangement of the Nauru Agreement may have had little impact on some of the PNG fleet, since vessels operating in PNG waters that rely heavily on FAD sets in archipelagic waters were exempt from the closure and subsequently, the catch in AW has increased.

PNG became a WCPFC Cooperating Member (CCM) at an early stage in the establishment of the WCPF Commission. PNG is a key driving force within the PNA group and has been instrumental in driving recent PNA initiatives, particularly the establishment of the PNA Office in Majuro, Marshall Island.

2.8.4 Major markets

PNG’s second generation access agreements link vessels to local processing plants and other onshore developments. The agreements include catch unloading provisions whereby vessels must unload a portion of catch to PNG-based processing plants for canning or loin production. PNG does have a long-term goal of eventually processing onshore 100% of the tuna catch within its EEZ, with a 30-40% increase in canning production anticipated in the short term. In late 2010, about 30% of the PNG fleet catch was processed onshore in PNG (~65,000t). The balance was exported to processing facilities in Thailand and the Philippines, and to a much lesser extent Japan, Taiwan and others. Table 2.5 summarizes the volume and value of all PNG tuna exports since 2004.

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156 Freitas 2010a.
157 PNG fleet catch (within and outside EEZ) estimated at 200,000 mt. Raw material locally processed estimated 65,000t (29.5%).
158 65,000 mt (author’s estimate) loined/canned by PNG processing facilities (located in Madang, Lae, Wewak) with the majority of raw material supplied by PNG vessels.
159 Exports of frozen tuna do not include fish transhipped and exported by PNG home-party vessels under the FSMA (possibly up to 80,000 mt).
Table 2.5  Volume (mt) and Value ($US million) of PNG Tuna Exports (2004-2009)

<table>
<thead>
<tr>
<th>Year</th>
<th>Chilled tuna</th>
<th>Frozen tuna</th>
<th>Canned tuna</th>
<th>Cooked loins</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mt</td>
<td>Value</td>
<td>Mt</td>
<td>Value</td>
</tr>
<tr>
<td>2004</td>
<td>2,320</td>
<td>10.4</td>
<td>26,720</td>
<td>17.9</td>
</tr>
<tr>
<td>2005</td>
<td>989</td>
<td>4.0</td>
<td>38,282</td>
<td>32.9</td>
</tr>
<tr>
<td>2006</td>
<td>1,667</td>
<td>7.5</td>
<td>33,159</td>
<td>33.1</td>
</tr>
<tr>
<td>2007</td>
<td>1,395</td>
<td>6.1</td>
<td>40,363</td>
<td>54.8</td>
</tr>
<tr>
<td>2008</td>
<td>1,302</td>
<td>6.2</td>
<td>47,444</td>
<td>78.5</td>
</tr>
<tr>
<td>2009</td>
<td>600</td>
<td>2.7</td>
<td>38,223</td>
<td>49.1</td>
</tr>
</tbody>
</table>

Source: Kumoru 2010

* Provisional data

Notes: Excludes fish meal production; Chilled tuna mostly longline catch; Frozen/canned/loins all purse-seine caught, with the exception of a small volume of longline-caught frozen tuna.

There is limited local demand for fresh/frozen tuna (from purse seine or longline vessels), but around 20% of domestic canned tuna production serves the sizeable domestic market.\(^{160}\)

PNG has preferential market access (24% import duty exemption) to the EU through an Interim Economic Partnership Agreement (IEPA), signed in late 2007. The IEPA allows ‘global sourcing’ of raw materials; that is, fish caught on any vessel, regardless of flag or location of catch is granted duty-free access to the EU market, provided the tuna is substantially transformed (i.e. processed into cans or loins) by PNG-based processors. In the past, PNG vessels and processing plants have experienced difficulties complying with the EU’s very strict sanitary and phytosanitary (SPS) standards (administered by DG-SANCO), resulting in RD Tuna Canners and SSTC being de-listed during 2008/09.\(^{161}\) However, the large FSMA vessels in the PNG fleet generally comply with the EU’s SPS standards (see Section 11.2).

The introduction of the EU-IUU Fishing Regulation in 2010 has not appeared to have posed any issues for PNG exports to the EU. Currently, any catch by Philippines-flagged vessels in PNG waters is still required to be handled by the Philippines EU-approved competent authority, which causes product shipping delays. Ideally, PNG would like catch from these vessels to fall under the jurisdiction of PNG’s competent authority.

2.8.5  Recent developments and future prospects

In keeping with WCPFC CMM 2008-01 and the VDS, there currently appears to be limited opportunities to further increase the already large purse seine catch volume from the PNG EEZ. Opportunities exist to enhance the value of catch taken from PNG waters through fishing-related onshore investments in processing. PNG has stated that it will prioritize access even further towards second generation access agreements and more tightly link fishing access agreements (both existing and new) to onshore processing obligations and other onshore investments.\(^{162}\)

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\(^{160}\) 4,000-5,000 mt canned tuna locally consumed. Kumoru 2010.

\(^{161}\) RDTC and SSTC EU sanitary certificates have now been reinstated.

\(^{162}\) Freitas 2010a.
It is of some concern that PNG’s existing processing plants are working at well below capacity, have experienced operational difficulties (i.e. low productivity, worker absenteeism and high operating costs) and are yet to take full advantage of the preferential market access to the EU.

Plans for the development of new processing plants in PNG will invariably include provisions for additional fishing licences and if fishing effort restrictions under VDS and WCPFC CMM 2008-01 are to be honoured, this should occur in conjunction with the progressive and selective exclusion of fleets not linked to onshore investments in PNG (i.e. traditional bilateral access agreements). Initially, increased processing capacity demands could be met by requiring the existing PNG fleet to land a greater proportion of catch locally rather than issuing new licences, since only 30% of their catch is currently processed in PNG (see above). This represents an interesting challenge for PNG in the near future as additional processing plants come onstream.

Given PNG’s well-documented advantages (proximity to a highly productive tuna resource, readily available labour force, available infrastructure and land-based resources etc.) it is the best placed of all the PICs to harness tuna catch in its EEZ to onshore domestic tuna fisheries development and optimizing this economic opportunity from the resource.

**Key Points: PNG**

- In 2010, the PNG purse seine fleet (that being, vessels whose catch is attributed to PNG) was comprised of around 45 vessels – 8-9 PNG-flagged vessels (fishing in PNG archipelagic and EEZ waters); 17 Philippines-flagged chartered vessels operated by PNG-based processors (fishing in PNG EEZ); and, 19 PNG home-party vessels operating under the FSM Arrangement (fishing in PNG waters and beyond). Total WCPO catch of the PNG fleet was around 200,000 mt in 2009.
- All vessels are privately-owned, mostly by Philippine and Taiwanese companies with investment in onshore processing and net repair facilities in PNG, as well as fishing/processing operations elsewhere.
- PNG’s second generation access agreements link vessels to PNG-based processing plants and other onshore developments, with catch unloading provisions included in the agreements whereby vessels must unload a portion of catch to domestic processors. In 2010, 30% of the PNG fleet’s catch was processed onshore in PNG (~65,000 mt), with the balance transhipped and exported mostly to Thailand and the Philippines. PNG has a long-term goal to locally process 100% of tuna catch from within its EEZ.
- PNG is committed to enhancing the value of catch taken from PNG waters through fishing-related onshore investments in processing. As such, fisheries access will be geared even further towards second-generation access agreements where fishing licences will be tightly linked to onshore processing obligations and investments.
2.9 European Union

2.9.1 Current fleet status

The European Union (EU) tropical tuna purse seine fleet is probably the most important in the world, despite this it is not a major player in the WCPO. As a result of this PIC governments and FFA know relatively little about EU fleet operations, which is an important limitation.

Tropical tuna purse seiners are the largest segment of the EU external fleet in terms of vessel power (kW) and the second largest in terms of gross tonnage (GT). Moreover, the EU purse seine fleet is estimated to be the largest in the world of this gear type. In 2007, EU-based firms controlled an estimated 84 boats (almost 20%) of the global purse seine fleet of c.450 vessels at >500GT; of these, 57 vessels were actually flagged by EU Member states.

Research in 2010 estimated 88 boats owned or controlled by EU-based firms (see Table 2.6). Of these, 56 were flagged by EU Member states (Spain, France and Italy) and at least 32 EU-owned boats were identified as using foreign flags.

In terms of several dimensions of its external relations European-flagged tropical tuna purse seiners are best categorised as the EU ‘distant water tuna purse seine fleet’ (EU DWF), rather than by national flag as ‘Spanish’, ‘French’ or ‘Italian’. Since Spain’s accession to the EEC in 1986 these ‘national’ fleets are all regulated by the European Commission, receive substantially the same benefits originating from the Commission (e.g. subsidies and EC-led access arrangements), and generally target the same markets which are often ‘locked-in’ through trade tariffs when selling to the EU and rules of origin conditioning tariff preferences when selling to the ACP and Andean (GSP+) countries (see Section 2.9.4). Importantly, working conditions on EU flagged boats are closely regulated by the European Commission and Member state governments, making the EU DWF one of the better employers of crew across the global purse seine fleet in terms of working conditions and remuneration.

In the 2000’s, the Spanish-owned foreign-flagged purse seiners used at least eight Seychelles flags, at least five each by Ecuador and Ghana and of a number of other Latin American and West African countries (see Table 2.6). In the case of the French-owned purse seine fleet only two used a ‘foreign’ flag in 2009 – that of Mayotte, a French overseas territory. However, several boats owned by the Ghana-based purse seine firm TTV were effectively controlled by the Paris-based MW Brands in the 2000s.

There are however, important firm-level differences within the EU DWF in terms of corporate structure and business strategies. In the case of the Spanish fleet, the main firms under the OPAGAC producer organisation (Albacora, Calvo and Garavilla) are vertically integrated into processing (see Section 4.5), while ANABAC members are all specialised boat-owning firms, with the main firms being Inpesca, Atunsas, Echebaster and Pevasa.

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163 Oceanic Développement 2008: 3. For comparative purposes fish hold capacity is the preferred measure of vessel capacity, but GT is the only indicator available on record for all vessels.
164 In 2007, the average EU purse seiner was 2,099GT and 3,191kW power. Oceanic Development 2008.
165 The decline by one vessel from the Oceanic Développement data is because a boat was sold by the Kuhn Ballery et. al. consortium to MW Brands in 2009 and shifted from the French to the Ghana flag.
166 This data does not include boats with part or full ownership by Jaczon Group or Sapmer, a firm based in the French overseas Indian Ocean territory of Réunion. Note also that firm averages in Table 2.6 are not always precise because data for three boats is for GRT rather than GT and data for the tonnage for one vessel and for four construction years is missing (which are excluded from averages).
167 There was only one Italian-flagged purse seine vessel by 2007.
168 Based on database in Oceanic Développement (2008); and multiple interviews, international fisheries specialists and industry representatives, 2006 and 2009.
169 Organización de ProductoresAsociados de GrandesAtunerosCongeladores
170 AsociaciónNacional de BuquesAtunerosCongeladores y la Organización de Productores de TúneidosCongelados
Albacora is by far the most important of the European firms involved in purse seine fisheries, with 25% of the total tonnage of the EU-owned fleet. Unlike the division between the Spanish fleet into two producer organisations, the French fleet are all organised under ORTHONGEL.\textsuperscript{172} The major exception was the TTV fleet based in Ghana. In 2010, it consisted of five purse seiners, which were turned over to Thai Union (TUF) with its takeover of MW Brands in July 2010; although the high level of depreciation of these boats - their average year of construction is 1980, the oldest in the entire EU DWF - indicates that this aspect of the takeover likely figured relatively low in TUF’s corporate strategy, with brand ownership as the most important aspect (see Section 4.2). TTV does not have any commercial relations with the French fleet.

MW Brands - and Heinz European Seafood before it - also held partial control (36%) over the French fishing firm Cobrecaf, which owned at least nine purse seiners. In late 2008, MW Brands sold its share of Cobrecaf to a consortium of three firms consisting of Kühn-Ballery, France-Afrique and CMB\textsuperscript{173} (‘Kühn-Ballery et. al.’). As a majority shareholder, the consortium had the right of first refusal on MW Brands sale.\textsuperscript{174} This left the Kühn-Ballery et. al. consortium with a 64% controlling share of Cobrecaf. This provided the consortium with control of the second largest European purse seine fleet in terms of gross tonnage, and with an average year of construction of 1993 – the second most modern after Echebaster. The move marked a major shift in the control of France’s largest DWF from a vertically-integrated branded-processor to a specialised boat-owning consortium. The relatively small Saupiquet fleet continued to be vertically-integrated into processing, and is controlled, ultimately, by Bolton Group (see Section 4.5 and 5.2).

Since the research for this report was undertaken a new company has been established (on 1 January 2011) – CompagnieFrancaise du Thon Oceânique – which represents the set of interests identified above as the Kühn-Ballery et.al. consortium. The fleet size has been reduced to 13 purse seiners and the average age of the vessels is now 1997 rather than 1993.\textsuperscript{175} CompagnieFrancaise du Thon Oceânique remains the dominant entity in the French DWF, the second largest tuna purse seining firm in the EU and one of the largest in the world. Given its recent consolidation and reputation as a good corporate player, this firm is an important existing and potential partner with developing coastal states.

Excluded from the table and other estimates on the EU DWF are three purse seiners owned by the Réunion-based firm Sapmer.\textsuperscript{176} This firm was excluded from the general analysis of the EU DWF because it operates in a different market segment. Its boats are reported to generate lower catch rates but obtain higher values because the tuna is super-frozen onboard at minus 40 degrees. The fish is then processed while still frozen into high quality loins and steaks at Sapmer’s Mer des Mascareignes factory in Mauritius, this allows the maintenance of product quality because the fish is not defrosted. Sapmer’s financial performance has been positive with 45% growth in 2010, in part due to its tuna business.\textsuperscript{177} An order for two additional new purse seiners was reported to have been placed in late 2010.\textsuperscript{178}

\textsuperscript{172} Multiple interviews, industry representatives and international fisheries specialists, 2006, 2009 and 2010. Although Echebaster is an important exception because of its 25% share of a tuna processing facility in Mauritius (see Section 4.17).

\textsuperscript{173} Organisation des Producteurs de Thon Congelé.

\textsuperscript{174} Chevannes-Merceron-Ballery.

\textsuperscript{175} MW Brand’s 36% was divided as follows: Kühn-Ballery (18%), France-Afrique (16%) and CMB (2%) (CREFMPM 2008).

\textsuperscript{176} Pers.comm., EU industry representatives, 2011.

\textsuperscript{177} Detailed information on Sapmer is available here: http://www.sapmer.com

\textsuperscript{178} IntraFish 2010a, IntraFish 2011.

\textsuperscript{179} Bates 2010.
Concarneau is the home port of the French distant water fleet. The Piriou shipyard continues to build modern purse seiners, including for the emerging player SAPMER. Photograph: Liam Campling.
<table>
<thead>
<tr>
<th>Controlling firm(s)</th>
<th>Vessel flags</th>
<th>EU industry asso,</th>
<th>Boats by area of operation</th>
<th>Gross tonnage (GT)</th>
<th>Average per vessel</th>
<th>Average year of construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>Albacora Group a</td>
<td>Spain (6); Seychelles (3); Ecuador (3); Panama (3); Netherlands Antilles (1)</td>
<td>Opagac</td>
<td>3</td>
<td>6</td>
<td>6</td>
<td>1</td>
</tr>
<tr>
<td>Kühn-Ballery, France-Afrique and CMB b</td>
<td>France (15); Mayotte (2)</td>
<td>Orthongel</td>
<td>2</td>
<td>14</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Inpesca</td>
<td>Spain (7); Seychelles (1)</td>
<td>Anabac</td>
<td>1</td>
<td>6</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Atunsa</td>
<td>Spain (5); Seychelles (1)</td>
<td>Anabac</td>
<td>2</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Echebastar</td>
<td>Spain (3); Seychelles (3)</td>
<td>Anabac</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Calvo Group</td>
<td>El Salvador (4); Cap Verde (2)</td>
<td>Opagac</td>
<td>2</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Pevasa</td>
<td>Spain (5)</td>
<td>Anabac</td>
<td>0</td>
<td>5</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Garavilla Group c</td>
<td>Spain (2); Ecuador (2)</td>
<td>Opagac</td>
<td>0</td>
<td>0</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Bolton Group (Saupiquet)</td>
<td>France (5)</td>
<td>Orthongel</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Jealsa-Rianxeira d</td>
<td>Guatemala (2)</td>
<td>--</td>
<td>2</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>MW Brands</td>
<td>Ghana (5)</td>
<td>--</td>
<td>4</td>
<td>0</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Others e</td>
<td>Spain (6); France (2)</td>
<td>Misc.</td>
<td>5</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>EU flag (56); Other (32)</td>
<td>23</td>
<td>47</td>
<td>14</td>
<td>4</td>
<td>88</td>
</tr>
</tbody>
</table>

a Two boats are permanently based in the WCPO; b Includes Cobrecaf fleet; c 2 boats fish in the WCPO for c.20% of their activity; d a vessel included here sank in 2009; e ‘Others’ includes the following firms and their number of boats: Nicra-7 (2 boats); Petusa (2); Compania Europea de Tunidos (1); Pebertu (1), reportedly in receivership; Sapmer (1); Sofilab et CIE SCS (1)

Sources: Campling (2010) using estimates based on multiple interviews 2006 and 2009; company websites; FIS; IATTC, ICCAT, IOTC and WCPFC vessel registries and databases; CIMB 2010.
2.9.2 Global fishing operations

The main fishing grounds of the EU DWF are the Eastern Central Atlantic (since the 1950’s) and the Western Indian Ocean (since the early 1980’s). Spanish-owned vessels are also active in the Eastern Tropical Pacific, where four boats use the Spanish flag and others use local Latin American flags or are under joint-ventures. While the combined catch of France and Spain of all species of tuna by all gear types is the second largest in the world (Japan leads, with Taiwan in third position), EU activity in the largest tuna fishery in the world, the WCPO, is marginal.179

In 2009, EU Fisheries Partnership Agreements (FPAs) were in place across three of the world’s four major tropical tuna fisheries, as illustrated in Figure 2.7. Of course, the figure offers only a static moment in a far more complex flow of EU vessel operations. Before 1980, EU access agreements were solely with African states on the Eastern Atlantic. Since then parts of this fishing capacity moved to (and expanded in) the newly discovered fishery in the WIO, and partly shifted again, although far less intensively, to the WCPO in 1999.

Spanish firms first accessed the Eastern Tropical Pacific in the 1970’s, where they expanded significantly in the early 2000’s. This was normally done via company-to-government access agreements for EU flagged boats or through domestic registration and flagging, but none of these boats use FPAs. By 2010, the EU-DWF was active in each of the world’s main tropical tuna fisheries.

French boats and ANABAC members are only active in the Atlantic and Indian Oceans, whereas OPAGAC members are also active in the Pacific. Only Albacora has purse seiners operating in all of the world’s tropical tuna purse seine fisheries.

Of a total identified EU DWF of 88 vessels, around 53% (47 boats) are estimated to be active in the Western Indian Ocean (WIO) (see Table 2.6). For the period 1984-2007, a total of 92% of catch in the entire WIO purse seine fishery was by European-owned boats. The WIO is a relatively high value purse seine fishery because of the high ratio of yellowfin to skipjack, with the former contributing to enhanced vessel profitability. Data on known transhipment and landing volumes by all purse seine vessels in the WIO demonstrates the centrality of the Seychelles. Port Victoria accounted for 88% of total known transhipment/landing volumes throughout the entire period 2000-08. This was followed by 6% in Antsiranana (Madagascar), 5% in Mombasa (Kenya), 0.6% in Port Louis (Mauritius) and 0.04% in Dar es Salaam (Tanzania). The fact that Mauritius is insignificant to this flow counters the position that Port Louis ‘competes’ with Port Victoria as a canning-grade tuna transhipment port, despite the creation of the Mauritius Seafood Hub (see Section 4.4). Nonetheless, Mauritius-based firms are important buyers of tuna transhipped from Seychelles.

Problems with Somali pirates have resulted in a number of French and Spanish flag vessels moving to the Atlantic Ocean during 2009/2010.

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179 Only the Spanish purse seine fleet is active in the WCPO. Spain had 6-12 purse seiners active in the WCPO between 1999-2001, but in 2002 it had only one and in 2009-10 it had four vessels registered (but registration does not mean that they actually fished). SPC 2003: 103; FFA databases.
180 IOTC database.
181 An industry representative indicated that the Mombasa plant used to purchase the majority of raw materials directly from fishing vessels, but the Somali piracy issue has resulted in an almost complete halt in vessels offloading directly. The plant now relies on container deliveries and its throughput is significantly reduced. Industry representative, pers comm. 2010.
182 SFA database.
Figure 2.7
Network of EU Marine Territories and Fisheries Partnership Agreements in 2009

2.9.3 WCPO fishing operations

The WCPO is currently of marginal importance to the EU DWF. Only four EU-flagged purse seiners were recorded on the FFA vessel registry in 2009/10 (see Table 2.6) and hence, these are the only boats able to access Pacific island country EEZs under EU FPAs.

- Albacora Uno (built in 1996; 3,584 GRT) and Albatun Tres (2004; 3,500 GRT), both owned by the Albacora Group. Both modern boats, they are 18% larger than the average tonnage for this firm’s total purse seine fleet and 35% larger than the average tonnage for the entire EU DWF.

- Aurora B (1998; 2,479 GRT) and Rosita C (2000; 2,502 GRT), both owned by the Garavilla Group. These two modern boats are close to the EU average tonnage. 80% of crew is Ecuadorian, which allows the boats to comply with EU rules of origin under the GSP+. After teething problems, Ecuadorian crew are reported to be highly professionalised and relatively well paid; the salary ratio of Spanish to Ecuadorian crew is around 1:3, whereas for processing it is more like 1:10. These two boats spend only around 20% of their time fishing in the WCPO.

In 2009, total catch of EU-flagged vessels in WCPO waters was 26,563 mt. Despite this very limited presence, the EU continues to maintain three FPAs in the region: with FSM, Kiribati, and the Solomon Islands. Most recently, the EU-Solomon Islands was renewed in 2009 and ratified by the EU on 3 June 2010. This was the first EU-ACP agreement to be approved by the European Parliament since the entry into force of the Lisbon Treaty, which gives the Parliament co-decision making powers in new EU legislation, the EU budget and international agreements. During the first discussion of the proposed new protocol, some parliamentarians highlighted the fact that it was a very large payment for only four purse seiners (a total of €15.5 million over three years), while others highlighted the strategic importance of the agreement for the wider EU presence in the Pacific.187

184 The EU's Generalised System of Preferences Plus provides special access to EU markets for eligible countries, including duty free market access for the Andean countries’ exports of canned tuna and tuna loins (subject to rules of origin and other conditionalities).
185 FFA 2010.
186 See CFFA et. al. 2010 for a critical assessment of this FPA.
In addition to these Spanish-flagged boats, the Spanish giant Calvo owns two El Salvador flagged purse seiners that fish in the WCPO (total catch in 2009 was 8,824 mt). Their operations consist of a regular round trip of two periods of offloading: the first transships to a Calvo reefer at Christmas Island, Kiribati, and in the second the boats offload direct to the Calvo processing facility in La Union, El Salvador. Therefore, like the two Garavilla boats, Calvo’s presence in the WCPO is currently fairly limited.

2.9.4 Major markets

EU DWF sales of tuna raw material are global, but these are broadly conditioned by two factors:

1) Rules of origin under preferential trading arrangements that provide duty free access to EU markets for canned tuna and pre-cooked tuna loins (e.g. Interim EPAs, GSP+).

2) Where vessels are vertically integrated (i.e. the major OPAGAC members, as well as Echebastar and Saupiquet), the priority for supply will be to own or financially-connected processing plants. Some ANABAC members also appear to be inserting raw material into chilled loining plants in Galicia for sale to local canneries.

If the price is right and if supply to own-processing facilities is not required, boat owners will sell on the global market, including to major competitors (e.g. the Philippines and Thailand).

There are however, important differences between players. For example, on the one hand, Albacora’s raw material production exceeds supply needs to its own Salica processing plants by around 40%, this surplus makes it an important player in the international tuna trade. On the other hand, Calvo and Garavilla’s boats are primarily geared to supply their own processing facilities. In other words, Albacora might best be described as a fishing firm that integrated vertically into branded-processing, while Calvo and Garavilla are branded-processors that integrated into fishing.

The main ANABAC members (Inpesca, Atunsa and Pevasa) and the large fleet controlled by the consortium of Kühn-Ballery et. al. together total 41% (77,600 GT) of the total tonnage of the EU fleet. As none of these firms are vertically integrated into processing they are all major suppliers to the international tuna trade; yet all of these firms’ boats are only active in the Eastern Atlantic and Western Indian oceans. This puts them in a strong geographical position to supply ACP tuna processing facilities in these regions (see Section 4.4). The processors in these two regions are all primarily orientated to supply the EU duty-free under Interim Economic Partnership Agreements (IEPAs), which in turn means that they must meet associated rules of origin (RoO). Given that these ACP processors very rarely have their own boats, the RoO provide the EU DWF with a captive market. As such, the RoO are reported to provide the EU DWF with a price premium. This is denied by others (including EU industry) who argue that any price differences are explained by better quality fish and higher operating costs.

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118 FFA 2010.
119 Multiple interviews, EU industry representatives, 2010.
120 The other main ANABAC member, Echebastar, is vertically integrated into processing (see Section 4.4).
Two of the main ANABAC members – Inpesca and Pevasa – cooperate in selling their catch through a non-profit entity called Peva Eche. Echebastar used to be included in this relationship, but pulled-out several years ago due to a ‘falling out’; it now trades part of its catch with Tri Marine, and markets the balance itself. Albacora used to trade with Tri Marine, but now tends to organise its own sales. Similarly, interviewees maintained that most of the Spanish fleet sells directly to processors in Spain and while an agent may be used in this process, the invoice is between the boat owner and the processor. In other words, this provides trading companies with less leverage in the EU market, especially for frozen yellowfin tuna.

A key feature of the French DWF is that, except for the Saupiquet fleet, all vessels were operationally managed by CMB and sold their fish through the ‘Sovetco’ trading company. Soveto is a public limited, not-for-profit entity whose function is to realise the exchange-value of the raw material through sale to processors. It sold solely to canneries in France in the 1960’s, but by 1997 was reduced to nominal amounts and instead tunas was sold around the world in the 2000’s, albeit predominantly to processors in the ACP, but also to Thailand among others.

2.9.5 Recent developments and future prospects

Despite being the largest fleet in the world, the EU DWF plays a marginal role in the WCPO. Given current complexities associated with the VDS, boat owners indicate that they are unlikely to extend their current levels of activity in the WCPO beyond the existing network of FPAs.

Analysis of the various firms that make up the EU DWF does not indicate any particular tendencies in business organisation; instead it demonstrates a reality of complexity and a high degree of diversity in the various firms’ strategies. For example, some firms are global operators, while others focus solely on their long-term fishing grounds; and some have become more vertically integrated, while others have moved out of processing to become specialised fishing firms.

The captive market generated by EU import tariffs and preferential rules of origin will continue to be central to the commercial survival of the EU fleet. The provision of ‘global sourcing’ RoO under the terms of the EU-Pacific IEPA is a deep source of contention because EU industry fears both that it sets a precedent for other trade negotiations and that PNG will become an export platform for Southeast Asian firms wanting to bypass the 24% duty. On a wider but related point, EU industry players are concerned that ‘Thai and Philippine firms are using PNA members to pursue their interests and convincing PNA members that they are theirs’.

Either way, if the eventual effects of global sourcing RoO erode the commercial survival of the EU DWF, the logic behind the EU’s tuna trade preference will collapse in parallel as it will no longer be a significant support to European industry. The likely outcome would be that the various agitating interests working against the current 24% preference available under IEPAs, the GSP+ and the Everything But Arms initiative would win the argument and the tariff will be liberalised.

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191 Interviews, EU industry representatives, 2010.
194 Interviews, EU industry representatives 2010.
195 Refer to Campling et. al. 2007 for a comprehensive overview of the EU’s Generalised System of Preferences which covers in detail EPAs, GSP+ and the EBA initiative.
In other words, the global sourcing RoO is a potential double edged sword for PICs: while it offers an important solution to a 30-year problem of insufficient supplies of originating fish to processors in the region, it also threatens to erode the commercial cornerstone of these processors (i.e. preferential access to EU markets) if the EU DWF declines as a result.

The EU DWF is facing a far greater direct threat in the Western Indian Ocean through the activities of Somali pirates, including attacks on and the capture of EU purse seiners.\textsuperscript{196} In parallel, catches of high value yellowfin tuna have tailed off since 2007, most likely due to the increased ‘catchability’ of tuna in WIO since the mid-1990s and record high catches in 2003-06 (e.g. FAD use, other forms of effort creep and rising vessel capacity);\textsuperscript{197} with negative implications for the EU DWF business model/profitability. Combined, these two factors have contributed to a shift in capacity from the WIO to other oceanic regions: it is estimated that up to 15 purse seiners have left the WIO. Some EU boat owners fear that the increased pressure on the purse seine fishery in the Eastern Atlantic Ocean will result in its collapse in two or three years.\textsuperscript{198}

Finally, of the world’s tuna purse seine industry the Spanish fleet has been subject to the greatest degree of public scrutiny in recent years. Environmental NGOs such as Greenpeace and WWF have targeted the Spanish fleet because of its very high level of subsidy uptake from the EU,\textsuperscript{199} the relatively large size of its boats (see Table 2.6) and several reports of IUU fishing.\textsuperscript{200} The Spanish industry is concerned about these arguments and feels that it is being unfairly targeted, not least because it is one of the most highly regulated fleets in the world; especially in comparison to the fleets of certain East and Southeast Asian countries.\textsuperscript{201} As one interviewee stated:

\begin{quote}
The Taiwanese fleet is very aggressive – why doesn’t Greenpeace look at them?

The Spanish shouldn’t be treated as obscure or illegal fishers. We comply with EU regulations (which are the most restrictive in the world), we’re transparent and we’re very responsible to crew.
\end{quote}

There is certainly some truth in the fact that environmental NGOs have ignored far more problematic players in the industry, but this is probably partly because of these NGOs’ own institutional logics (e.g. they do not have support bases in any Asian countries and they believe that by lobbying at the level of the EU, action might be taken and thus, a victory could be claimed).

\textsuperscript{196} See various issues of FFA Fisheries Trade News for an overview: http://www.ffa.int/trade_news
\textsuperscript{198} Interviews, EU industry representatives, 2010. For example, Calvo had two purse seiners based in the WIO, but these relocated in 2007 due to poor fishing and shifted their activities to other oceans.
\textsuperscript{199} Greenpeace 2010. Based on the EU Transparency database available at http://www.fishsubsidy.org Campling (2010) estimates that the Spanish DWF received 94% of total vessel construction and modernisation subsidies paid to the entire EU DWF under the EU’s Financial Instrument for Fisheries Guidance in the period 1994-2006.
\textsuperscript{200} Greenpeace 2007; IntraFish 2010b (see also InfraFish 2010c,d); Ministry of Fisheries, Mozambique, 2010.
\textsuperscript{201} Multiple interviews, EU industry representatives, 2010.
Key Points: EU

- The EU purse seine fleet is the largest in the world and is comprised of some of the most powerful purse seiner businesses in the world. In 2010, an estimated 88 vessels were owned or controlled by EU-interests; 56 of which were flagged by EU member states (Spain, France and Italy), and 32 (at least) which carried foreign flags. The EU fleet is active in each of the world's main tropical tuna fisheries; the main fishing grounds being the Eastern Central Atlantic and Western Indian Ocean.

- The EU is a very minor player in the WCPO, with only four Spanish-flagged vessels actively operating in the region to date under FPAs with Kiribati, Solomon Islands and FSM (total catch of 26,563 mt in 2009). Two El-Salvadorian purse seiners also fish in Kiribati waters (total catch of 8,824 mt in 2009). Given the current complexities associated with implementation of the Vessel Day Scheme in the WCPO, EU vessel owners have indicated that they are unlikely at this stage to extend their current levels of activity in the region beyond the existing network of FPAs.

- EU vessels that are owned by vertically integrated companies supply catch to their own or affiliated processing plants, with surplus catch sold on the global market. Specialised boat-owning companies generally supply the global market. Given EU-vessels’ catch is Rules of Origin (RoO) compliant under preferential trading arrangements between the EU and ACP countries, vessels are generally orientated towards supplying ACP-based tuna processing facilities.

- EU import tariffs and preferential RoO are central to the commercial survival of the EU fleet. The provision of ‘global sourcing’ RoO for processed tuna under the P-ACP Interim EPA is a deep source of concern for the EU fishing and processing sectors.

- EU vessels operating in the Western Indian Ocean (WIO) have suffered greatly in the past several years due to attacks from Somali pirates, as well as considerable reductions in catches of high value yellowfin. These two factors have contributed to a shift in capacity from the WIO to other ocean regions, particularly the Eastern Atlantic Ocean.

2.10 Indonesia

2.10.1 Current fleet status

Indonesia is the world’s largest archipelagic state, with 5.8 million km² of marine fisheries area, including EEZ waters 2.7 million km² in extent, with highly productive EEZ and archipelagic waters in both the Pacific and Indian Oceans and large resources of both oceanic and neritic tunas. These resources are shared to the east with adjacent PICs (Papua New Guinea, Palau and FSM) and to the north and west with south-east Asian nations (Philippines, China, Malaysia, Vietnam and Timor Leste). The tuna fisheries of Indonesia are multi-gear and multi-species by nature and are largely artisanal in scale, in contrast to the large industrial tuna fleets (purse seine and longline) operating throughout most of the WCPO east of Indonesia (east of 140°E). Artisanal non-powered fishing vessels of all types number over 200,000, with a similar number of inboard and outboard-powered vessels.²⁰³

²⁰² Coastal or neritic tunas (often called bonitos) are important for food security but are regarded as a secondary market species and typically have darker meat, so are not often canned for premium markets.

²⁰³ Williams 2009: 29.
Commercial purse seine and longline vessels account for only 3% of the total number of inboard-powered vessels. The predominant tuna fishing gears used are purse seine of various sizes (pajeko), pole and line (huhate, funai), troll, handline and longline (rawai tuna), with most fishing activity reliant on the use of FADs (rumpon) which have been used in Indonesia for centuries.

For fishery management and monitoring purposes, the vast Indonesian EEZ is divided into eleven Fishery Management Areas (FMAs), established through Ministerial Regulation 01/2009. Eight of the FMAs are in Pacific waters and three are Indian Ocean FMAs. Most oceanic tuna production and fishing activity occurs in five Pacific deep water (oceanic) areas including the Sulawesi, Maluku, Halmahera, Ceram, Flores and Banda Seas, and parts of the far western Pacific Ocean.

Vessels are licensed by various levels of Government according to size – District Government (vessels<10 GT), Provincial Government (10-30 GT) and National Government (> 30 GT). In 2007, 176 tuna purse seine vessels (< 2,000 GT), 73 pole and line vessels (< 100 GT) and 154 longline vessels (< 100 GT) were authorized to fish in Pacific EEZ waters (two MPA areas). Additional vessels are authorized to fish in three Pacific archipelagic FMAs. Larger vessels move freely within Indonesian waters in the course of fishing operations and may be registered or authorized to fish in more than one area or FMA.

Photograph: Tony Lewis.
The main tuna landing ports in eastern (Pacific) Indonesia include Bitung (more than 100,000 mt annually), Sorong, Kendari, Ternate, Ambon and Biak. Inter-island fishery product distribution systems are in place to move large quantities of fresh/frozen tuna for domestic consumption from eastern Indonesia to the more densely populated demand centres in the west (and also to canneries in east Java). However, these tend to be unreliable, infrequent and expensive. Exports mostly occur direct from the main fishing ports.

Ownership of fishing vessels is private, with larger companies operating sizeable fleets (up to 30 vessels in some cases) which may include several gear and vessel types (i.e. purse seine and auxiliary vessels, pole and line, longline and carrier vessels). Catch may be unloaded at numerous private landing points, often with associated processing facilities, municipal or provincial markets and canneries. Canneries may also have associated vessels, either owned/operated by the cannery or with fish supply contracts within a cooperative arrangement (mitra kolobarasi). Carriers are extensively used and are an important business strategy of fleet operations, particularly for purse seiners. There are several companies which specialize in large-scale carrier operations and also operate their own fishing vessels. The extent of vertical integration is generally less than seen in the Philippines, for example, with companies tending to specialize in fishing or transport or processing. Government-supported fleets have operated in the past in eastern Indonesia (e.g. cooperative/nucleus estate systems) but have generally failed after some initial success. Some Philippine tuna vessels have re-flagged to Indonesia in recent years, generally to supply canneries in Bitung. Numbers are not known with certainty, but it is possible less than 20 vessels.

Indonesia was initially an observer and is now a cooperating non-member (CNM) of WCPFC. It is not clear when it will accede to CCM status; Indonesia is clearly intent on excluding archipelagic waters from any WCPFC control and does not currently report catches in areas other than the two Pacific EEZ FMAs to the WCPFC. There is currently no integrated National Tuna Management Plan.

The diverse and geographically dispersed Indonesian tuna fishery is served by three industry associations; the Indonesian Tuna Association (ASTUIN), the Tuna Longline Association (ATLI) (mostly serving the interests of larger Indian Ocean longliners) and the Indonesian Pole and line Association. These organizations all participate in the Indonesian Tuna Commission (KTI), the recognized national tuna forum. The more general Indonesian Fisheries Industry Association (GAPPINDO) is also active but covers all fisheries, not just tuna. The need for an eastern Indonesian-focused tuna industry organization has been recognized.

2.10.2 Global fishing operations

There is very little fishing outside Indonesia by Indonesian vessels by virtue of their generally small size and limited range, but some longliners operate beyond the EEZ, especially in the Indian Ocean and may shift operations seasonally between oceans (e.g. Indian Ocean to Banda Sea/Sulawesi Sea according to seasonality in catches) and unload in ports in either ocean.

205 Author’s estimate based on provisional landings data and interviews with industry representatives 2009 & 2010.
206 The GEF-funded WCPFC West Pacific East Asia Oceanic Fisheries Management Project (WPEA OFM) project provides funding for the establishment for such an association.
2.10.3 WCPO fishing operations

Production figures for Indonesian tuna fisheries are generally incomplete or uncertain due to the difficulties of monitoring catch and effort associated with large numbers of artisanal vessels offloading to multiple landing points, often private, throughout Indonesia’s vast archipelago. Most monitoring is carried out at the provincial level at multiple landing sites but limited operational (logsheet) data is available. Hence, strengthening tuna data collection systems has been a priority for both regional organizations (WCPFC) and national agencies (DGCF) for at least two decades, with some limited success in recent years under the WCPFC IPDCP. The first review workshop to provide agreed estimates of annual catch and identify means of improving these estimates was held earlier this year. The recent introduction of the catch documentation scheme under the EU-IUU Fishing Regulation has prompted some additional action.

The WCPFC estimate of the 2008 Indonesian Pacific Ocean catch (EEZ and archipelagic waters) of oceanic tunas was 322,000 mt, comprising 70% skipjack, 20% yellowfin and 9% bigeye. Provisional estimates for 2009 are only slightly higher. Nearly two-thirds of the catch is attributed to purse seine, 20% to pole and line and 7% to longline vessels, with the remainder caught using small-scale artisanal gear such as handline and troll. The catch by artisanal gears includes large amounts of near-shore neritic tunas, which do not enter export trade and are not included in these estimates. Official Indonesian catch figures for 2008 provided to WCPFC for the two Pacific EEZ FMAs list the oceanic tuna catch as 125,000 mt, comparable to that portion of the WCPFC estimates (i.e. 40% of 322,000 mt) above for the much larger eastern Indonesian area.

With a likely combined purse seine and pole and line catch of over 260,000 mt, Indonesia makes a significant contribution to the WCPO total tuna catch (estimated at 15%) and to the supply of raw material potentially available for canned tuna production. It is also one of the few places left where pole and line fisheries persist on a large scale. It is likely that virtually all of this large catch is taken in Indonesian waters, with close to 40% (125,000 mt) taken in Indonesian Pacific EEZ waters adjacent to both PIC EEZs and to the western high seas pocket.

2.10.4 Major markets

With a population of over 230 million, mostly based in Java, Indonesia has a ready market for fresh, frozen and processed fish of any kind, which is primarily supplied by the subsistence and small scale commercial fisheries.

Tuna fisheries in the more sparsely populated eastern Indonesian region developed during the 1970s and 1980s, often through foreign involvement in joint-ventures, in response to increased international demand for canning-grade tuna, rather than to supply domestic demand. In some cases, product was processed locally into canned tuna and also katsuobushi, but the majority of raw material caught was exported as frozen whole round.

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207 Indonesia Philippines Data Collection Project (IPDCP), administered by WCPFC, along with its successor project, the GEF-funded West Pacific East Asia Oceanic Fisheries Management Project (WPEA OFM).
208 SPC 2008.
209 SPC 2010.
210 Catch estimates by other sources are considerably higher (e.g. WWF 2008).
211 The WCPFC estimate of the 2008 Indonesian Pacific Ocean catch (EEZ and archipelagic waters) of oceanic tunas was 322,000 mt, comprising 70% skipjack, 20% yellowfin and 9% bigeye.
212 Data are not supplied to WCPFC for Pacific archipelagic waters and must be estimated separately.
213 MMAF 2010.
214 Total catch estimate (322,000 mt), less catch by minor gears.
A significant (but unknown) proportion of the total catch continues to be exported as fresh or frozen fish. However, an increasing amount of catch is being processed locally by a growing number of canneries (estimated 90,000 mt/year)\textsuperscript{215} (see Section 4.11), with a lesser amount dedicated to smoke-drying (katsuobushi) and various artisanal products.

Export data are generally incomplete and products of Pacific and Indian Ocean origin are rarely disaggregated. Canned tuna makes up the majority of exports\textsuperscript{216} (see Section 4.11) but large quantities of frozen whole tuna are exported to Thailand,\textsuperscript{217} Vietnam and the US.\textsuperscript{218} Katsuobushi production for the Japanese market utilizing pole and line fish has reportedly declined in recent times.\textsuperscript{219}

\textbf{2.10.5 Recent developments and future prospects}

It is difficult to ascertain Indonesia’s significance in the canned tuna supply chain, both currently and in the future, since production levels and exports cannot be quantified with any level of certainty.\textsuperscript{220} The potential of the tuna resource to sustain further increases in catch is also uncertain. It is clear that yellowfin stocks are seriously over-exploited in the Indonesian area and further increases in catch will not be sustainable,\textsuperscript{221} whereas the skipjack resource possibly remains robust. Management interventions may limit catches in the future; a moratorium on the issue of new trawl and purse seine licences was announced early in 2010\textsuperscript{222} and there has been some discussion of a progressive ban on the use of FADs (rumpons).\textsuperscript{223}

Modernization of the commercial fleet would result in efficiency and catch gains, especially in the purse seine fleet, but this has been constrained by the low level of investment in the Indonesian tuna fishery, other than mostly overseas investment in processing. The pole and line fishery persists and could potentially benefit from reportedly increased consumer demand for pole and line caught tuna (because it is deemed to be more sustainable than purse seine caught tuna), but the fishery is reportedly becoming constrained by baitfish shortages.\textsuperscript{224}

The domestic canning industry is once again expanding in areas close to key landing points (i.e. Bitung, Sorong) and this expansion looks set to continue (see Section 4.11), resulting in increased demand for local raw material. Indonesia also remains a major potential source of raw material for canneries in nearby areas (i.e. Thailand, Vietnam), provided transport difficulties can be overcome, particularly distribution of product and post-harvest cold storage prior to export.

Indonesian remains an important middle level supplier of raw material to WCPO canneries and its own growing domestic canneries, but no major increase in supply is anticipated in the short term.

\textsuperscript{215} Author’s estimate based on site visits and various industry interviews.
\textsuperscript{216} 52,000 mt in 2006; Eurostat 2010.
\textsuperscript{217} 35,000 mt in 2008, Thai Customs 2010.
\textsuperscript{218} 11,600 mt in 2009 (part of this catch may be longline-caught tuna), NMFS 2010
\textsuperscript{219} Mike A. McCoy 2010, pers. comm.
\textsuperscript{220} An attempt is made in Section 4.11 to trace exports of Indonesian canned tuna to principal markets.
\textsuperscript{221} Langley et. al. 2008.
\textsuperscript{222} WWF 2010.
\textsuperscript{223} Pers. comm., industry source, August 2010.
\textsuperscript{224} WWF 2008.
Key Points: Indonesia

- In contrast to other large industrial tuna purse seine and longline fleets operating in the WCPO, Indonesia's tuna fisheries are largely artisanal in scale and multi-gear/multi-species by nature. Commercial-scale purse seine and longline vessels account for only 3% of the total number of inboard-powered vessels (~200,000 vessels).
- In 2007, 176 commercial-scale purse seine vessels (<2,000 GT) were licenced to fish in two Fishery Management Areas in Indonesia's Pacific EEZ waters. There is very little fishing outside domestic waters by Indonesian vessels by virtue of their generally small size and limited range.
- Production figures for Indonesia tuna fisheries are generally incomplete or uncertain due to the difficulties of monitoring catch and effort associated with large numbers of artisanal vessels offloading to multiple landing points. Total purse seine catch in 2009 may have been in the order of ~190,000-200,000 mt.
- An increasing volume of catch is processed locally by tuna canneries (~90,000 mt/year), and smaller volumes are smoke-dried for katsuobushi production. Catch is also exported to Thailand and Vietnam-based processors.
- Since production levels and exports cannot be quantified with any level of certainty, it is difficult to ascertain Indonesia's significance in the canned tuna supply chain. Indonesia remains an important middle-level supplier of raw material to WCPO canneries and its own growing domestic canning industry, but no major increases in supply is anticipated in the short term.

2.11 Others – Eastern Pacific Ocean

2.11.1 Current fleet status

In 1998, the IATTC began efforts to control the growth of the purse seine fleet by freezing well volume (m³) capacity for each state with purse-seine vessels. In 2002, the IATTC abandoned country capacity quotas, replacing them with a regional capacity limit, documented through a register of vessels. Total capacity allowed after 2002 (212,288 m³) was more than the active capacity in 1998 (193,670 m³). Note that while the system does limit the number of vessels, it does not limit catches. The primary conservation measure complementing the capacity limit is an annual mandatory purse seine vessel closure of 59, 62, 73 days in 2009, 2010 and 2011 respectively. Each vessel can chose one of two closure periods from August-September or mid-November to mid-January.225

In 2008, there were 218 licensed purse seine vessels in the EPO.226 The two largest fleets in the region are Ecuador and Mexico, each of which retained 40-50 vessels throughout the 2000's. Ecuadorian fleet well capacity is 60,000m³ and Mexican fleet well capacity is over 50,000m³ (27% and 24% of total EPO capacity respectively). Both fleets primarily supply domestic processing industries, which are the two largest processing countries in the EPO (see Sections 4.6 and 4.16). Preliminary EPO landings data indicate that of the 569,000 mt of tunas and bonitos landed in 2008, 53% was landed in Ecuador and 22% in Mexico.227

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227 IATTC 2010: 12.
Panama (16% of total capacity) and Venezuela (13% of total capacity) have well capacity of 30,000 m³ each and have retained 20-30 vessels each since 2005. There are approximately 11 Colombian flagged vessels with combined well volume of approximately 17,000m³; Nicaragua, Peru, Vanuatu, Spain and Honduras each have less than 10 flagged vessels. Current purse seine capacity in the EPO is the highest in history. Notably absent from the list is the US fleet, the vast majority of which left the EPO for the WCPO in the 1990s in order to catch tuna on sets that are not associated with dolphins. In 2010, two US vessels (total well capacity of 1,200 m³) were fishing in the EPO. However, in 2010, the US, which had voluntarily capped its volume at 9000m³ in an effort to lead capacity reduction by example, indicated that it would allow fleet capacity to rise to 31,000mt. It is unclear if there is interest from the US fleet in exercising this capacity.

Longline vessels over 24m in length are required to register on an official list of vessels in order to be authorized to fish for, retain on board, tranship or land tuna and tuna-like species. There are over 1,100 longline vessels listed on the register. However, there is no capacity cap for longline vessels of any size and vessels are not required to report their catch to IATTC. In 2007, China, Japan, Korea, French Polynesia, Taiwan, the US and a handful of other countries voluntarily reported a combined catch of over 48,000mt. In late 2010, the EU announced plans to table measures to freeze the capacity of the EPO longline fleet, one of its first efforts since becoming a full IATTC Member.

Total reported catches for all species and gear types are reported in Figure 2.8. Note that total catch peaked in 2003 above 800,000 mt and declined to 600,000 mt in 2008; yellowfin declines are responsible for most of the difference. The figure does not include the most recent data on dramatic skipjack declines in 2010 (see below).

**Figure 2.8** Total Annual Catch By Species (All Gear Types) in the EPO, 2001-2008

![Graph showing total annual catch by species (all gear types) in the EPO, 2001-2008](image)

Source: IATTC 2010: 29

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228 IATTC 2010, 14-15; Compeán 2010: 16, 18. Data are for vessels with capacity >400m³, note that Ecuador has over 35 purse seine vessels with capacity <400 m³.
229 Court House News Service 2010.
230 IATTC resolution C-03-07.
231 Vessel register available at: http://www.iattc.org/VesselRegister
232 IATTC 2010: 49.
233 Fish News EU 2010.
2.11.2 Recent developments and future prospects

The major recent development in the EPO was the record low skipjack catches in 2010. Total skipjack catches were down 32% for the first five months of 2010, from 108,271 mt in 2009 to 74,178 mt in 2010.\footnote{Atuna 2010f.} Of significance for Pacific island countries, this decline meant that from January to early August 2010, EPO processing plants transhipped over 71,000 mt of raw material from the WCPO to supply EPO processing facilities (see Section 4.6).\footnote{Confidential industry database.} It is anticipated that the EPO fleet will continue to fall short of Latin American processing supply needs.\footnote{Interviews, multiple processing industry representatives 2010.}

Supply shortages are both a function of the need for conservation measures (populations and catch are declining) and driven by conservation measures. In 2005, IATTC resolved that fishing mortality for northern albacore in the eastern Pacific should be decreased.\footnote{IATTC Resolution C-05-02.} Bigeye tuna has been classified as ‘overfished’ since 2005 and its population has declined below the level that would support maximum sustainable yield (MSY). Yellowfin stock has remained about the level that produced MSY, but catch has declined dramatically from 413,000 mt in 2003 to 173,413 mt in 2007. Among factors causing the decline is reduction in average fish size from 12.4kg to 8.3kg.\footnote{Allen 2010: 17.} To address these conservation challenges IATTC members agreed to progressively longer purse seine fishery closures (from 59 to 73 days over three years, as noted above) in 2009.\footnote{IATTC Resolution C-09-01.}

Across the EPO, more than half of the purse seine catch is taken in the high seas, and most of the long line catch is taken in the high seas.\footnote{Interviews, multiple international fisheries specialists 2010.} The distinction of catch between the high seas and in-zone is not an important issue for the IATTC and its member states. Unlike the WCPO, there has been no effort by coastal states to close high seas areas.

While there is little information about the structure of fishing access agreements in the EPO, most countries license vessels under their flag, which grants the vessels the right to fish within their EEZ and in the high seas. Fishing within another country’s EEZ is only done with permission from the coastal state. Each country sets its own licensing conditions. For example, Mexico has prohibited foreign fishing and the fully domestic fleet supplies the large domestic processing industry. Costa Rica, having no large scale tuna vessels, has only foreign fishing. Foreign vessels are licensed by the Costa Rican government and generally include some requirement to offload at Costa Rican processing plants. Ecuador has a large fleet made primarily of national capital, but also with investments from foreigners, primarily from Spain. The fleet primarily supplies the Ecuadorian processing industry (see Section 4.6). Panama, which has no domestic industry, licenses vessels for the licensing fees alone (rather than to support processing interests).\footnote{IATTC Resolution C-09-01.}

\begin{footnotes}
\item[234] Atuna 2010f.
\item[235] Confidential industry database.
\item[236] Interviews, multiple processing industry representatives 2010.
\item[237] IATTC Resolution C-05-02.
\item[238] Allen 2010: 17.
\item[239] IATTC Resolution C-09-01.
\item[240] Interviews, multiple international fisheries specialists 2010.
\item[241] Interviews, multiple international fisheries specialists and fishing/processing industry representatives 2010.
\end{footnotes}
Of interest to Pacific Island countries is that the EPO fleet primarily services the well-established processing sector in Central and South America (see Section 4.16), a feature that many Pacific island countries seek to emulate. While many of the Latin American processing firms began first as fleets supplying European canneries and gradually expanded into onshore processing, this transition was supported by several variables including: raw material supply, preferential access to major markets outside of Latin America, supporting physical infrastructure and necessary material inputs for processing, ample and efficient labour force and a growing domestic market for tuna products.  

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**Key points: Other Fleets – EPO**

- In 2008, there were 218 licences purse seine vessels operating in the EPO. The two largest fleets in the region are Ecuador and Mexico, each comprised of 40-50 vessels. Both fleets primarily supply domestic processing industries, which are also the two largest processing countries in the EPO. Panama and Venezuela have fleets consisting of 20-30 vessels each, while Columbia has 11 vessels. Nicaragua, Peru, Vanuatu, Spain and Honduras each have less than 10 vessels operating in the EPO fishery. Current total purse seine carrying capacity in the EPO is the highest in history (~212,000 m3).

- Total skipjack catch in EPO waters (for all gear types) was around 305,000 mt in 2008. In 2010, skipjack catches reached a record low, resulting in EPO processing plants sourcing a considerable volume of raw material from the WCPO.

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242 Interviews, multiple processing industry representatives 2010.
2.12 Others – Western and Central Pacific Ocean

2.12.1 Solomon Islands

The Solomon Islands EEZ, 1.34 million km² in extent, is about half the size of the adjacent PNG EEZ, and with much of it lying south of 100S. The long catch history within the EEZ suggests tuna production levels within the Solomon EEZ are lower and more variable than in PNG, with total annual production rarely exceeding 120,000 mt.

Commercial tuna fisheries began in 1971, with the establishment of Solomon Taiyo, a joint-venture pole and line fishing operation with Taiyo A & F Co. (TAFCO), a subsidiary of the major Japanese seafood company, Maruha. The fishery developed rapidly with good bait-fishing and fishing opportunities and, at its peak, took over 36,000 mt per year. Increased taxes and duties on essential inputs (e.g. fuel) marginalised the operations of the pole and line vessels in the late 1990’s. With the withdrawal of TAFCO from the joint venture in 2000, coupled with almost five economically disruptive years during the ethnic tension (1999-2003), the pole and line fishery never fully recovered and folded in late 2008 after a 37 year history. Fourteen pole and line vessels were scrapped, with only three remaining now; two of which are relatively new vessels gifted to the Solomon Islands by Japan in 2006 that are currently tied up while issues concerning ownership and usage are clarified. It is unclear whether the remaining vessels will resume operations in the future or if plans to revitalize the pole and line fleet using purpose-built smaller vessels will proceed. Tri Marine’s Solomon Islands registered fishing company, National Fisheries Development (NFD) has purchased and re-fitted one of the former Soltai pole and line vessels, which has now recommenced fishing operations. Soltai may be able to lease the remaining two vessels to NFD, pending a decision to be made by the Solomon Islands and Japanese Governments, given these vessels were gifted to the Solomon Islands under Japanese grant aid. It is doubtful the Solomon Islands pole and line fleet will expand beyond these three vessels, as the capital investment required in acquiring additional vessels would most likely render such operations unviable, even if price premiums are available for pole and line caught fish.

Domestic purse seine fishing began in 1975, with one joint-venture group seine vessel, and later other joint venture and two purpose-built NFD vessels (1988). It has continued to the present day, with up to five vessels fishing at any one time and a peak catch of around 25,000 mt in 2000. During 2009, five Solomon Islands-flagged (NFD) and two to three Vanuatu-flagged purse seiners were fishing in the Solomon Islands, mostly in archipelagic waters. Two older NFD purse seiners (mentioned above) were replaced by three smaller vessels during 2008/09. Currently, none of NFD’s vessels are licenced under the FSMA, hence, all of their catch is taken within the Solomon Islands EEZ.

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244 For a history of the Solomon Islands tuna fishery see Barclay and Cartwright 2008 (Chapter 9: 201-226).
245 One vessel (Soltai 105) was on charter to the SPC Pacific Tuna Tagging Project during much of 2009 and following the conclusion of the charter contract in October 2009 was tied up.
246 Pers.com., Solomon Islands industry representative, 2011.
247 Global Investment Ltd. is the Solomon Islands-registered company; Yuh Fa (Vanuatu) is the parent company and owner.
248 MFMR 2010.
The Solomon Islands domestic purse seine catch was 17,788 mt in 2009. The five NFD purse seine vessels are owned and operated by Tri Marine International (TMI), one of the three major tuna trading companies. TMI also recently became the majority shareholder of Noro-based Soltai Fishing and Processing Ltd (see Chapter 3). In 2009, some of the catch from the NFD fleet was processed (canned or loined) by Soltai, with the balance (approximately 10,000 mt) exported to Thailand. The small Global/Yuh Fa catch is assumed to be exported to Thailand.

Foreign purse seine vessels fishing in the Solomon Islands EEZ under access agreements took over 87,434 mt during 2009, with the Korean, Taiwanese, Japanese, Vanuatu and FSMA fleets accounting for the majority of the catch. Foreign longliners (China, Japan and Taiwan) caught around 16,000 mt, with a small catch (365 mt) by Japan long-range pole and line vessels.

Several pump boats (Philippine-style handline vessels) were operated by NFD on a trial basis during 2009, but ceased operations early in 2010.

With an abundant resource within its EEZ and with encouragement from Solomon Islands Government, there may be more locally-based purse seine fishing and processing developments in the near future. One Philippines company (Dalmalerio FC) has recently concluded a joint venture agreement with the Western Province, with two purse seiners initially proposed to fish within archipelagic waters and possibly other associated fishery developments.

Unloading an NFD purse seiner at Noro, Solomon Islands. Photograph: Tony Lewis.
There are also two proposals under consideration for establishing loining/canning plants in Guadalcanal, one of which will require the granting of additional licenses to supply the plant. The provision by SIG of a competitive fiscal regime will be essential to the further expansion of onshore processing. The global sourcing provision of the IEPA, and Solomon Islands’ accession to it, will also be crucial.

Solomon Islands is classified as a least-developed country (LDC), so enjoys preferential market access to the EU under the ‘Everything But Arms’ Initiative. However, strict rules of origin (RoO) apply where raw material must be sourced from Solomon Islands or EU-flagged vessels to benefit from the 24% import duty exemption. In order to qualify for ‘global sourcing’ RoO like PNG, Solomon Islands will need to sign onto the IEPA. The Solomon Islands Government is still considering whether or not to sign; in the event that it does not, in order for future loining/canning plants to be able to benefit from duty free access to the EU, they will need to source raw material from domestic (or EU-flagged) vessels. Hence, it is highly likely that foreign investors in new onshore processing facilities will also seek to secure domestic fishing licenses to ensure adequate supply of RoO compliant raw material.

2.12.2 Federated States of Micronesia (FSM)

Seven purse seine vessels are currently based in FSM; three operated by the long-standing Caroline Fishing Corporation (Pohnpei), two by the Yap State Fishing Corp. (Yap), one by a National Fishing Corporation joint venture and one for the Shanghai Deep Sea Fishing Corporation, both in Pohnpei. All vessels are FSM-flagged and five of the seven have FSMA status.

The catch by the FSM vessels in 2009 was 19,143 mt, however, much of the catch is taken outside the FSM EEZ since five out of seven vessels are licensed to fish in other PNA members’ EEZs under the FSMA.

Foreign access vessels fishing in the FSM EEZ during 2008 took only 35,000 mt, as compared to a high of 235,000 mt in the recent past (2005). This marked decline in catch is, in part, related to Japan re-establishing a fisheries access agreement with PNG in 2006 and diverting effort to PNG’s EEZ from FSM. The fleets accounting for the largest volumes of catch in FSM are Japan, Taiwan and the US. The catch by foreign pole and line vessels (Japan) has been low in recent years.

All the catch by FSM vessels is exported, with Thailand imports from FSM for 2009 recorded as 23,500 mt, larger than the reported catch by FSM flag vessels, with presumably some transhipments in Pohnpei attributed to FSM vessels. During 2008, there were 157 purse seine transhipments, totalling 112,000 mt, with Pohnpei a major transhipment location in the region.

255 Frabelle Fishing Corporation (Philippines) and Dongwon (Korea).
256 Provisional data, SPC 2009.
257 NORMA 2009. No country report for FSM was tabled at SC6 in August 2010.
258 Thai Customs 2010.
There is currently no shore-based processing of purse seine fish in FSM, however, the FSM Government has recently granted approval for the President to apply for a US $50 million loan to rehabilitate infrastructure and build a loining plant.259

2.12.3 Republic of the Marshall Islands (RMI)

In late 2010, the Marshall Islands fleet consisted of eight purse seine vessels; four operated by Koos Fishing Company, two by Marshall Islands Fishing Co. (MIFCO) and three by Pan Pacific Fishing, in association with the Pan Pacific Foods (RMI) Inc. loining plant which operates in Majuro.260 All vessels are RMI-flagged and five enjoy FSMA status.

The 2008 catch by RMI vessels (5) was around 33,000 mt, increasing to 44,000 mt in 2009 with one additional vessel.261 Much of this catch is taken outside the RMI EEZ, as RMI waters generally lie just north of the rich equatorial tuna fishing area.

Foreign fishing access purse seine vessels took just 15,300 mt in the RMI EEZ in 2009, down from 24,200 mt in 2009 and mostly in the extreme south of the zone by the FSMA-licenced vessels. Foreign longline vessels caught 4,300 mt and pole and line vessels 438 mt.

Majuro is an important transhipment location within the region, with 233 shipments (156,000 mt) taking place during 2008.262

Some of the catch by RMI flag vessels is processed for loining at the Majuro plant, but this was less than 5,000 mt in 2009.263 The majority of the catch is thus still exported, with Thailand imports from RMI around 14,000 mt in 2009.12 A significant proportion of the exports are believed to go to Japan (possibly 20,000 mt) where the RMI fish is used for katsuobushi production.264 A small amount is also exported to China and other markets.

The number of vessels in the RMI is likely to increase; PPF’s fourth vessel (still currently under construction) will become operational in 2011 and PPF is reportedly seeking another two licences, in addition to the four licences covered under the existing MOU.265

There has also been recent interest expressed by another local company associated with the Bank of the Marshall Islands.266

The loining plant is endeavouring to reach full production capacity of around 100 mt/day (running two shifts per day). At full capacity, raw material requirements will be in the order of 20,000–25,000 mt/year, which will be comfortably met by the four associated PPF vessels (who will likely have excess catch).

259 MIMRA 2010.
260 Provisional data, SPC 2009.
261 MIMRA 2010.
262 Industry source, pers.comm. 2010.
263 Mike A. McCoy, pers. comm. 2010. Shima 2010 reports that just 14,000 mt of skipjack for katsuobushi was imported into Japan in 2007; down from close to 50,000 mt in previous years, but imports levels may have increased again since then.
264 Hamilton et al. 2009.
RMI is at the forefront in the promotion of domestic fisheries development, despite some geographical and natural resource disadvantages in comparison to several other PNG members and is determined to continue in this vein. RMI Government, together with PNG, was also instrumental in establishing the PNA Office in Majuro.

2.12.4 Vanuatu

Nineteen purse seine vessels are Vanuatu-flagged, although thirteen of these are regarded as PNG home party vessels in terms of FSMA access (see Sections 2.3 and 2.8). Vanuatu’s vessels are generally owned by Taiwanese investors. Prior to 2009, there were more vessels on the Vanuatu register (23) before a shift of some vessels to US flag under the US Treaty (see Sections 2.3 and 2.5). Three small Vanuatu flag vessels also fish in Solomon Islands (see above).

The Vanuatu purse seine catch in 2009 was 37,853 mt; similar to the 2008 catch of 38,742 mt. This is assumed to be the catch of three Vanuatu-flag vessels, while an additional 144,893 mt was taken by the 13 PNG home party vessels. These vessels achieve some of highest catch rates in the WCPO fleet. None of the catch is made in the Vanuatu EEZ, but over wide area of the WCPO. While there is no foreign access purse seine fishing in the EEZ, there is considerable longline activity.

The entire Vanuatu tuna catch is transhipped in various ports around the region. Thailand imports from Vanuatu were 81,500 mt in 2009, which presumably includes much of the catch of the PNG home party FSMA vessels, as well as the three Vanuatu-flagged vessels.

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267 Provisional data, SPC 2009.
Forty-six large-scale longliners are Vanuatu-flagged (Taiwanese owned); 39 of which target albacore. A number of other small-scale longliners are also flagged in Vanuatu (see Sections 2.3 and 2.12).

2.12.5 Kiribati

Three vessels of Ecuadorian origin have been flagged to Kiribati since early 2009 and as a result, the Kiribati purse seine catch jumped from under 6,000 mt in 2008 to over 21,000 mt in 2009.\(^{268}\) This growth may continue in the future, with a fifth Japanese vessel reportedly commencing operations very recently under a joint venture arrangement (Fukuichi Fishery Corporation’s Taijin 18)\(^{269}\). Only the original Japanese joint venture vessel (Kao) is currently on the FSMA register.

A single pole and line vessel commenced fishing in 2009, taking 150 mt. There was a small longline catch recorded by domestic vessels (50 mt).

Kiribati EEZ waters are very extensive (3.5 million km\(^2\) in three separated zones) and highly productive, particularly during El Niño periods. The foreign access purse seine catch was around 181,000 mt in 2008 and 211,000 mt in 2009. Foreign longliners took a record high 11,000 mt in 2009, dominated by Korean and Taiwan vessels targeting bigeye.\(^{270}\)

Prior to 2009, the entire Kiribati purse seine catch was exported to Thailand. During 2009, the catch from the three new Ecuadorian vessels was exported mostly to Ecuador (~14,000 mt).

2.12.6 New Zealand

Four New Zealand vessels fished in the WCPO during 2009, as has been the case for some years. A catch of 26,600 mt was recorded for 2009, a slight decline on the 2008 catch of 30,000 mt.\(^{271}\) A modest portion of catch is exported to Thailand (3,500 mt in 2009) and other markets, but the majority of catch is unloaded in Pago Pago.

\(^{268}\) MFMRD 2010.
\(^{269}\) Interviews, Japanese industry representatives, July 2010.
\(^{270}\) MFMRD 2010.
\(^{271}\) Ministry of Fisheries 2010.
2.13 Longline-caught Albacore (White Meat) for Canning

2.13.1 Current fleet status

Unlike light meat tuna, which accounts for the great majority of the global canned tuna pack and is mostly supplied by the purse seine fleet, the higher priced white meat tuna (albacore) is supplied mostly by the longline fishery and to a lesser extent, pole and line and troll fleets. The estimated catch of albacore in the WCPO was 125,479 mt in 2009, the second largest on record.273

273 Light meat tuna includes skipjack and yellowfin for the most part, with some bigeye; white meat tuna is exclusively albacore.

274 Williams and Terawasi 2010.
Longline catches comprise close to 70% of this total, with over twenty countries recording albacore catches (around 80,000 mt). Table 2.7 presents catch details of those countries making a significant contribution to WCPO albacore catch, which is usually shipped initially as whole frozen round and consists almost entirely of adult fish. Taiwan and Vanuatu (Taiwanese owned) vessels accounted for the largest share of longline albacore catch (combined 21,800 mt) (see Section 2.3), closely followed by China and Japan, both catching around 20,000 mt.

Pole and line fish caught seasonally east of Japan usually account for around 15% of the WCPO catch and are generally consumed as fresh fish. The troll fishery, mostly New Zealand-based, now contributes only around 4% of the catch. Occasional purse seine catches are made in the temperate north Pacific, there is a small gillnet catch in Japan and artisanal fisheries contribute small amounts of albacore catch.

### Table 2.7 Total WCPO Albacore Catch by Fleet (2009)

<table>
<thead>
<tr>
<th>Country</th>
<th>Catch (’000 mt)</th>
<th>Market destination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Longline</td>
<td>Pole and line</td>
</tr>
<tr>
<td>Japan</td>
<td>20.0</td>
<td>32.4</td>
</tr>
<tr>
<td>China</td>
<td>20.1</td>
<td>-</td>
</tr>
<tr>
<td>Taiwan</td>
<td>13.8</td>
<td>-</td>
</tr>
<tr>
<td>Vanuatu</td>
<td>8.0</td>
<td>-</td>
</tr>
<tr>
<td>Fiji</td>
<td>7.2</td>
<td>-</td>
</tr>
<tr>
<td>Am Samoa</td>
<td>3.9</td>
<td>-</td>
</tr>
<tr>
<td>French Poly.</td>
<td>3.8</td>
<td>-</td>
</tr>
<tr>
<td>Samoa</td>
<td>2.8</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>78.8</td>
<td>32.4</td>
</tr>
</tbody>
</table>

Source: SPC 2009

2.13.2 Global fishing operations

Albacore are caught in all oceans, mostly by longline, with the global catch just over 200,000 mt in 2008, of which nearly 60% originates from the Pacific Ocean.

2.13.3 WCPO fishing operations

Nearly 90% of the total Pacific Ocean catch of albacore is taken in the WCPO. The longline fishery occurs over a wide area of the Pacific Ocean, but with two thirds of the longline catch taken in the south Pacific. The PIC coastal fleets (fresh and frozen fish) now make a significant contribution to the albacore longline catch, contributing 50-60% of the south Pacific albacore landings in recent years.

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275 Provisional data, SPC 2009.
276 Very high catch report in 2009 – estimated 32,400 mt (i.e. 25% of total catch).
277 SPC 2008.
278 Williams and Terawasi 2010, 87% of total Pacific Ocean catch (144,624 mt) taken in the WCPO in 2009.
279 South Pacific albacore catch in 2009 was the highest on record (66,996 mt).
Most of this catch is taken in sub-tropical waters (100S – 300S) (Figure 2.9).

The remainder of the catch is taken by the larger distant water longline fleets of Taiwan, China and Japan, although albacore is not always the target species. Some at-sea transhipping occurs, as well as unloadings in Fiji (Suva, Levuka), American Samoa (Pago Pago) and French Polynesia (Papeete), amongst others.

Figure 2.9 Distribution of the South Pacific Albacore Catch, 1988-2009

![Distribution of the South Pacific Albacore Catch, 1988-2009](image)

Source: SPC, in Williams and Terawasi 2010.

### 2.13.4 Major markets

Most of the albacore longline catch is destined for canning, with the US the primary market.

Thailand may be the largest non-US processor of albacore and imported 39,500 mt of raw material in 2009, mostly from the WCPO, with Japan, Taiwan, Vanuatu and Philippines the main WCPO sources. Indonesia is also listed as a significant source of imports, but this is believed to be Indian Ocean fish caught by longliners based in Jakarta/Benoa.

Large quantities of albacore were processed at the two canneries in American Samoa (Chicken of the Sea, Starkist) in the past and were the focus for the development of longline fisheries for albacore in the south Pacific in previous decades (see Section 4.4). Only StarKist’s cannery currently remains in operation and is reportedly likely to focus increasingly on processing albacore. Tri Marine has very recently purchased the former Chicken of the Sea plant and plans to re-commence processing high quality tuna for the US market.

One small Indonesian cannery, PT Juifa at Cilacap, Java, processes almost entirely albacore, but with most of the raw material likely coming from the Indian Ocean.

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280 Japan 13,761 mt, Taiwan 7,181 mt, Vanuatu 1,893 mt, Philippines 1,863 mt (from the PH distant water longline fleet). Thai Customs 2010.
281 20,000 mt/year estimated in 1993 (SPC/TBAP).
282 Industry sources, pers. comm. 2010.
283 PT Juifa at Cilacap, Java, estimated production 6,000 mt/year. Industry sources, pers. comm.
The largest processor of albacore within the Pacific Islands region is currently Fiji, with 18,400 mt of albacore processed into loins for export to the US in 2008.\textsuperscript{284} This operation involves one of the three major US processors (Bumble Bee), largely specialising in albacore and is associated with albacore processing in other locations (i.e. California (Santa Fe Springs), Thailand (Sea Value), Ecuador, Mauritius and Trinidad). The Fiji operation is supplied by Taiwanese and Chinese freezer vessels and some Fijian-flagged vessels. The frozen catch is mostly unloaded in Suva, then transhipped to Levuka for processing. There are plans to expand this operation to 180 mt/day from the current 120 mt/day, facilitated by the construction of additional cold storage in Suva to deal with seasonal fluctuations in supply.\textsuperscript{285}

It is assumed that most of the seasonal Japanese pole and line caught albacore is consumed fresh or various traditional ways in Japan, with some product vacuum or tray-packed for local consumption.

It is not known how much WCPO albacore is exported to the EPO (Ecuador) or Europe for subsequent processing.

\subsection{2.13.5 Recent developments}

The albacore longline fishery is particularly important to the non-PNA PICs in terms of offering an opportunity for domestic tuna fishery development with a medium level capital entry and modest technological requirements. PICs have capitalized on this opportunity to varying degrees and will likely continue to do so. There remain additional opportunities for value adding, such as the loining activity in Fiji and processing/packaging for seasonal fresh/frozen fish markets.

Prices and demand for albacore remain strong, with prices increasing steadily since 2007, despite the ongoing heavy metal scare in US markets. The resource is under-exploited,\textsuperscript{286} with some prospect of increase catches, although some caution needs to be exercised, with most of the present catch consisting of mature adults and catches subject to environmentally-induced fluctuations.\textsuperscript{287} The albacore catch by Chinese distant water longliners has also seen significant increase as this fleets expands thought the acquisition of second hand vessels, and this seems likely to continue.

\textsuperscript{284} McGowan and McClain; presentation at La Jolla meeting, May 2010.
\textsuperscript{285} PAFCO representatives, pers. comm., September 2010.
\textsuperscript{286} Albacore is managed as separate south and north Pacific stocks; the southern stock is considered neither overfished nor subject to overfishing.
\textsuperscript{287} Langley 2004.
2.14 Implications for PICs

2.14.1 General Points

The future of the fishing industry for canned tuna production, particularly in the WCPO region, is currently in a rather delicate position; purse seine fishing capacity continues to expand, despite an increasingly difficult operating environment (i.e. sustainability concerns, high operating costs, increasing fishing regulations and restrictions, uncertainty of fisheries access etc.). While current global processing capacity is likely more than adequate to meet existing demand levels for canned tuna, plans are in place for the construction of a number of additional processing facilities, as well as the issuing of new fishing licenses in conjunction with these facilities. Given recently introduced management interventions for the purse seine fishery, particularly the closure of several WCPO high seas areas, it is also likely that distant water fishing partners are placing additional pressure on PNA members to accommodate displaced fishing vessels.

Expansion in purse seine fishing activity and processing capacity in the WCPO is being driven by PICs exercising their legitimate desire to derive greater economic benefits from their tuna resources, by linking fisheries access more closely to onshore investments, rather than market forces. In the short-term at least, the trend in increasing vessel numbers is likely to continue, which may negate resource management efforts and compromise future potential economic benefits unless strict limits are enforced under the Vessel Day Scheme (or alternate management arrangements).

Since yellowfin and bigeye stocks are fully exploited, the potential to continue the expansion of purse-seine caught skipjack within sustainable limits is constrained, unless there are significant technological and/or logistical developments for minimising juvenile by-catch, particularly bigeye.

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**Key Points: Longline-Caught Albacore for Canning**

- Albacore is caught in all oceans, mostly by longline, with global catch exceeding 200,000 mt in 2008.
- The estimated catch of albacore in the WCPO was 125,479 mt in 2009. Longline catches comprise close to 70% of this total (around 80,000 mt). Taiwan and Vanuatu (Taiwan-owned) vessels accounted for the largest share of longline albacore catch, closely followed by China and Japan. PIC-flagged fleets operating in the South Pacific albacore fishery also make a significant contribution to the WCPO catch (i.e. Fiji, Samoa, Tonga, Cook Islands) (around 67,000 mt in 2009).
- Most of the albacore longline catch is destined for canned, with the US being the primary market. Some at-sea transhipping occurs for export to Thailand, as well as unloadings to processing plants in Fiji, American Samoa and French Polynesia.
2.14.2 Fleet Specific Implications

Japan: The Japanese fleet will remain stable at 35 vessels. However, there may be further relaxation of JFA regulations concerning vessel size, resulting in additional larger-sized vessels entering the fleet. To make way for additional new larger vessels, it is likely that Japanese vessel owners would seek to transfer old vessels under joint venture arrangements established with Pacific Island partners. In addition, JFA would likely continue to require Japanese vessel owners to scrap existing vessels within the WCPO purse seine fleet to offset the additional capacity of new vessels.

Since Japan’s past experience in onshore processing investments in the Pacific region has been negative, Japanese fishing companies remain reluctant to once again head down this track. In the case of those vessels owned by small family businesses, the capacity for onshore investment is extremely limited anyway. Hence, it is likely that in order to maintain favourable fisheries access in the WCPO region, Japan’s ‘islandisation’ strategy will centre on fishing joint ventures, in addition to other forms of technical cooperation (i.e. establishing crew training programs, conducting research in the area improved gear technology, by-catch mitigation etc.). If significant investment is made in islandisation projects by the Japanese industry (particularly processing facilities), it is highly likely that the level of overseas development assistance (ODA) provided by the Japanese Government to the Pacific Islands will decrease.

Taiwan: The average age of the Taiwan-flagged purse seine fleet is nearly double that of Taiwanese-owned vessels registered in Vanuatu and three times older than those registered in the Marshall Islands. This indicates that while one might expect older vessels to be used in regional joint ventures, with newer vessels placed under the national flag, in the case of the Taiwanese fleet (and potentially others in the future), several new vessels have gone directly into joint venture operations with PICs. The reasons are likely due to fishery access concerns, as well as being capacity-related, since such vessels may not be eligible to be flagged in Taiwan if their carrying capacity is larger than the vessel being replaced. Utilizing PIC involvement may be seen as a means to deflect criticisms of increased capacity, while at the same time providing greater assurance of fishery access.

In the case of Taiwanese longliners targeting albacore for canning, the trend towards using smaller FRP vessels will result in a greater reliance on PIC ports for re-supplying.

Korea: Despite being one of the most productive fleets operating in the WCPO, the Korean fleet has concerns that it is vulnerable in terms of assured fisheries access to PNG, an historically important fishing ground for Korean vessels, since it currently does not have any second generation access agreements in place tied to onshore investments. In the meantime, Korean interest in the Solomon Islands has grown, with Dongwon planning to invest in a processing facility in Guadalcanal. The level of transhipment conducted by Korean vessels in Honiara has increased, as has the number of Solomon Islander crew employed. In addition to the proposed Dongwon investment in the Solomon Islands, there is reported additional interest in transferring older vessels into joint ventures under PIC flags.

In terms of broader fisheries access in WCPO waters, Korea is potentially vulnerable due to the lack of absence of any significant aid programme and a lack of close diplomatic ties with most FFA countries.
In terms of WCPO fisheries management initiatives, the Korean fleet is likely to be affected by further high seas closures, but in comparison to other fleets, will be less affected by FAD closures, given the Korean fleet fishes more on free-swimming schools than other fleets.

**US:** Given the level of overcapacity in the WCPO purse seine fishery and related sustainability concerns, it is in the interest of PICs (particularly PNA members) to ensure the US is also subject to fishing effort restrictions under the VDS, particularly since the level of fishing effort expended by the fleet has increased considerably in the past 3-4 years. While the US fleet acknowledges this need, they will likely stand firm on the position that any effort restriction imposed must take into account effort levels of the full US fleet (i.e. 40 vessels), rather than being based on the fleet's 2004 effort level (which has been the benchmark level used for calculating total and party allowable effort under the VDS) when the fleet was operating at well below capacity. Until such time as a new US Treaty is finalised (scheduled for 2013), the US fleet will be exempted from fishing effort restrictions.

The likelihood that preferential market access to the US for tuna products from PICs can be negotiated under the US Treaty is very low. However, the US has indicated a willingness to consider PICs’ call for expansion of the level of US investment and development cooperation in the region.

**Philippines:** The Philippines domestic fleet has been significantly hampered by the cessation of access to Indonesian waters at the end of 2007, as well as the recent closure of several WCPO high seas areas. To maintain catch levels, the Philippines fleet is under pressure to expand fisheries access in alternative areas, since there is little opportunity to increase tuna catches within the Philippines EEZ. Hence, an increasing proportion of catch by Philippine vessels will likely be taken in PIC EEZs by existing vessels, as well as additional vessels licensed in conjunction with new processing plants. As has been the case in the past in PNG, vessel relocation to supply (in part) onshore processing plants will continue and in the short-medium term will likely be extended to the Solomon Islands, with integrated Philippine companies continuing to play a major role in PIC domestic fishing and processing developments.

**China:** The involvement of Chinese state-owned enterprises in large scale purse seine and longline (albacore) fishing operations indicates these fleets have strong financial backing and their goals that may not be completely centred on profitability. China is the youngest player in the WCPO purse seine fishery (first vessel commenced fishing in 2001) and considers itself in ‘developmental’ mode with respect to the WCPO tuna fisheries with a clear intention to continue expand its fleet. China’s presence in PICs is set to increase with the development of processing facilities and shore bases in several countries, as well as the potential establishment of joint venture fishing operations. Unlike some of the other key DWF players (i.e. Japan, Korea), China has not developed a national policy which limits the number of vessels that may be authorised to fish and hence, is only bound by RFMO set management measures.

**EU:** While the EU purse seine fleet is currently a very minor player in the WCPO it is important for PICs to better understand the EU fleet. The French and Spanish fleets contain some of the largest and most powerful purse seiner businesses in the world. As a result, EU-caught canning-grade tuna is an important input into the global canned tuna industry. In addition, while the EU DWF remains a relatively minor player in the WCPO, its three FPAs provide important contributions to the government revenue of three PICs. Furthermore, should firms within the EU DWF show interest in expanding their activities in the WCPO this will enhance competition for licenses and (if allocations are carefully capped) should benefit PICs.
The EU fleet is also important in terms of PIC development aspirations, since without preferential access to the EU market several tuna processing facilities based in PICs would not be able to withstand global competition. But at the same time, the EU tuna trade regime is politically determined by benefits to the EU DWF and EU-based processors; should the EU DWF decline, so will the political logic for the tariff preference available to certain PICs.

**Indonesia:** Given Indonesian vessels do not fish within PIC EEZs, there is likely to be very limited (if any) impact on PIC domestic developments. However, since Indonesian waters are tuna spawning grounds, the potential for impacts on resource sustainability is rather high.

**PIC Fleets:**

- **PNG:** Limited opportunity exists to further increase the catch in the PNG EEZ, hence, additional fishing licences issued in conjunction with new onshore investments will need to be offset by a reduction in licences issued to existing distant water fishing partners (likely those fleets not linked to onshore investments), if fishing effort restrictions are to be honoured.

- **Solomon Islands:** Purse seine catches in the Solomon Islands’ EEZ are likely to increase in the future, with additional effort associated with new onshore processing developments. There is some possibility of the revitalization of Solomon Islands’ pole and line fishery, through the re-commencement of fishing by Soltai’s former three remaining vessels and/or the establishment of a fleet of small-scale/artisanal vessels.

- **FSM:** Catch levels are increasing and some potential exists for onshore processing, particularly given the large volumes of transhipment that take place in FSM ports.

- **RMI:** Catch levels will continue to increase in conjunction with a growing RMI-flagged fleet. As available supply of catch will be well in excess of raw material needs of the PPF loining plant, the RMI fleet will supply increasing volumes to processors elsewhere.

- **Vanuatu:** Vanuatu-flagged vessels will continue to be a major supplier to Thailand-based processors.

- **Kiribati:** Kiribati and EU-associated vessels (El Salvador/Ecuador) fishing in Kiribati’s EEZ are likely to become increasingly important suppliers of EU-RoO compliant raw material to EPO-based processors.
3 CANNED TUNA TRADING COMPANIES – THE ‘BIG THREE’

3.1 Overview

3.1.1 Tuna Trading Companies’ Role in the Canned Tuna Supply Chain

In the simplest sense, tuna trading involves the procurement of raw materials from multiple fishing vessels and coordinating transhipment of catches into reefer carriers for sale and delivery to tuna processors. As in any trading relationship, the business objective is to sell raw materials for higher than the purchase price, plus any costs incurred.

Canning-grade tuna trading companies have grown to a position of relative dominance in the supply chain, largely due to the effectiveness of the services offered to vessel owners. Engaging a trader enables vessel operators to channel their energies into fishing, rather than having to deal with the financial, administrative and logistical hassle and risk associated with marketing catch. In addition, the majority of payment (90-95%) is received at the time of offloading onto the carrier. Trading companies also offer additional support services to vessel owners including supply of fuel, bait, spare parts, provisions; financial support;290 voyage planning; quality assurance; and, in some cases, assistance with government relations and fisheries access negotiations.

In the WCPO, relationships between trading companies and vessel owners are generally built on trust and historical dealings, resulting in many fishing vessels dealing exclusively with one particular trader.291 Tuna trading transactions are mostly conducted on a purchase rather than commission basis, where the trading company buys a vessel’s entire catch at unloading, with a new contract drawn up for each separate unloading.

In the case of processors, purchasing raw material from tuna traders removes the complexities of dealing with a large number of vessel owners selling small volumes of catch. Working with trading companies ensures that processors have continued access to large volumes of raw material. In contrast to vessel owners, processing companies prefer to share their business between various trading companies, so as to not be ‘at the mercy’ of one single trader. Some processors also deal directly with larger fishing participants like Dongwon (Korea), Fair Well Fishing Co. (Taiwan) and the major Spanish fishing firms, in addition to purchasing raw material through trading companies. Business conducted with processors is usually on an ongoing contractual basis or through ‘gentlemen’s agreements’, particularly in the case of Thai packers, where a mutual understanding exists that a trader will offer a processor a certain volume of raw material each month. Price negotiations are normally conducted on a monthly basis.

288 This section is largely based on multiple interviews with industry representatives and Campling et. al. 2007.
289 A useful discussion of the role of the major traders in the canned tuna commodity chain is also provided in Campling et. al. 2007 (Chapter 15: 229-234).
290 Financial support may be provided in the form of cash advances at the commencement of a fishing trip to assist in meeting operating costs. In the 1970s, Itochu and FCF were involved in offering finance for vessel construction/purchasing but claim to have since ceased this practice.
291 With the exception of some US vessels that are directly aligned with Starkist in American Samoa, as well as some others that like to ‘shop around’ selling to the trader offering the best price at the time or simply to whichever trader has a carrier nearby when the vessel wishes to unload.
In reducing the risk of raw material marketing/procurement for vessel owners and processors, tuna trading companies themselves take on a considerable level of risk. As price negotiations with processors are generally conducted 1-1.5 months prior to delivery, in the event that tuna prices increase during this time, traders are locked into the lower negotiated price (although conversely, if prices decline during this time, the risk is borne by processors). In the event that fishing conditions decline and a trader is unable to fill a carrier, this cost must be absorbed by the trader. Also, in order to honour contractual obligations, traders are occasionally forced to wear losses in times of supply shortages or intense price competition with other traders.

Tuna trading is a highly competitive business; as limited profit is made per shipment, trading companies capitalise on economies of scale and attain profits through trading high volumes of product.

3.1.2 The ‘Big Three’

Three major companies dominate canned tuna trading activities in the WCPO - Tri Marine, Itochu and FCF Fishery Co. Ltd. Collectively, these companies handle annually over 1,350,000 mt of raw canning material; around 70% (900,000 mt) of which is sourced from vessels operating in the WCPO.

Of the three companies, FCF handles the largest volume of raw material (around 650,000mt per year) and is by far the most prominent tuna trader in the WCPO region. While Tri Marine handles lower volumes than FCF (500,000 mt/year), it has a much stronger global presence (especially in the European market and other oceans) and has a more vertically integrated business model. Itochu is the most conservative of the three, operating almost exclusively in the WCPO and trading the smallest volume of raw material (200,000 mt annually). Company overviews with more detailed specifics on each of these firms are provided in the sections following (see Sections 3.2-3.4).

The canned tuna trading business in the WCPO grew significantly in the 1980’s, largely in conjunction with the development of Thailand's tuna packing industry. Tuna traders established an integral role for themselves since WCPO fishing grounds are located a fair distance from Bangkok and Thailand did not have an established domestic purse seine fleet from which to source raw material, nor a sufficiently sizeable local market for finished product. Originally, there were 20 or so trading firms supplying raw material to Thai processors. However, by the mid 1990’s, FCF, Tri Marine and Itochu emerged as the dominant players and nowadays, collectively supply Bangkok-based tuna processors with around 80% of their raw material needs.

FCF, Itochu and Tri Marine's dominance in tuna trading rose largely out of their ability to stay abreast of shifting sources of raw material supply. When the purse seine fishing industry first started to evolve in the 1950’s, the US fleet was the primary source of raw material. Over time, major supply sources shifted from the US and Mexico to Asian fleets (firstly Japan, followed by Korea, Taiwan and the Philippines, and now increasingly, China). Being geographically located in Asia was beneficial; especially in the case of FCF and Tri Marine who have strong links with the Taiwanese fleet, which has emerged as the largest and highest performing fleet in the WCPO region.

While competition between the three trading companies is intense, the market for raw material purchasing is reportedly large enough to comfortably support all three. Given FCF, Tri Marine and Itochu have well established long-term relationships with fishing and processing clients,
strong financial backing to fund trading transactions, as well as sophisticated market intelligence systems, it is unlikely that any new trading companies could enter the market and compete with these three trading firms.

3.2 Tri Marine

3.2.1 Company Overview

Tri Marine was originally founded in Singapore in 1971 by the Italian Government to operate largely as a tuna trading company to procure yellowfin for the Italian canning market, as well as a base for albacore and sashimi longliners. In 1986, the Italian Government-owned holding company opted to privatise Tri Marine and it was purchased by a consortium of four Italian and Taiwanese individual investors. The onshore facilities associated with the longline base were later sold to a Singaporean company, enabling Tri Marine to focus attention on further developing its trading operations for canned tuna.

While Tri Marine’s core business is tuna trading, the company is involved in all aspects of the canned tuna supply chain – fishing, trading, logistics, processing and marketing. To support these functions, Tri Marine has established a global and vertically integrated network of fishing vessels, reefer carrier vessels and processing facilities, with commercial and representative offices located in all major global tuna producing areas.

3.2.2 Current Company Status

Tri Marine’s annual turnover is over US $1 billion and the company currently handles around 500,000 mt of canning-grade tuna per year.

Tri Marine’s major canned tuna brand partners are Chicken of the Sea and Starkist in the US, as well as the Bolton Group in Europe. Tri Marine also supplies a considerable volume of raw material to tuna packers in Thailand, and elsewhere.

Traditionally, Tri Marine supplied tuna brands with whole round tuna. Over the past 15 years, some tuna brands have increasingly demanded cooked loins and finished products, due to the relatively high cost locations of their canning facilities. Hence, Tri Marine’s tuna trading activities have extended to include whole round tuna (yellowfin, skipjack, albacore), cooked loins (yellowfin, skipjack) and finished product (cans for retail and catering use). Tri Marine also buys and processes wet fish (sardines, squid and mackerel) in the USA.

Tri Marine’s business model partly differs to that of its competitors, FCF and Itochu. Rather than focusing primarily on tuna trading activities, Tri Marine’s interests have extended to a level where the company is now involved in end-to-end management of the global canned tuna supply chain (i.e. fishing through to finished goods). Tri Marine’s own fishing fleet contributes around 20% (60,000-80,000 mt) to the total volume of raw material handled annually.

292 This section is largely based on multiple interviews with industry representatives, information derived from the company website (http://www.trimarinegroup.com) and Campling et. al. 2007.
293 Mr. Renato Curto (Italy) is the majority shareholder and Chairman of the Tri Marine Group of Companies.
295 Author’s own estimate.
To ensure Tri Marine can provide a reliable and economic supply of raw material and tuna products to its major brand clients, the company’s global and vertically integrated business model includes:

- Fishing vessels, both company owned/affiliated and client vessels, operating in all oceans (EPO, WCPO, Indian and Atlantic Oceans) to ensure access to a diversity of fishing grounds and reduce the risk of supply interruptions.
- A network of company owned and affiliated tuna processing plants strategically located near major fishing grounds, most of which have duty free access to the EU or US markets.

3.2.3 Global Operations

Tri Marine’s corporate headquarters is in the USA (Bellevue, Washington). The company also has commercial offices in Singapore, Panama and Italy; representative offices in Spain, Mexico, Ecuador, American Samoa, Thailand, Taiwan and FSM; and, fishing and/or processing operations in the US, Panama, Ecuador, Mexico, Colombia, Kenya, Mauritius, China, Marshall Islands and Solomon Islands.

Tri Marine's operations extend across all major tuna fishing grounds, as well as the major markets. A summary of Tri Marine’s global operations is presented in Table 3.1.

In terms of tuna trading, FCF deals with larger volumes of raw materials in the WCPO region than Tri Marine. However, Tri Marine has a much stronger global presence than the other two trading companies, with long-standing and very strong connections in the European market, as well as a strong foothold in tuna trading and processing in South America.
Table 3.1 Overview of Tri Marine’s Global Operations

<table>
<thead>
<tr>
<th>Company Function</th>
<th>Activities/operations</th>
<th>Area of Operation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fishing</strong></td>
<td>13 company owned purse seine vessels</td>
<td>EPO WCPO</td>
</tr>
<tr>
<td></td>
<td>Some vessels purchased in 2001 from StarKist</td>
<td></td>
</tr>
<tr>
<td></td>
<td>US, Solomon Islands &amp; Panama flagged</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vessel age range: 5 – 31 years</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vessel size range: 719 – 2,019 GRT</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual average total catch: 60-80,000 mta</td>
<td></td>
</tr>
<tr>
<td><strong>Tuna trading</strong></td>
<td>Purchasing whole round SKJ, YF, ALB</td>
<td>EPO WCPO ATL IO</td>
</tr>
<tr>
<td></td>
<td>Ongoing supply contracts with vessel owners from major purse seine fleets (TW, EU, US, CH, KR, PH)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spot purchases/brokering of catch from vessels with no other formal relationships</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Annual volume: 500,000 mt</td>
<td></td>
</tr>
<tr>
<td><strong>Logistical support</strong></td>
<td>Transhipment services – time-chartered reefer carriers (operate 5-6 for normal fishing seasons), plus voyage charters as required, shipping containers</td>
<td>WCPO IO</td>
</tr>
<tr>
<td></td>
<td>Vessel servicing &amp; support – fuel, bait, provisioning, voyage planning, market intelligence</td>
<td></td>
</tr>
<tr>
<td><strong>Processing</strong></td>
<td>Network of 11 TMI owned or contracted tuna processing facilities</td>
<td>WCPO: Solomon Islands, Marshall Islands, China x 2 ATL: Colombia, Ivory Coast EPO: Ecuador x 2 IO: Kenya, Mauritius, Madagascar</td>
</tr>
<tr>
<td></td>
<td>Producing loins (YF, SKJ), cans (retail/catering – YF, SKJ, ALB)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Processing facilities located near productive fishing grounds.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Some plants have duty free access to EU or US markets (plus sources of RoO compliant raw materials)</td>
<td></td>
</tr>
<tr>
<td><strong>Marketing</strong></td>
<td>Market loins/finished product for processing clients to major brands</td>
<td>EPO WCPO ATL IO</td>
</tr>
<tr>
<td><strong>Financing</strong></td>
<td>Access to credit lines in major financial markets (Singapore, Panama) to finance raw material purchases and processing.</td>
<td>EPO WCPO ATL IO</td>
</tr>
</tbody>
</table>

Sources: Tri Marine website 2010, interviews, multiple industry representatives, 2010.

*Author’s own estimate.
3.2.4 WCPO Operations

Tri Marine handles around 250,000 mt of raw material annually from purse seine vessels operating in the WCPO.

Solomon Islands based fishing company, National Fisheries Developments Ltd. (NFD) is also owned by Tri Marine. NFD operates five purse seine vessels which collectively catch around 16,000-20,000 mt per year\(^{296}\) mostly in Solomon Islands waters. Yellowfin and skipjack caught by NFD’s vessels is supplied directly to Soltai Fishing and Processing Ltd. in the Solomon Islands for loining, as well as transhipped to Thailand and other destinations.

NFD has also recently acquired Soltai’s former pole and line fishing fleet, with the objective of supplying Soltai with pole and line caught raw material, in response to increased market demand, particularly in northern European markets, for pole and line caught canned tuna.\(^{297}\)

Tri Marine’s commercial relationship with Soltai also extends to processing activities. In 2003, Tri Marine entered into a contractual processing arrangement with Soltai for the production of frozen yellowfin loins for Bolton Group (Italy). In 2006, Tri Marine also facilitated the introduction of a processing line to enable Soltai to commence processing catering cans under contract, also for the European market (France, Germany). In late 2008, Tri Marine provided Soltai with three senior managers on secondment to help overcome managerial and operational difficulties experienced by the processing plant. Tri Marine has recently become Soltai’s major shareholder (51%) (see Section 3.2.6).

Tri Marine has developed close commercial relations with Pan Pacific Foods (RMI) Inc. (PPF) loining plant in Majuro, Marshall Islands.\(^{298}\) Tri Marine provides the plant with whole round fish to meet a portion of their raw material needs and exclusively handles the marketing on a commission basis of PPF’s processed loins. Tri Marine also purchases surplus catch from PPF’s purse seine fleet (currently three vessels, with a fourth under construction in China which is scheduled to commence operation in 2011). Tri Marine has no capital investment in the plant and hence, no associated risk. Rather, Tri Marine’s involvement with PPF’s operations stems from a historic relationship with the loining plant’s owner, Shanghai Deep Seas Fishing Company (see Section 2.7 on the Chinese PS fleet).

3.2.5 Major Markets

Tri Marine has ongoing contracts to supply the major US brands, StarKist and Chicken of the Sea with raw material for canning. Tri Marine supplies around 50,000-60,000mt of light meat (skipjack, yellowfin) and 30,000 mt of white meat (albacore) annually to these processors. Albacore is purchased mainly from Taiwanese longliners operating in the Pacific, Indian and Atlantic oceans and is shipped to American Samoa and elsewhere for processing. A small volume of whole round albacore is also sold to a special market in Spain, but this is mostly sourced from troll vessels.\(^{299}\)

\(^{296}\) MFMR 2010.
\(^{297}\) Soltai’s pole and line fleet consisted of fifteen significantly aged vessels and two newer vessels gifted to the Solomon Islands Government through Japanese grant aid in 2005. Tri Marine retained one of the older vessels still in working order and scrapped the remaining fourteen aged vessels. Negotiations continue with the Solomon Islands Government to ascertain if NFD will be able to operate the two newer pole and line vessels in the future.
\(^{298}\) PPF (RMI) Ltd. is currently processing 35-40 mt/day in one shift and aims to introduce a second shift to increase maximum production capacity to 80 mt/day.
\(^{299}\) Spain is the largest market for troll-caught albacore and is a high value market. Troll-caught albacore is smaller than longline-caught albacore and has higher oil content. Tri Marine sources troll-caught albacore from vessels fishing in South Africa, New Zealand, Japan and the US West Coast.
Tri Marine also supplies several Thailand tuna packers with raw material (60,000-70,000 mt annually). In contrast to supply contracts with the US processors, Tri Marine has informal ‘gentlemen’s agreements’ established with the Thai packers and offers a certain volume of raw material per month. Similar arrangements are also in place to supply raw material to Soltai (Solomon Islands) and plants in China for loining. Hence, each month a certain amount of whole round fish is either contracted or informally committed to Tri Marine’s main processing clients, and any leftover product is sold on the spot market to other buyers (e.g. Philippines).

Tri Marine has a contract with Italy’s Bolton Group to supply high quality yellowfin loins (as well as small volumes of skipjack loins) for Bolton’s Rio Mare and Saupiquet canned tuna brands. The majority of Tri Marine’s yellowfin loins are sold to Bolton. Surplus loins or those that are below Bolton’s very high quality specifications are sold to other Italian and Spanish customers.

The majority of yellowfin loins marketed by Tri Marine are sold under contract, while larger volumes of skipjack loins are sold to canners globally on a spot basis (i.e. North Africa, Israel, EU, US, American Samoa, Mexico) since skipjack loins are a so-called ‘commodity’ product. In its loin business Tri Marine competes with other loin processors (e.g. Thai packers), rather than the other tuna trading companies.

In addition to yellowfin loins, Tri Marine also supplies Bolton Group with canned tuna sourced from processors in the Indian and Eastern Pacific Oceans and from the company’s own processing facilities. Tri Marine also supplies finished goods from its processing facilities in Ecuador and Colombia to private label customers in Europe and South America.

3.2.6 Recent Developments and Future Prospects

Over the past 12 months or so, Tri Marine has been involved in a number of significant developments.

Tri Marine has entered into a joint venture partnership, Niugini Tuna Ltd., with RD Tuna Canners and Fair Well Fishing Company to establish a tuna processing plant (250 mt/day) in Madang, Papua New Guinea in the Pacific Marine Industrial Zone (PMIZ) site. Tri Marine will be responsible for overseeing raw material supply and marketing, while RD Tuna Canners will oversee the processing operations. Fair Well Fishing Company’s PNG-based purse seine fleet will supply raw material to the plant. Construction is expected to commence in late 2011/early 2012 and it is anticipated that the plant will then become operational within two years. Tri Marine’s interest in establishing a processing facility in PNG largely stems from PNG being one of the world’s most productive tuna fishing grounds, coupled with PNG’s favourable preferential market access to the EU which includes global sourcing rules of origin (see Section 11.2).

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300 Rio Mare is the leading canned tuna brand in Italy; Saupiquet is the leading brand in France.
At the invitation of the Solomon Islands Government, Tri Marine has entered into the shareholding of Soltai Fishing and Processing Ltd. and participated in the financial restructuring of the company. Soltai was formerly owned by the Solomon Islands National Government (51%) and the Western Province Government (49%). During the extended negotiations operations at the plant folded for several months due to cash-flow constraints, with Tri Marine hesitant to provide the necessary capital investment required to restore Soltai to an operational status until such time as the shareholding issue had been resolved. The sale of Soltai shares was finalized in September 2010, with Tri Marine the majority shareholder (51%), in partnership with the Solomon Islands National Provident Fund (29%), Western Province Government (10%) and Investment Corporation of Solomon Islands (ICSI) (10%). A working capital injection of SBD $100 million (USD $13.7 million), equally financed through a loan from Tri Marine and the Solomon Islands National Provident Fund (NFP), has funded the introduction of a further processing line, intended to increase Soltai’s loin and canned tuna processing capacity to 80 mt/day in the short-term, to eventually reach 150 mt/day.

In October 2010, Tri Marine concluded an agreement for the purchase of Thai Union’s Chicken of the Sea (COSI) plant in Pago Pago, with plans to restore the plant to a functioning tuna processing facility under the company name of Samoa Tuna Processors Inc. (see Section 4.4). Tri Marine has secured a long term ground lease (30 years) and tax exemptions with the American Samoa Government. Tri Marine officials have clearly indicated that it is not the company’s intention to replicate Chicken of the Sea’s former business model, given the difficulties encountered by both Chicken of the Sea and Starkist in operating globally competitive tuna processing facilities. Tri Marine will likely operate a smaller facility and the company has indicated its goal is to produce very high quality tuna for the US market, including fresh-chilled and frozen longline caught tuna. The plant is expected to become operational in late 2011.

Tri Marine has been a strong advocate in various dialogues and initiatives concerning the long term sustainability of global tuna fisheries. Tri Marine is one of the founding members of the International Seafood Sustainability Foundation (ISSF); a collaboration launched in 2009 between leading canned tuna companies, marine scientists and WWF to facilitate stronger science-based fisheries management of tuna stocks used for shelf-stable products (see Section 10.2). In addition, over the past several years, members of Tri Marine’s senior management have delivered numerous addresses to key industry stakeholders concerning sustainability issues relating to fishing and processing overcapacity in the canned tuna sector.

In August 2010, Tri Marine established a joint venture company in Mexico (Baja Marine Foods) to handle fishing, procurement, processing and marketing of sardines and other seafood products. This operation complements Tri Marine’s existing wet fish processing operations in San Pedro, California.

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301 Campling et. al. 2010a, Hamilton et. al. 2011, Interview, industry representative, 2010.
302 Campling et. al. 2010b.
304 Pers. comm., industry representative, 2011.
3.3 FCF

FCF (originating as Fong Cherng Fishery Company Ltd.) is a privately-held company founded in Taiwan in 1972. The firm initially engaged in the business of trading tuna from the catch of longline vessels. It has since grown into Taiwan’s largest trading company of sea products.\textsuperscript{306}

The company has benefited from the fact that most Taiwan tuna vessels operating overseas are historically family-run businesses with limited experience and ability to arrange the full range of support services required for their vessels. These necessary services can include arrangements for provisioning, logistics, bunkering and transhipment, as well as assistance with financing, government relations and fishery access when required.

Of all services offered by FCF to vessel operators, the marketing of the catch has historically been the most important. FCF’s activities have evolved over time to where the company now purchases the catch from purse seiners and longliners and markets on its own account.\textsuperscript{307} Relatively small product volumes from individual vessels or fishing companies can be leveraged to obtain better prices from processors or end users. Vessel operators are in turn provided with a guaranteed market, which is an important consideration in periods of glut.

3.3.1 Current Company Status

The company’s current shareholders are believed to be representative of long-time participants in Taiwan’s tuna industry, with investments in ongoing fishing enterprises and ancillary businesses such as shipbuilding and ship repair. As a company, FCF does not invest in fishing vessels although some shareholders are believed to hold significant ownership positions in Taiwan’s purse seine and large-scale longline tuna fleets.

The evolution and expansion of the company’s activities has resulted in strategic alliances with processors, importers, brand owners and others in the industry. Notable among these alliances are those that have developed with Bumble Bee (albacore) and Thai Union (light meat). In the case of Bumble Bee, FCF is the main supplier of raw material for loining at the PAFCO facility in Levuka, Fiji. Albacore is sourced primarily from Taiwanese longline vessels and processed by PAFCO under contract to Bumble Bee. FCF also has a supply agreement with Thai Union Frozen (TUF) in Bangkok for the supply of light meat, both whole frozen and loins, and claims to be the largest single supplier of raw material to TUF. FCF obtains its product from multiple sources in all three oceans to ensure that supply obligations under these agreements are met. The company’s emphasis is in the WCPO, where in addition to a large presence in the purchase of purse seine-caught skipjack and yellowfin, FCF is also the majority stockholder in South Seas Tuna Corporation (SSTC) that operates a loining plant in Wewak, PNG.
3.3.2 Global Operations

FCF company headquarters are located in Kaohsiung, Taiwan, the major home port for Taiwan’s distant water tuna longline and purse seine fleets. In Asia, the company also maintains offices in Japan, Thailand, Singapore and China. Investments in Asia include a wholly-owned subsidiary in Singapore engaged in vessel support services and a cold storage facility in Xiamen, China.

Raw material sourcing strategies from the various fleets include both spot purchases and long term contracts with vessels. According to the company, the total volume of tuna handled on an annual basis worldwide is around 650,000 mt. Figure 3.1 depicts the volumes of each of the three product categories - light meat for canning (skipjack and yellowfin), albacore for canning, and ULT deep frozen sashimi grade (predominantly bigeye and yellowfin).

![Figure 3.1 FCF Global Tuna Marketing Volumes](image)

Data Source: FCF, pers.comm., May 2010

Of the total volumes shown in Figure 3.1, about 80% (430,000 mt) of light meat comes from the WCPO. Approximately 40% (32,000 mt) of albacore originates in the WCPO and about 20% (6,000 mt) of ULT frozen sashimi-grade tuna is WCPO fish.

In addition to the production of loins at the PNG plant, FCF also arranges for the processing of loins at facilities in China and Vietnam. Shipments of frozen loins from these locations are typically made via container. However, FCF has 22 refrigerated reefer carriers on long-term charter for movement of frozen fish from transhipping sites to processing facilities. Space is purchased when needed on an additional four reefers engaged in the trade.

FCF is also active in the support of distant water squid jigging vessels and marketing of squid from the South Atlantic fishery.
3.3.3 WCPO Operations

FCF activities in the Pacific islands are supported by offices in PNG (Wewak), American Samoa (Pago Pago), and Fiji (Levuka). Agency services are provided in PNG, while offices in American Samoa and Fiji primarily provide liaison with processors and handle catch offloading details at each site.

The impetus for the company’s majority ownership in the SSTC loining plant in Wewak was, and continues to be, second-generation fisheries access to PNG’s very productive tuna resources. Construction and operation of the loining plant assured SSTC of fourteen purse seine fishing licences. The production of these vessels far exceeds the needs of the loining plant, enabling FCF further opportunity in marketing of the catch from vessels associated with the facility. While not without its problems on the processing side, the facility provides further income streams from license acquisition, fish sales and support services provided to purse seine vessels connected to the facility. It has also expanded the company’s involvement in the processing of cooked frozen tuna loins, a commodity that is traded worldwide.

3.3.4 Major Markets

FCF is reportedly the largest supplier by far of raw material to Thailand tuna processors, with the bulk of fish transhipped by FCF from purse seiners in the WCPO and sent to Bangkok. The company also markets some fish to European and Latin-American based processors, however, the volumes traded are considerably lower than those handled by Tri Marine. FCF (and other traders) maintain that it is not cost-effective to ship via reefer carrier from the WCPO to buyers in Europe. Hence, fish destined for Europe are sorted in Bangkok and shipped onward via container.

In light of the need to comply with EU catch certification requirements under the EU-IUU Fishing Regulation introduced in January 2010, FCF officials indicate that this has resulted in additional costs to the industry. During transhipment, products must be segregated by source to maintain compliance with the certification requirements and considerable paperwork is required. FCF feels these requirements are onerous in a fishery that has seen very few problems with IUU fishing in comparison with other regions/fisheries that supply the EU.

It is generally recognized in the industry that operations such as SSTC in Wewak were conceived to enable access to fishery resources. While the owners’ stated intention is for the facility to become profitable, company representatives indicate that SSTC has not made money since it commenced activities in 2004. Several reasons are cited as impediments to profitable operations. Firstly, a major problem is a lack of adequate infrastructure, which is restricting production at the facility. A key component for success is of the facility is a wharf to enable sufficient amounts of fish to be unloaded for processing. According to FCF, the current wharf must be shared with other shipping activity, and is inadequate for the needs of the processing industry. As a result of this and other problems, the processing facility, originally designed to process up to 200 mt/day, is currently averaging about half of its maximum processing capacity. Another infrastructure-related issue affecting profitability of the processing plant is the high cost and unreliable electricity supply.

With respect to albacore processing in Fiji, according to FCF, one of the limiting factors to increasing production at PAFCO is the availability of cold storage space. With additional cold storage, the current processing capacity of 120 mt/day could be increased by up to 50%, to as high as 180 mt/day.
There have been discussions with PAFCO shareholders and others regarding cold storage expansion, but to date nothing definite has been arranged. Even if additional cold storage could be constructed, expansion of processing capacity of the facility beyond 180 mt/day is not likely. According to FCF, this is because of the high costs associated with this activity in Fiji and the resultant lack of any competitive advantage over existing facilities elsewhere.

3.3.5 Recent Developments and Future Prospects

There are two major areas of concern for the tuna trading and processing sector as represented by FCF. The first is linked directly to concerns over sustainability of tuna stocks, while the second relates to the inherent inefficiencies of processing in small island countries. Overshadowing both these concerns is uncertainty as to which future regulatory measures will be enacted and the roles of WCPFC, PNA, and FFA.

As a processor, FCF is deeply concerned about maintaining the required levels of supply on which their businesses depend. As a trader, they are tasked with sourcing those supplies in a timely and efficient manner. Wearing both hats, the company is concerned about how management measures will affect supply. According to FCF, at the present time it is difficult to see where the key policy issues are heading, and exactly how and when fishing effort and volumes will be reduced.

FCF recognizes the desire of some Pacific Island countries to derive greater benefits from tuna resources by increasing onshore processing. Their concern is that at present the available infrastructure is inadequate and not cost-effective. A second issue raised is that generally speaking, labour productivity is currently low and this creates inefficiencies in production compared with well-established sites in Thailand and elsewhere. This is important since the tuna processing business is highly competitive and all negative aspects must be minimized to provide opportunities for profitability. The company has no further plans for investment in shore-based processing at this time.
3.4 Itochu

3.4.1 Company Overview

Itochu Corporation (formerly C. Itoh) is a publicly held Japanese general trading company (sogo shosha), established in 1858, when the company’s founder, Chubei Itoh, commenced linen trading operations. Over the past 150 years, Itochu has diversified and evolved substantially to become one of Japan’s leading sogo shosha and is engaged in domestic trading, import/export and overseas trading of a huge range of goods and services.


Itochu has 15 offices in Japan (Head Office in Tokyo), 136 overseas offices and 73 overseas trading subsidiaries in 80 countries. Itochu directly employees 4,368 people and has a capital value of around $US 2.2 billion.

Overall, Itochu Corporation’s major source of competition are other Japanese sogo shosha (e.g. Mitsubishi Corporation, Mitsui & Co., Marubeni Corporation, Sumitomo Corporation), along with large foreign conglomerate companies (e.g. Samsung International and Daewoo International from South Korea). In terms of canning-grade tuna-trading activities, Itochu competes with FCF and Tri Marine. (Mitsubishi is believed to be the world’s most important player in the trade of sashimi-grade tuna.)

Japan is Itochu Corporation’s largest geographic market, accounting for 63% of total revenue.

3.4.2 Current Company Status

Itochu’s Food Company is one of the top-ranking food divisions of general trading companies in Japan and is striving to become the leading food company in China, as well as Japan. Of Itochu’s seven companies, the Food Company generates the highest gross profit (36%, US $3.6 billion in 2009/10).

Itochu’s tuna-trading activities are handled by the Marine Products Department, which is housed within the Food Company’s Fresh Food & Food Business Solutions Division. The Marine Products Department is comprised of three sections:

- Section No.1: raw material unit – handles tuna trading activities for the procurement of raw materials for canning and katsuobushi production.

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308 Sogo shosha (Japanese term for ‘general trading company’) is a form of an industrial organization that originated and remains largely unique to Japan. Sogo shosha are characterized by strong international networks, large market shares and trading of a huge range of products (often 10,000–20,000 products). In the 1990s, sogo shosha controlled about 10% of the world’s exports and over 50% of Japan’s overall trade. enotes 2010.


311 Itochu 2010c.
Section No.2: canned tuna – handles trading activities and imports of canned tuna for human consumption and pet food.

Section No. 3: sashimi & other marine species (e.g. squid, shrimp, octopus etc.) – handles imports of wild-caught and farmed/ranched sashimi-grade products.

Tuna accounted for around 70% of the Marine Products Department’s sales in 2006.\(^{312}\)

In terms of trading in raw materials for canning, Itochu’s operations are relatively simple compared with FCF and Tri Marine. Generally, Itochu purchases whole round fish and sells whole round fish. Itochu handles only a very limited amount of loins and small (but growing) volumes of finished product. Transactions are conducted on a purchase, rather than commission basis.

Most of the vessels affiliated with Itochu were originally provided with financial support for vessel construction. However, nowadays, Itochu does not provide vessel financing support to its clients, nor does it own any fishing or carrier vessels outright.

Itochu is the only remaining Japanese company trading purse-seine caught tuna. Others, including Mitsubishi, were also involved in the 1970’s and early 1980’s. However, Itochu was the only Japanese company able to stay abreast of shifting supply sources (see Section 3.1).

3.4.3 Global Operations

Itochu Corporation is a global business operating in Japan, North America, Latin America, Europe, Africa, Middle East, Oceania, Asia, China and Russia.

However, the company’s tuna trading activities are limited mainly to the WCPO region. Only around 5% of raw material is procured from purse seine vessels operating in the Indian Ocean and Japanese coastal waters.

3.4.4 WCPO Operations\(^{313}\)

Itochu’s purse seine tuna trading interests rely heavily on the WCPO fishery. Around 95% of Itochu’s raw material supplies are purchased from Taiwanese, Japanese, Korean and Filipino vessels operating in the WCPO.

Itochu purchases around 200,000 mt per year; 75% from Taiwanese vessels (around 150,000 mt) and the remaining 25% from other fleets (Japan, Korea, Philippines). The majority of vessels supplying Itochu have long term relationships with the company (some dating back 30-35 years). Small volumes are also purchased on a spot basis.

As noted above, Itochu does not own any carrier vessels. Instead, the company time charters carrier vessels or purchases space onboard carriers on the spot market.

\(^{312}\) Campling et. al. 2007.

\(^{313}\) Unless otherwise specified, the following is based on multiple interviews, Japanese industry representatives, 2006 and 2010.
Itochu has also invested in a joint-venture tuna processing facility (P.T. Aneka Tuna Indonesia) established in Surabaya, Indonesia in 1991. Itochu is the major shareholder (47%), along with Hagoromo Foods Corporation (Japan’s leading tuna brand owner) and one other silent foreign partner. Itochu handles sales and management, while Hagoromo Foods is in charge of production (100-150 mt/day of canned tuna). Raw material for the processing plant is sourced from vessels fishing in Indonesian waters, as well as other areas in the WCPO.

Itochu (under the company’s former name C.Itoh) was the majority shareholder of PAFCO Cannery in Levuka, Fiji when the processing facility was first established during the 1970’s. However, in 1986, C.Itoh and the other Japanese partner, Hosui (one of Japan’s historically prominent fishing companies) withdrew from the joint venture due to raw material supply issues and the high-cost operating environment, which compromised profitability of the canning facility.

3.4.5 Major Markets

Itochu supplies around 150,000 mt of raw material to Thailand’s major tuna packing companies (accounting for 75% of sales from Marine Products Department – Section 1). The remaining raw material is sold to processing facilities in the Philippines, Vietnam, Indonesia and Japan. A limited volume of yellowfin is also supplied to Europe.

Small volumes of loins are purchased from Asian tuna processors and sold to canning companies in Europe and Japan.

Products processed by P.T. Aneka Indonesia (cans, pouches, loins, pet food, fish soluble) are marketed in Japan, Europe, Middle East, Canada, Australia and Africa, as well as sold domestically in Indonesia.

3.4.6 Recent Developments and Future Prospects

Itochu’s business model of canning-grade tuna trading has remained stable, with no notable major developments in recent years. Itochu operates quite a conservative business in terms of tuna trading and is likely to continue to do so in the future. Of the three major trading companies operating in the WCPO region, Itochu handles the lowest volume of raw material and is reportedly the most risk averse. There are no plans to expand Itochu’s area of operation outside of WCPO, largely due to concerns with tuna resource sustainability, as well as staffing constraints.

At the whole-of-company level, Itochu is well-placed to capitalise on the growing Chinese consumer market, particularly for food products, as Itochu was the first general trading company to enter China in 1972 and has developed a strong presence there. Itochu’s Food Company also stands to benefit from growth in the global food products industry (25% global growth forecasted for 2008-2013). However, Itochu’s heavy dependence on the Japanese market poses some risk should Japan continue to face economic difficulties, especially if the economy worsens. Also, Itochu is sensitive to foreign exchange rate fluctuations given that many transactions are conducted in foreign currencies.

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P. Aneka Tuna Indonesia 2010.
PAFCO was established under a 10-year joint venture arrangement between C.Itoh (61%), the Fiji Government (25%), Hosui (another Japanese investor) (10%) and local private investors (4%).
Interview, Japanese industry representatives, 2010
Itochu 2010b: 20-23.
Itochu has been exposed to exchange rate risk for transactions conducted in US dollars (e.g. tuna raw material sales) in recent years, given the very strong Japanese Yen relative to the US dollar.  

### 3.5 Implications for PICs

The ‘Big Three’ tuna traders have established an integral position for themselves in the WCPO tuna fishery and, to an extent; the global canned tuna supply chain as a whole. Their position is unlikely to change or be challenged anytime soon. Hence, FCF, Tri Marine and Itochu will remain the three dominant trading entities in the WCPO region, with little to no likelihood of new entrants to the industry.

#### 3.5.1 Benefits of Fostering Relationships with Trading Companies

There are a number of benefits to be gained by PICs through fostering closer relationships with the major tuna trading companies.

The global canned tuna industry is complex and dynamic. Since tuna trading companies maintain close commercial relationships with the major industry players (fishing fleets, processors and brands), they are in the best position of any sector in the industry to understand supply chain dynamics and keep abreast of developments. By enhancing relationships with trading companies, an excellent opportunity exists for PICs to tap into their extensive corporate knowledge base to help better understand industry and market place dynamics, as well as the impacts on industry of complex and ever-changing government regulations, which is integral for more effective fisheries policy making and industry development planning.

Tuna trading companies are potentially strong industry allies for PIC governments in promoting sustainability of the WCPO tuna fishery. Since their commercial success depends on the ongoing availability of high volumes of product, trading companies also have a shared interest in sustainability, as well as high fish prices. This position is particularly useful for PNA members, who are endeavouring to implement a Vessel Day Scheme (VDS) for the WCPO purse seine fishery to strengthen management of the fishery and derive greater economic benefits, in part, through higher fish prices stemming from effort limits to cap supply levels.

Tri Marine, in particular, has clearly demonstrated its commitment to the sustainability of global tuna fisheries, through its close involvement with ISSF. In addition, Tri Marine actively provides opinions and advice to PNA members concerning the effectiveness of VDS in managing the WCPO fishery and suggestions on how it could be improved. Tri Marine and FCF also maintain a visible presence in RFMO-related forums.

PICs are seeking to use access to their tuna resource as leverage for greater onshore investment in tuna fishing and processing operations, as well as support services (e.g. vessel and net repair facilities etc.). To ensure such investments are legitimate and sustainable in the long-term, as opposed to false fronts to simply maintain fisheries access and/or obtain second-generation cheap licences, it is imperative that PICs identify credible and strong investors. Since tuna trading companies have strong links with fishing vessel owners and processing companies,
they are well-placed to assist PIC Governments in identifying and assessing sound new investment partners and reviewing proposals for shore-based facilities.

The trading companies themselves are also potentially reliable partners for new onshore domestic developments, either in their capacity as a tuna trading company (to assist fishing operations with catch marketing, logistics, etc., and to supply processing plants with raw material), or as actual investment partners, as evidenced by FCF and Tri Marine's existing investments in the region (SSTC, Soltaï) and, in the case of Tri Marine, the new joint processing venture in PNG (Niugini PNG). Tri Marine (and likely, FCF) has experience in tuna fishing; all three traders have experience in loin processing; Tri Marine and Itochu also have experience in finished goods production. However, Itochu is highly unlikely to emerge as a key strategic partner in onshore investment in PICs given its relatively conservative business model and past negative experience with PAFCO in Fiji. FCF has also indicated that it has no further plans for investment in shore-based processing at this time.

3.5.2 Lessons Learned from Trading Companies

There are also some important lessons for PICs from the experience of the trading companies’ past and present onshore investments in the region.

FCF’s investment in the SSTC loining facility in PNG was primarily driven by a desire for access to resources. Additional income streams leveraged through catch volumes well in excess of the processing facility’s needs have helped to offset operating losses made by the plant.

The operating environment for processing facilities in PICs is always going to be more costly than other lower cost sites of production in Southeast Asia and South America. In Itochu’s case, extensive difficulties encountered in cost-effective production resulted in the company withdrawing from the PAFCO venture. Hence, it is highly unlikely that a company will establish stand-alone onshore processing facilities in their own right; they will almost always be associated with securing access for fishing operations. In addition, current and past experience has shown that the number of licences sought will likely be far greater than the number of vessels required to meet the raw material needs of the plant. In fact, with few exceptions the major impetus for shore-based development is access to resources and in this sense the investment can be seen to be an additional cost of such access.

When a company with little or no background in canning is involved in processing without a major partner, as was the case for FCF in PNG, there are incentives for the company to undertake loining as opposed to canning, since loins are a global commodity that can be traded in much the same manner as whole frozen fish.