

FFA releases important report on the tuna longline industry in the WCPO

The latest report from the Pacific Islands Forum Fisheries Agency (FFA) on the tuna longline industry in the western and central Pacific Ocean (WCPO) was released in November 2017. The comprehensive report, “The Tuna Longline Industry in the Western and Central Pacific Ocean and its Market Dynamics” – available from: <http://www.ffa.int/node/2025> – was authored by Liam Campling, Antony Lewis and Mike McCoy, and covers the distant-water tuna longline industries and fleets of China, Japan, South Korea and Taiwan, as well as global markets and value chains for longline-caught tuna. The report’s 201 pages, contains over 60 tables and 20 figures, as well as photographs of fishing vessels and equipment, fish processing and retail products and markets.

The report provides information on the longline industry and markets by characterising the current status of the industry in terms of the four major distant-water fleets and the companies involved in the global value chains supplied by those fleets. The industry and market dynamics of the global longline industry are poorly understood, especially compared with the global canned tuna industry. It is widely known that the vast majority of sashimi-grade tuna goes to Japan and that the majority of canning-grade albacore is processed for sale in the United States (US). The primary focus of the report is on industry dynamics – key companies and organisations, industry organisation and corporate strategies – and this segment of the report takes up about half of its 200+ pages. A secondary focus of the report is on markets for longline-caught tuna and marketing strategies. These topics were chosen because the industry and market dynamics are not as well understood or publicised as the information on longline tuna catch and effort trends.

The study is timely because much is changing in the east Asian longline sector, including the rise of the Chinese-flagged fleet, new trends in sashimi product processing and international trade, shifts in traditional markets, and the growth of nascent ones. Two new regulatory initiatives by Pacific Island countries (PICs) also point to new management regimes (e.g. vessel day scheme and the Tokelau Arrangement) that seek to capture larger benefits for PICs.

The most significant distant-water longline fleets operating in the WCPO – and the eastern Pacific Ocean (EPO) – are those of China, Japan, South Korea and Taiwan in terms of fleet size, catch volumes and bigeye catch quota allocation. Thus, these four countries were selected as case studies for the report. The activities of these four major distant-water fishing nations are placed within the overall context of a global overview of tuna longline fisheries and their regulation. It is noted that collectively, China, Japan, South Korea and Taiwan’s longline vessels accounted for 75–83% of the total number of longline vessels active in the WCPO from 2011 to 2015.

The report describes the long-term trend of below-average economic conditions in the WCPO tropical longline fishery, which has resulted in a declining number of vessels

fishing for tuna, particularly distant-water vessels from Japan, South Korea and Taiwan. It is projected that the fishery will continue to follow a declining trend from 2017 to 2026 as a result of a forecasted increase in fuel prices and a decline in catch rates, primarily of bigeye tuna, which will more than offset projected above-average fish prices. Economic conditions for the WCPO southern longline fishery have also declined. Persistently low catches continue to impact the fishery negatively, and if prolonged, will result in below-average economic conditions for the fishery in the coming years.

The report describes the layered regulatory mechanisms that shape the longline industry, which work at multiple scales – regional, subregional and national – and at multiple points in the global value chains for longline products. The increased focus on labour standards is also addressed, and as the report concludes, such issues will be particularly challenging to address for large-scale, distant-water longline vessels that are away at sea for long periods and employ foreign crew who work very long hours under difficult conditions.

The report acknowledges that public regulatory frameworks are not achieving desired outcomes in terms of responsible fisheries management, environmental sustainability, food safety, quality and ethical employment. This concern has given rise to numerous fisheries-related private standards and certification schemes that have emerged over the past two decades. It is noted that while private standards are typically established by industry or non-governmental bodies and are voluntary, some may in practice become *de facto* mandatory, where compliance is a prerequisite for market entry.

The distant-water tuna longline industry

The major longline fleets of China, Japan, South Korea and Taiwan are described in detail in this section of the report. Following an introduction, Japan’s longline industry is discussed in terms of national regulation and industry support, and a description of the fleet and review of its current status is provided. Subsequent sections describe Japan’s longline catch, effort and transshipment situation, broken down by

global and WCPO fishing operations. Some indication of operating costs is followed by a summary of corporate governance and the profiles of several companies active in the fishery. Recent developments and future prospects of Japan's longline industry are discussed, and a final section presents some potential implications for PICs.

Key points identified in the report for Japan's longline fleet and its activities in the WCPO are:

- The number of vessels actively fishing has continued to decline in all fleets since 2010, with offshore/distant-water vessel numbers dropping from 160 in 2010 to 111 in 2016, and small offshore vessels from 272 in 2010 to 228 in early 2017. The sharpest decline over time has been in the medium offshore longline fleet (50–120 gross register tonnage, which are included in the offshore/distant-water vessel category), from 757 vessels in 1980 to just 28 vessels in 2017.
- It is unclear how many of these vessels are operating profitably, and the decline in numbers can be expected to continue. High fuel prices, the ageing of experienced officers, and problems with recruiting young Japanese crew members were identified as the most serious factors that will continue to impact the Japanese sashimi fishing fleets in the future.
- The catch has similarly declined from 48,226 tonnes (t) (all tuna species) in 2010 to 30,777 t in 2016 for the offshore/distant-water fleet, and from 34,524 t to 26,114 t for the small offshore fleet.
- The area fished by the distant-water fleet is now mostly high seas areas in both the WCPO and EPO, with 25% of the tuna catch taken in the exclusive economic zones (EEZs) of PICs in 2015, and even less in 2016; small offshore vessel activity has largely contracted to Japan's EEZ and adjacent high seas areas, with just one component of the fleet continuing to fish in Micronesian waters (Okinawan longline vessels).
- The species composition of the catch has also changed over time, with the bigeye tuna proportion of the total distant-water catch now around 20%, and albacore and yellowfin slightly lower. The small offshore catch is now dominated by albacore (close to 50%), with declining catch rates for yellowfin and bigeye tunas.

Taiwan

The discussion of the Taiwanese longline industry includes the topics of national regulation and industry support, a description of the large-scale and small-scale tuna longline fleets in the WCPO, longline catch and effort data and transshipment of the two fleet types, operating costs, corporate governance and company profiles, market dynamics, and implications for PICs. The report noted that:

- Taiwan's flagged and beneficially owned boats (i.e. registered with countries that have an open registry) are the largest component of the WCPO longline fleet.
- Some Taiwanese firms have good relationships with some PIC governments. However, the history of Taiwan's longline industry as a specialised fishing fleet with no, or minimal, shore-based investment outside of Taiwan means there has been limited interest in onshore investment in PICs. These attitudes will probably continue to dictate Taiwan's industry approach to such investment, at least under current economic and regulatory conditions.
- There are considerably fewer vessels on the FFA register than that which actively fished in the Western and Central Pacific Fisheries Commission (WCPFC) Convention Area in 2015 (126 vs 1,382). This is presumably because a large number of vessels, especially those in the small tuna longline category, are continuing to fish mostly in high seas areas, and not within the EEZs of FFA member countries.

South Korea

The growth of South Korea's longline fleet is described, beginning with its inception as an export-oriented industry to supply Japan's rapidly growing and profitable sashimi market. Subsequent sections of the report describe national regulation and industry support, fleet size and status, longline catch and effort data, transshipment, operating costs, corporate governance and company profiles, market dynamics and future prospects. Present and future challenges, as identified by the industry during discussions in 2017, are described:

- Reduced access to fishing grounds within PIC EEZs as result of the introduction of the Parties to the Nauru Agreement vessel day scheme or other catch management schemes, which the fleet feels are beyond its financial reach to adhere to. There is a resignation to fishing more and more outside of PIC EEZs and instead in high seas areas for as long as good catches are maintained;
- Concerns regarding continued overfishing of bigeye stocks;
- The ageing vessels in the longline fleet, with the average vessel age now close to 30 years, and no plans to replace or build new vessels, although there is optimism by some that the vessels can continue to fish effectively in the short to medium term because they have been well maintained and repaired as necessary;
- Recruitment of young Koreans to replace ageing vessel officers is difficult because longlining is not seen as a desirable career path, especially as there are very long periods at sea and difficult working conditions. Replacement by non-Koreans is probably not an acceptable option;



Shaving tuna loins in a -60°C room in Busan, South Korea. Image: Antony Lewis

- Increasing the focus on crew members' working conditions is seen as a potential threat, only because the necessary long working hours, essentially around the clock, are an accepted part of distant-water tuna longline fishing;
 - Heavy reliance on a single market (Japan) where the market price has been stable but undermined by the depreciation of the yen against the US dollar, and downward pressure on profitability;
 - Recent suggestions to consider a ban on high seas transshipments might be the ultimate blow for a fishery that is highly reliant on such transshipments during very long voyages (i.e. 18–24 months) for economic efficiency, with transshipment ports often far from fishing areas, especially in the EPO and eastern WCPO where most fishing occurs.
- Key points identified in the report for South Korea's longline fleet and its activities in the WCPO are:
- In 2015, the global South Korean longline fleet consisted of 148 vessels (compared with 276 in 1990), with a total global catch of over 38,000 t. Most are large, ultra-low temperature (ULT) distant-water vessels, typically 350–500 gross register tonnage in size.
 - In 2016, around 100 South Korean longline vessels operated in the WCPO, catching around 24,000 t of the main tuna species; 50% of the retained catch was bigeye and 30% yellowfin.
 - An increasing portion of the catch in most recent years has been taken in high seas areas in both the WCPO and EPO, rather than within the EEZs of PICs, a situation that is likely to be exacerbated by the introduction of vessel day scheme and catch management schemes, which marginally profitable fleets feel unable to afford.
 - The majority of the South Korean longline catch is exported to Japan after processing (70% of exports), and 10% of the total catch is landed directly in Japanese ports. The European Union (EU), US and China are minor export markets, while significant volumes of landed product are supplied to the domestic sashimi market.
 - The main commercial challenge is the increasing highly-subsidised competition from other fleets, especially those from China.

- Given that most of the South Korean longline catch is taken in WCPO and adjacent EPO waters, future prospects for South Korea's longline fleet closely relate to ongoing developments in the region. Continuing high seas transshipment is seen as critical to the viability of the South Korean fleet. Hence, South Korean vessel owners are particularly concerned about the possible prohibition of at-sea transshipments in the WCPFC Convention Area.

China

The rise of China's longline fleet, which began fishing in 1988 with just seven vessels, is described and subsequent sections of the report describe national regulation and industry support, fleet description and status, catch and effort data, transshipment within the WCPO, operating costs, corporate governance and company profiles.

Some of the key points for China's longline fleet identified in the report and some implications for PICs are:

- Luen Thai Fishing Venture operates a fleet out of Majuro in the Marshall Islands that is China's only fully fresh, tropical longline fleet. Other bases are located in Pohnpei in the Federated States of Micronesia (frozen bigeye and yellowfin), Palau (fresh longline from non-Chinese vessels), and Samoa (frozen albacore). The Majuro base includes a processing facility with products going to Hawaii and the mainland US. Luen Thai's business model relies on close working relations with Pacific Island governments. This appears to have been successful given that the company has become the largest supplier of fresh bigeye and yellowfin to Japan.
- Although Luen Thai has expressed concern about the longline vessel day scheme, company officials do not seem as concerned as some of the other distant-water longline companies (particularly those from Taiwan) in their ability to retain fishery access for their operations.
- Kiribati Fish Ltd (KFL) started business at the end of 2012 and consists of a processing plant in Tarawa that is co-owned by the government of Kiribati (40% share), Golden Ocean Fish Ltd of Fiji (40%), and Shanghai Deep Sea Fisheries (SDSF) (20%). SDSF's partial ownership of Golden Ocean ensures that it has a significant, if not controlling, interest in KFL. SDSF believes that companies that invest in shore-based development in PICs will be better placed in the future to be assured fishery access.
- Some companies in China continue to seek other bases in PICs, encouraged by PIC government policies and support. An investigation of Kiritimati (Christmas) Island in Kiribati by one firm seeking a base for its longline vessels, found the necessary infrastructure for such an operation to be lacking at that location. This may signify a lack of interest in undeveloped sites if all funding must come from China.
- Southern albacore catches by Chinese-flagged and beneficially owned vessels have increased over the past five years, largely in relation to growing vessel numbers within the fleet, which are subsidised. Other fleets, particularly some PIC fleets, have experienced declining or fluctuating catches due to increased competition from subsidised Chinese vessels.
- Suva, Fiji remains the primary source of shore-based supplies for China's albacore fleet, although Santo in Vanuatu was suggested by one company as an alternative location for fuel acquisition when logistics and/or prices are unfavourable in Suva.
- Commercial concerns were expressed about the 100% local unloading requirements incorporated into Solomon Islands' licensing conditions.
- China's share of Japan's import market for processed ULT sashimi products grew from 30% in 2015 to 33% in 2016. In the first few months of 2017, China's share overtook South Korea as the leading supplier.



Luen Thai Fishing Venture vessels after undergoing maintenance in Zhoushan, China. Image: Mike McCoy

Tuna longline industry supply chains and market dynamics

This segment of the report focuses largely on two value chains for WCPO longline fisheries' tuna products. The main product linkages of large-scale and small-scale longline vessels with the principal markets – the Japanese sashimi market and the US canned albacore market – are highlighted. A number of secondary markets that exist for sashimi and other value-added fresh or frozen products are also briefly described.

Japan's tuna sashimi market

Japan is well known as the major global market for sashimi quality tuna, accounting for around 80% of global sashimi consumption in 2010. This may be slightly lower in 2017 with the growth of Japanese restaurants elsewhere and declining consumption in Japan, but this market continues to drive the global longline industry. Of the estimated 750,000 t of tuna consumed in Japan in 2014, an estimated 62% was consumed as sashimi, around 23% as *katsubushi*¹ and 15% as canned tuna. It has been estimated that sashimi consumption, not including skipjack, in 2014 was 449,000 t whole round fish² equivalent. This demand is met by a combination of domestic landings by Japanese vessels and imports from fleets of various other nations. In 2014, bigeye accounted for 38% of the total supply volume (imports and landings) of sashimi-grade tuna, followed by skipjack (20%), bluefin (14%), yellowfin (15%) and albacore (13%). Notably, albacore is becoming increasingly attractive as a lower-value sashimi. Overall, Japan has experienced a decline in household consumption and expenditure of tuna in the past two decades. While there is little price linkage or competition with other fish species such as salmon, competition exists from other protein sources, particularly chicken and beef.

In 2015, around 80% of the sashimi market in Japan consists of frozen tuna (232,700 t) and 20% fresh (66,200 t), with imports comprising 60% of the total supply. While the majority of the sashimi supply comes from longline vessels, catches from pole-and-line and purse-seine vessels with ULT freezer capability are also utilised. The bulk of frozen catch (70–80%) is sold outside the auction system to trading companies and processors. Japan typically relies on about 10–15,000 t per month of imported, mostly frozen, tuna. China and South Korea have considerable sashimi-grade processing capability, with much of their frozen processed product also exported to Japan.

In 2015, Japan's market sales for fresh tuna totalled 66,200 t. The fresh tuna market is smaller than the frozen tuna market, with fresh catches generally marketed as whole round through wholesaler auctions (e.g. Tsukiji). Domestic landings, mostly



A. Pacific bluefin tuna sold at Tsukiji market.
 B. Slicing bluefin tuna in Tsukiji market.
 C. Bluefin *toro* sushi (three kinds) with seared -40°C albacore.
 All images: Antony Lewis

¹ *katsubushi*: dried, fermented, and smoked skipjack tuna (*Katsuwonus pelamis*).
² Whole round fish: gilled and gutted fish.

from the small offshore fleet, and all from the North Pacific, are dominated nowadays by albacore tuna, with declining catches of bigeye and yellowfin tunas. Fresh tropical tuna (bigeye, yellowfin) imports are dominated by Indonesia, by Mexico in the case of air-freighted farmed Pacific bluefin, and the US and Canada in the case of Atlantic bluefin.

The Japanese sashimi market is characterised by multiple complex market arrangements and distribution systems, but these can largely be distinguished as two channels: fresh and frozen. Fresh tuna (and to an increasingly less extent, frozen) sashimi-grade tuna is traded through government regulated wholesale market systems. Frozen sashimi-grade tuna is traded via “unofficial” channels that either bypass, or only partly flow through, the traditional wholesale market system.

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.

Trading companies have become increasingly significant in Japan’s sashimi distribution system. In 2016, the “big four” sashimi trading companies were reported to be Toyo Reizo, Try Sangyou, Fukuichi and Yamafuku. Combined, they may account for over 70% of the traded volume. Toyo Reizo and Try Sangyou are subsidiaries of *sogo shosa* – a unique business group in Japan that can be thought of as giant conglomerate of companies involved in a very diverse range of businesses, with a core competence in, but not limited to, trading.

US canning-grade albacore market

The major market for longline-caught albacore is the US, in canned or pouched form, with price and consumption driving the global market. The total global albacore catch was about 260,000 t in the mid-2000s and an estimated 50–60% of the catch was consumed by the US market. East Asian-owned longline vessels active in the WCPO that target albacore sell the bulk of their catch to trading companies or directly to loining plants or canneries. Product is then largely imported into the US as finished goods (i.e. pouch or canned), or as pre-cooked loins to be processed by Bumble Bee’s cannery in Sante Fe Springs, California or Chicken of the Sea’s facility in Lyons, Georgia.

The US’s “shelf-stable” seafood market is dominated by canned and pouched tuna at 73% share of a USD 2.2 billion market, salmon follows at 10%. The US’s shelf-stable tuna market is divided into light (typically, skipjack with some yellowfin), white meat (albacore), and value-added

products (e.g. ready-made dishes). Water packs³ are by far the greatest share of the US market, both pouched and in cans. The total supply of albacore to the US market in 2014 in whole round equivalent was 107,586 t.

Light tuna is the largest segment of the US shelf-stable tuna market, with almost 60% of the tonnage, but only 44% of value market share. For canned albacore (white meat), this is reversed, with a higher value (35%) than volume (29%) share of the market, reflecting higher retail prices paid for canned albacore. This tendency also applies to pouched tuna, which is typically a more profitable item than canned tuna.

Three brands dominate the US canned tuna market in volume and value, controlling 84% of the value market share in 2015. StarKist is owned by the South Korean giant Dongwon Industries – a large family-owned conglomerate (*chaebol*⁴) with investments in many areas, and which owns purse-seine vessels and a small number of longline vessels. Bumble Bee is owned by the private equity firm Lion Capital, which owns several other shelf-stable seafood brands, including the number one brand in Canada. It does not own any vessels but does control supplies to, and guarantees the purchase of, finished product from the Pacific Fishing Company loining plant in Fiji, although it is not the majority shareholder. Thai Union procures albacore globally and owns Chicken of the Sea, as well as many EU seafood brands and a growing number of other seafood businesses.

US market for high-value tuna

In contrast to the US market for canned albacore, the various fresh or frozen value chains for longline products feeding the US market are characterised by having both many suppliers and many buyers. These relations are moderated by the geographies of offloading and transshipment, the reliability of cold chains, historical business and marketing relationships, and linkages (or lack thereof) to market outlets.

The US fresh retail market for all fish species was valued at USD 4.6 billion market in 2015. Fresh tuna sales represent just 1.7% of this, with fresh salmon leading at 30.3% and shrimp following at 18.1%. Nonetheless, one source pegged the increase in value of the fresh tuna market at 40% between 2011 and 2015, reaching USD 76 million in 2015. The main species of fresh tuna consumed in the US is yellowfin. Suppliers include several countries in Latin America, Indonesia, Vietnam and Senegal.

Tuna treated with tasteless smoke and carbon monoxide (CO) is a high-volume, non-canned product sold in US supermarkets and, in recent years, is increasingly being used in food service. This is a relatively low-value segment and is generally less of a commercial focus of east Asian longline fleets. There can, however, be a significant amount of frozen

³ Tuna cooked in water with no added flavours.

⁴ A *chaebol* is a large industrial conglomerate that is run and controlled by either an owner or family in South Korea.



ULT bigeye tuna ready for processing, Ningbo, China, April 2017. Image: Mike McCoy

yellowfin tuna (-35°C) sent to Vietnam from Taiwanese- and Chinese-owned longline vessels for CO processing for the US market. It is assumed that much of the Vietnamese exports to the US is CO tuna and factories in the Philippines remain major suppliers. Hawaiian-inspired poke (fresh, marinated tuna cubes) has grown in popularity in 2016 and 2017 in the US, and often uses CO tuna (most commonly yellowfin).

Higher-value fresh tuna is mainly sold in specialty seafood retailers and higher-end mass retail stores. Supermarkets tend to procure non-canned tuna products from specialist distributors. Total frozen seafood retail sales in the US were about USD 4.5 billion in 2015, with shrimp representing nearly half (49%), followed by tilapia (13%). Data on retail sales of frozen tuna in the US compiled by one source valued the market at USD 31.9 million; less than 1% of total retail seafood sales.

There is, however, a major market for frozen tuna products (e.g. steaks), worth around USD 323 million in 2016. Frozen tuna is seen as having potential growth, given that only 1.5% of US households are currently buying the product. Frozen loins are imported and processed in the US for retail or food service. The main species used is yellowfin. The loin can be cut into steaks, medallion and kebab cuts, and half-size “sandwich” steaks. Ground tuna meat is used in sushi rolls.

Market channels for consumer purchase of frozen tuna are primarily supermarkets, warehouse club stores and food service sectors. A variety of products are offered, including individually frozen and wrapped single servings in bulk packaging, both cooked and uncooked, with some of the latter cooked with *faux* grilling marks applied, and value-added items in sauce. The most commonly sold frozen tuna is yellowfin.

EU market for high-value tuna

France, Italy and Spain are the principal markets for fresh and frozen tuna for direct consumption in the EU, especially in these countries’ urban centres. The main product type is yellowfin and albacore steaks, believed to total around 40,000 t. The main supply comes from the western Indian Ocean, and is supplemented by some volume from the Atlantic and Pacific. There is a growing demand for ULT tuna products in some EU markets but the trade is limited by a lack of supporting infrastructure. However, where infrastructure is available, such as in Belgium, the Netherlands, Spain and the United Kingdom, it is legally permitted to sell defrosted ULT fish as “fresh”, although packaging must make it clear that it was originally frozen. CO-treated tuna is illegal in the EU.

Yellowfin tuna is the most important fresh-chilled tuna species for all European countries, although there is demand for albacore in France, Italy and Spain. Steaks and sushi are the main product forms, and differences in prices of frozen tuna are considerable. EU consumption of fresh tuna is dominated by the intra-EU trade (around 81% of supply), mainly France and Spain. The leading EU supplier outside of Europe is now the Maldives because Sri Lanka lost its duty-free access under the EU GSP+ scheme,⁵ and was delisted as a supplier of fish and fish products under the EU’s illegal, unreported and unregulated regulation in 2015.

In general, western Europe has seen a shift in fish and fish product consumption to more convenience products and sushi, especially among younger consumers. There has been growth in the promotion and purchase of “sushi kits” in supermarkets, and it is predicted that there will be increasing demand for more premium sushi.

For more detailed information, the entire report can be downloaded from the Internet at <http://www.ffa.int/node/2025>.

⁵ The General Scheme of Preference (GSP) allows vulnerable developing countries to pay fewer or no duty on exports to the European Union, thereby giving them vital access to the EU market and contributing to their growth.