Tuna Fisheries Conservation and Management in the Pacific Islands Region

Implications for Korean Distant Water Fisheries

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Abstract

The Korean tuna fishing fleet has a long history of participation in the tuna fisheries of the Western and Central Pacific Ocean (WCPO), the largest tuna fisheries in the world. As one of the largest distant water fishing fleets operating in the WCPO, Korea has a strong interest in maintaining access to both EEZs and the high seas, and ensuring sustainability of the region's tuna stocks. The regulatory environment for tuna fisheries in the WCPO is complex and multi-layered, with regional, sub-regional and national legislation, regulation and policies all affecting tuna fishing vessels and operations. Management of tuna fisheries within Pacific Island EEZs is increasingly being tightened, including through the introduction of zone-based management approaches, and Pacific Island countries are also advocating for improved management of tuna fishing in the high seas. While all four primary tuna species in the WCPO are currently considered healthy, catch rates and economic conditions in the southern and tropical longline fisheries are in decline and catch reductions will be necessary to improve catch rates and increase economic returns for longline vessels. Within this context, the Korean distant water fishing fleet will need to strengthen engagement and cooperation with Pacific island States in order to maintain their competitiveness.

Keywords

Korean distant water fisheries – tuna – Pacific islands region – Western and Central Pacific Fisheries Commission

1 Introduction*

The tuna fisheries of the Western and Central Pacific Ocean (WCPO) comprise the largest tuna fisheries in the world, with catches producing 54% of the global tuna catch in 2019 worth an estimated US\$5.8 billion.¹ The Republic of Korea has been fishing within the WCPO since 1958 and remains one of the largest distant water fishing fleets in the region. The catch of tuna by Korean

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1 SPC-OFP, (2020), Estimates of Annual Catches in the WCPFC Statistical Area, *Western and Central Pacific Fisheries Commission Scientific Committee, Sixteenth Regular Session, Online Meeting*. WCPFC-SC16-2020/ST-IP-1.

vessels has increased from less than 1000 mt a year in the early 1960s, to over 100,000 t in the late 1980s, and has fluctuated between 200,000 mt and 310,000 mt a year from 2000–2018. In 2019, Korean vessels reported a total WCPO catch of 347,508 mt,² representing the highest total annual catch yet reported by Korea.³ This equated to a total value of approximately US\$666 million (Figure 1).

FIGURE 1 Value of Korea tuna catches in the WCPO⁴

Initially the Korean fleet was comprised of longline vessels only, with purse seine vessels added to the Korean fleet in 1980.⁵ The number of vessels in the WCPO Korean fleet peaked in the 1970s, with over 250 active longline vessels catching a mix of bigeye, yellowfin and albacore.⁶ More recently, the Korean longline fleet has declined to 97 active vessels in 2019 with a total annual longline catch of 32,936 mt. The current longline fleet primarily targets bigeye and yellowfin, taking smaller amounts of blue marlin and albacore.⁷

The Korean purse seine fleet has been relatively stable over the past two decades with between 25 and 29 vessels active in the WCPO.⁸ While the number

2 SI Lee, et al, (2020), Annual Report to the Commission Part 1: Information on Fisheries, research and Statistics, Republic of Korea, *Western and Central Pacific Fisheries Commission Scientific Committee, Sixteenth Regular Session, 2020*. WCPFC-SC16-AR/CCM-12 (Rev.01).

3 SPC, (2019), *Western and Central Pacific Fisheries Commission: Tuna Fishery Yearbook 2018*. Oceanic Fisheries Programme, Pacific Community, Noumea, New Caledonia.

4 FFA, (2020), *Value Of WCPFC-CA Tuna Catches 2019*. Pacific Islands Forum Fisheries Agency, FFA, Honiara.

5 MK Lee, et al, (2013), The fishing characteristics of Korean tuna purse seine fishery in the Western and Central Pacific Ocean, *Western and Central Pacific Fisheries Commission Scientific Committee, Ninth Regular Session, Pohnpei, Federated States of Micronesia, 2013*. WCPFC-SC9-2012/SA-IP-12.

6 SPC, *supra* note 3.

7 Lee, et al, *supra* note 2.

8 SPC, *supra* note 3.

of vessels hasn't increased over this time, the catch of these vessels has, from around 141,899 mt in 1999⁹ to 314,572 mt in 2019.¹⁰ As with all purse seine vessels in the WCPO, the majority of catch by the Korean purse seine fleet is skipjack, which typically account for more than 70% of annual tuna catches.¹¹

As one of the largest distant water fishing fleets operating in the WCPO, and record high catches in 2019, Korea has an interest in ensuring they continue to have access and economically viable operations in the WCPO tuna fisheries. This paper provides an overview of the current status of tuna fisheries in the region, and the regional and national regulations that govern them in focused case studies exclusive economic zones (EEZs). The paper concludes with a

TABLE 1 Summary of stock status of key WCPO tuna species

Stock	Overfished	Overfishing	Catch in 2019	SB _{recent} / SB _{F=0}
Bigeye tuna (<i>Thunnus obesus</i>) ¹²	No	No	135,680 t	0.4
Yellowfin tuna (<i>Thunnus albacares</i>) ¹³	No	No	669,362 t	0.58
Skipjack tuna (<i>Katsuwonus pelamis</i>) ¹⁴	No	No	2,034,230 t	0.44
South Pacific albacore (<i>Thunnus alalunga</i>) ¹⁵	No	No	121,787 t	0.52

9 SPC, *supra* note 3.
10 Lee, et al, *supra* note 2.
11 SPC, *supra* note 3.
12 N Ducharme-Barth, et al, (2020), Stock assessment of bigeye tuna in the western and central Pacific Ocean. *Western and Central Pacific Fisheries Commission Scientific Committee, Sixteenth Regular Session, Online*. WCPFC-SC16-2020/SA-WP-03.
13 M Vincent, et al, (2020), Stock Assessment of Yellowfin Tuna in the Western and Central Pacific Ocean. *Western and Central Pacific Fisheries Commission Scientific Committee, Sixteenth Regular Session, Online Meeting*. WCPFC-SC16-2020/SA-WP-04.
14 M Vincent, G Pilling, and J Hampton, (2019) Stock Assessment of Skipjack Tuna in the Western And Central Pacific Ocean. *Western and Central Pacific Fisheries Commission Scientific Committee, Fifteenth Regular Session, Pohnpei, Federated States of Micronesia*. WCPFC-SC15-2019/SA-WP-05.
15 L Tremblay-Boyer, et al, (2018), Stock assessment of South Pacific Albacore Tuna. *Western and Central Pacific Fisheries Commission Scientific Committee, Fourteenth Regular Session, Busan, Republic of Korea*. WCPFC-SC14-2018/SA-WP-05.

brief analysis of development and fisheries management priorities for these Pacific Island countries, and the likely issues and challenges for future tuna fishing operations in the region.

2 Current Status of Tuna Fisheries

The primary tuna species caught in the WCPO are Skipjack tuna (*Katsuwonus pelamis*), Yellowfin tuna (*Thunnus albacares*), Bigeye tuna (*Thunnus obesus*) and South Pacific albacore (*Thunnus alalunga*). In addition to being the largest tuna fishery in the world, the WCPO is also the only ocean (of the Eastern Pacific, Western Pacific, Atlantic and Indian Oceans) where these tuna stocks are at healthy abundance levels, with assessments indicating that stocks are not overfished and overfishing is not occurring.

A number of secondary tuna and billfish species are also caught in the WCPO, including North Pacific albacore (*Thunnus alalunga*), Pacific bluefin tuna (*Thunnus orientalis*), North Pacific swordfish (*Xiphias gladius*), Southwest Pacific swordfish (*Xiphias gladius*), Southwest Pacific striped marlin (*Kajikia audax*), North Pacific striped marlin (*Kajikia audax*) and Pacific blue marlin (*Makaira nigricans*). Of these species, stock assessments of the Pacific bluefin tuna and North Pacific striped marlin indicate that the stocks are overfished and overfishing is occurring,¹⁶ and the assessment of Southwest Pacific striped marlin indicated that overfishing is not occurring but the stock is likely overfished.¹⁷ There are also concerns related to overfishing of some shark species that are targeted and/or taken as bycatch, including the Oceanic Whitetip shark and Silky shark, while the stock status of a number of other shark species has not been assessed.¹⁸

The largest WCPO fishery in terms of catch is the purse seine fishery, with 285 vessels responsible for just over 2 million mt of catches in 2019. This accounts for 70% of the total WCPO tuna catch. The majority (65–77%) of

16 ISC, (2019), Stock Assessment Report for Striped Marlin (*Kajikia Audax*) in the Western and Central North Pacific Ocean through 2017, *Western and Central Pacific Fisheries Commission Scientific Committee, Fifteenth Regular Session, Pohnpei, Federated States of Micronesia*. WCPFC-SC15-2019/SA-WP-09. -- Pacific Bluefin Tuna Working Group (2018).

17 N Ducharme-Barth, G Pilling, and J Hampton, (2019), Stock assessment of sw Pacific striped marlin in the WCPO. *Western and Central Pacific Fisheries Commission Scientific Committee, Fifteenth Regular Session, Pohnpei, Federated States of Micronesia*. WCPFC-SC15-2019/SA-WP-07.

18 WCPFC, (2019a), *Overview of Stock Status of Interest to the WCPFC*, available at www.wcpfc.int/current-stock-status-and-advice.

purse seine catch is skipjack tuna, with yellowfin accounting for 20–30% and bigeye a much smaller proportion of around 2–5%.¹⁹ Although skipjack is currently sitting below the WCPFC adopted interim target reference point, the 2019 purse seine fishery experienced among its highest ever catch rates, from both unassociated and drifting FAD sets. Increased fishing efficiency is likely to have contributed to high catch rates, together with stable and healthy stock abundance.²⁰

The major purse seine fleets in the WCPO are Korea, Chinese Taipei, USA, Japan and Pacific Island fleets. The catch of Pacific Island fleets have dominated the purse seine fishery since 2003, and their catches continue to increase each year to the point where in 2019, their catch was close to the combined catch of the other four major fleets. Over the past 5 years the Korean purse seine fleet has had the second highest total fleet catch, after the combined Pacific-Island fleet.²¹

China, Chinese Taipei, Korea and Japan are the four largest distant water longline fleets operating in the WCPO in terms of fleet size, catch volumes and bigeye catch quota. Collectively they accounted for 75–83% of the longliners active in the WCPO during the period 2011–2015.²²

There are two primary longline fisheries operating in the WCPO, the tropical longline fishery which typically targets bigeye and yellowfin tuna for the sashimi market, and the southern longline fishery comprising of typically smaller vessels targeting albacore for canning markets.²³ There is no clear geographical boundary where the catch composition shifts from tropical species to albacore dominance, and some vessels have the ability to switch targets and move between both fisheries depending on seasonality and abundance of key species.²⁴

While the stock assessment indicates that South Pacific albacore biomass is well above the limit reference point, catch rates are considered below those

19 P Williams, and T Ruaia, (2020) Overview of tuna fisheries in the Western and Central Pacific Ocean, including Economic Conditions – 2019. *Western and Central Pacific Fisheries Commission Scientific Committee, Sixteenth Regular Session, Online Meeting*. WCPFC-SC16-2020/G N-IP-1 rev 1.

20 *Ibid.*

21 *Ibid.*

22 L Campling, A Lewis, and M McCoy, (2017), *The Tuna Longline Industry in the Western and Central Pacific Ocean and its Market Dynamics*. Forum Fisheries Agency, Honiara, Solomon Islands.

23 *Ibid.*

24 *Ibid.*

levels that produce beneficial economic outcomes for most fleets.²⁵ Without significant reductions in longline effort, projections of future stock status of albacore predict further declines from $0.52 \text{ SB}_{F=0}$ to $0.39 \text{ SB}_{F=0}$ by 2035, with CPUE estimated to decrease by 36% relative to 2013 levels (when longline fishery catch rates were considered adequate to meet economic objectives).²⁶ An interim target reference point of $0.56 \text{ SB}_{F=0}$ was agreed by WCPFC in 2018, which would result in an 8% increase in CPUE compared to 2013 levels.²⁷ In order to achieve this however, significant reductions in albacore catch and effort will need to be made across the fishery.

Economic conditions in the tropical longline fishery have also been declining, driven by declining catch rates and fish prices, and it is projected that trend will continue through to at least 2026.²⁸ Catch and effort reductions will be needed in order to increase the biomass of yellowfin and bigeye, and therefore increase catch rates in the tropical longline fishery.

3 Key Regional Policies and Regulations for Foreign Fishing Vessels

The wide-spread and migratory nature of tuna in the WCPO means that fishing occurs across a number of jurisdictions and the regulatory framework is multi-layered. The Western and Central Pacific Fisheries Convention is the international agreement under which conservation and management measures (CMMs) are developed and agreed. All members of the WCPFC, of which Korea is one, are required to implement the agreed CMMs throughout the Convention Area. National rules and regulations apply when fishing within the EEZs of coastal States, and flag states have responsibilities and obligations which apply to vessels fishing under their flags. In addition, there are sub-regional arrangements that exist in the Pacific which apply across groups of coastal State EEZs, including the Parties to the Nauru Agreement (PNA) Vessel Day Scheme (VDS).

25 C Reid, A McDonald, and L Rodwell, (2016) Capturing economic benefits from the Pacific's tuna resources. *Pacific Economic Monitor*, July 2016, *Asian Development Bank*.

26 SPC-OFP, (2019), Trends in the South Pacific Albacore Longline and Troll Fisheries, *Western and Central Pacific Fisheries Commission, Sixteenth Regular Session, Port Moresby, Papua New Guinea*, 2019. WCPFC16-2019-IP08.

27 WCPFC, (2019b), *Western and Central Pacific Fisheries Commission, Fifteenth Regular Session of the Commission, December 2018, Summary Report*. Honolulu, Hawaii, USA. WCPFC Secretariat and SPC-OFP (2020) Catch and Effort Tables on tropical Tuna CMMs. *Western and Central Pacific Fisheries Commission Scientific Committee, Sixteenth Regular Session, Online Meeting*. WCPFC-SC16-2020/MI-IP-19.

28 Campling, *supra* note 22.

A range of other international bodies have regulations and requirements relevant to distant water fishing, including the International Maritime Organisation (IMO) and the International Labour Organisation (ILO). A range of requirements are also applied by market States including the European Union, Japan and the US, and seafood buyers and consumers are increasingly influencing fisheries through market certifications schemes such as the Marine Stewardship Council. The primary mechanisms currently influencing the management of WCPO tuna fisheries are discussed below.

3.1 *Western and Central Pacific Fisheries Commission (WCPFC)*

In 1997, the Marshall Islands hosted the second²⁹ Multilateral High Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific (MHLC).³⁰ This successful meeting adopted the Majuro Declaration, establishing timelines and principles for the negotiation of a multilateral arrangement, and identified matters to be covered within any subsequent arrangement.³¹ This was the first time that WCPO coastal States and distant water fishing nations (DWFNs) had collectively agreed to a multilateral approach to the management of the region's tuna fisheries.³² Subsequent MHLC meetings negotiated through the matters raised in

29 In 1994, the Pacific islands Forum Fisheries Agency hosted the first conference in the Solomon Islands. (1994) *Multilateral High Level Conference on South Pacific Tuna Fisheries – Record of Proceedings*. Multilateral High Level Conference on South Pacific Tuna Fisheries. Honiara, Solomon Islands, 5–9 December 1994. FFA

30 Participants in these negotiations included: Australia, Canada, China, Chinese Taipei, Cook Islands, Federated States of Micronesia, Fiji, France, Indonesia, Japan, Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Philippines, Korea, Samoa, Solomon Islands, Tonga, Tuvalu, Great Britain, USA and Vanuatu. Referenced from the Introductory note to the *Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean* (WCPFC Convention). Opened for signature 5 September 2000. Entered into force 19 June 2004. Pohnpei, Federated States of Micronesia. Available at <http://www.wcpfc.int>.

31 MHLC Secretariat, (1997), *The Second Multilateral High Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific: Report of the Conference*. The Second Multilateral High Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific. Majuro, Marshall Islands, 10 to 13 June 1997. WCPFC. – MHLC2. (1997) *Majuro Declaration*. Second Multilateral High Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific. Majuro, Marshall Islands, 10 to 13 June 1997. WCPFC.

32 S. Tarte, (1998), *Report on the Third Multilateral High-Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*. Suva, Fiji. University of the South Pacific. p1.

the Majuro Declaration, reaching a conclusion at the seventh session of the MHLIC in Honolulu, USA in September 2000.³³ These negotiations were often contentious, but despite their controversies, the MHLIC was ultimately successful in that it produced the world's first tuna RFMO Convention that fully reflected the provisions of the United Nations Fish Stocks Agreement.³⁴ In so doing, the MHLIC incorporated many of the modern principles and standards of fisheries governance that had recently developed.

However, the negotiations failed to resolve some fundamental disagreements and consequently depended upon ambiguous language to progress agreement and enable the WCPF Convention to be adopted. In summary, the MHLIC was unable to agree on defined northern or western boundaries, and adopted an eastern boundary that partly overlapped with the Inter-American Tropical Tuna Commission (IATTC). The MHLIC also deferred interpretation of contentious matters relating to application to archipelagic waters, compatibility of management across EEZs and high seas, and criteria for 'real interest' to the Commission. While the MHLIC provided guidance on various conservation and management issues, it failed to address a fundamental disagreement on whether the Commission should allocate fishing rights throughout its membership for all the highly migratory fish throughout their range. At the Seventh Session of the MHLIC, the Chair concluded negotiations after all efforts at reaching agreement had been exhausted, and formally presented a draft text

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- 33 Notably, Sandra Tarte from the University of the South Pacific attended all MHLIC meetings between 1997 and 2000 and wrote detailed reports. For readings, see: S. Tarte, (2002), *Report on the Third Session of the Preparatory Conference for the Establishment of the Commission on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*, Suva, Fiji, University of the South Pacific; S. Tarte, (1999), *Report on the Fourth Multilateral High-Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*, Suva, Fiji, University of the South Pacific; S. Tarte, (1999), *Report on the Fifth Multilateral High-Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*, Suva, Fiji, University of the South Pacific; S. Tarte, (2000), *Report on the Sixth Multilateral High-Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*, Suva, Fiji, University of the South Pacific; S. Tarte, (2000), *Report on the Seventh Multilateral High-Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*, Suva, Fiji, University of the South Pacific.
- 34 M. Lodge, (2006), *The Practice of Fishing Entities in Regional Fisheries Management Organisations: The Case of the Commission for the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean*. *Ocean Development and International Law*. 37.

of the Convention. The Convention was adopted by a vote of 19 in favour. Korea and Japan voted against, while China, France and Tonga all abstained.³⁵

The Seventh Session of the MHLCC also adopted a resolution to organise the establishment of the Commission. This initiated seven preparatory conferences that met from 2001 to 2004. Despite significant early tensions and attempts by the USA, Japan and Korea to reopen the Convention, these Preparatory Conferences were ultimately successful in resolving outstanding matters. By the conclusion of these Conferences, Japan, Korea, China, France and Tonga had all committed to support the new Commission. This was a significant achievement and ensured that the Commission enjoyed sufficient participation.³⁶

Since entering into force in 2004, the WCPFC has adopted numerous measures on matters ranging from data and reporting requirements through to catch limits, spatial and temporal restrictions and species specific regulations. The primary conservation and management measure (CMM) that regulates the management of tropical tuna species (skipjack, bigeye and yellowfin) is CMM 2018-01 and its various predecessors. CMM 2018-01 restricts activities in

35 MHLCC Secretariat, (2000), *Multilateral High Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific: Seventh Session. Report of the Conference*. Multilateral High Level Conference on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific: Seventh Session. Honolulu, USA, 30 August to 5 September 2000. WCPFC. p2.

36 For further commentary on the Preparatory Conferences, see WCPFC Prep Con. (2004) *Final Report of the Preparatory Conference for the Establishment of the Commission for the Conservation of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean on all Matters Within its Mandate Pursuant to Paragraph 9 of Resolution I*. Seventh Session of the Preparatory Conference for the Establishment of the Commission for the Conservation of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean, Pohnpei, Federated States of Micronesia 6 to 7 December 2004, WCPFC; S. Tarte, (2001), *Report on the First Session of the Preparatory Conference for the Establishment of the Commission on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*, Suva, Fiji, University of the South Pacific; S. Tarte, (2002), *Report on the Second Session of the Preparatory Conference for the Establishment of the Commission on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*, Suva, Fiji, University of the South Pacific; S. Tarte, (2002), *Report on the Third Session of the Preparatory Conference for the Establishment of the Commission on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*, Suva, Fiji, University of the South Pacific; S. Tarte. (2003) *Report on the Fourth Session of the Preparatory Conference for the Establishment of the Commission on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*, Suva, Fiji, University of the South Pacific; S. Tarte, (2003) *Report on the Fifth Session of the Preparatory Conference for the Establishment of the Commission on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*, Suva, Fiji, University of the South Pacific; S. Tarte, (2004), *Report on the Sixth Session of the Preparatory Conference for the Establishment of the Commission on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific*, Suva, Fiji, University of the South Pacific.

the purse seine and longline fisheries, in particular, through provisions such as catch and effort limits, retention of catch requirements, and limits on the number of large purse seine and longline vessels.

Restrictions specific to purse seine fishing include (but are not limited to) an annual three month prohibition on fishing upon FADs and an additional two month FAD closure in the high seas, a limit on the number of FADs a vessel can deploy, a limit on the number of days each fleet can fish in the high seas and a limit on the number of days that can be fished by any fleet within coastal States EEZs. The Korean fleet is limited to a maximum of 207 days of purse seine fishing in the high seas (between 20°N and 20°S).

Major distant water longline fleets have bigeye catch limits under CMM 2018-01, with Korean flagged longline vessels allowed a maximum catch of 13,942 t of bigeye tuna across the WCP-CA (both within EEZs and high seas). CMM 2018-01 also contains a range of explicit instructions for the application of the various limits, restrictions and obligations, and provisions regarding the operational catch and effort reporting requirements. The CMM is regularly reviewed and updated, with the next review due at the WCPFC Regular Session in December 2020, where it is likely that members will decide to simply extend the measure for another year due to COVID restrictions preventing the WCPFC from meeting in person to re-negotiate the measure.

There are also a range of other WCPFC CMMs which prescribe restrictions and requirements. These include CMM 2015-02 which limits the number of vessels fishing for South Pacific albacore south of 20°S, and a number of CMMs for the management of other secondary and protected species including swordfish, striped marlin, sharks, sea turtles and cetaceans. A number of CMMs have also been agreed that specify monitoring, control and surveillance requirements, such as vessel registration, reporting, boarding and inspection, observers, Vessel Monitoring Systems (VMS), transshipment, and port state measures.³⁷

3.2 *Pacific Island Forum Fisheries Agency (FFA)*

The FFA is an inter-governmental agency with 17 member countries and territories,³⁸ whose purpose is to strengthen national capacity and regional

37 See full list of active WCPFC CMMs, available at <https://www.wcpfc.int/conservation-and-management-measures>. At the time of writing, a number of WCPFC requirements had been suspended until March 2021 in response to the COVID-19 pandemic, to minimise the risk of transmission among fishing vessels. These included the purse seine observer coverage requirement and the at-sea transshipment requirements relating to purse seine vessels and observers.

38 FFA Members are Australia, Cook Islands, Federated States of Micronesia, Fiji, Kiribati, Marshall Islands, Nauru, New Zealand, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tokelau, Tonga, Tuvalu and Vanuatu.

FIGURE 2 The Pacific islands region³⁹

cooperation for the sustainable management and development of their off-shore fisheries resources. The FFA is not a regulatory body, but members regularly develop joint policy positions on fishery issues. FFA members cooperation in pursuit of their shared interests and joint policy positions often result in proposals to WCPFC and with their 17 member voting bloc, they have a strong influence on the content and adoption of any new CMMs.

FFA members have developed a range of cooperative mechanisms including the FFA Vessel Register, the FFA VMS program and the Regional Surveillance Program. They have also agreed, and regularly update, the *Harmonised Minimum Terms and Conditions for Access by Fishing Vessels* (MTCs).⁴⁰ The MTCs contains a detailed set of conditions related to monitoring, control and surveillance, fisheries management, and labour and employment. These constitute the minimum standards for access by fishing vessels to FFA EEZs, and are implemented by each FFA member through their national legislation, access agreements and vessel licence conditions. The HMTCs include a number of conditions ranging from the requirement to register on the FFA Vessel

39 Map sourced from Q. Hanich & M. Tsamenyi (Eds.) *Navigating Pacific Fisheries: Legal and Policy Trends in the Implementation of International Fisheries Instruments in the Western and Central Pacific Ocean*. (University of Wollongong, Wollongong, Australia, 2009).

40 FFA, (2019), *The Harmonised Minimum Terms and Conditions for Access by Fishing Vessels* (as amended by FFC110, May 2019), Honiara, Solomon Islands.

Register, through to transshipment, reporting, VMS and crew employment conditions.

Collaboration among FFA countries has also led to the development of a range of arrangements between sub-sets of the FFA membership, including the Parties to the Nauru Agreement (PNA) and the Tokelau Arrangement.

3.3 *Parties to the Nauru Agreement (PNA)*

The PNA include the eight Pacific Island countries whose EEZs produce around 80% of the tropical tuna caught in the WCP0 and 50% of the world's skipjack tuna.⁴¹ The PNA countries work together to cooperatively manage their tuna fisheries, with the primary tool being the purse seine and longline Vessel Day Schemes (VDS).⁴² The purse seine VDS limits the purse seine fishery across the PNA EEZs through an agreed Total Allowable Effort (TAE), which is then distributed among the participating countries as Party Allowable Effort (PAE). Each country then distributes their PAE among fleets and vessels through mechanisms of their choice (e.g., auction, tender, bilateral agreement, domestic vessel priority), in accordance with basic rules agreed among all countries. The VDS allows trading of days between countries, and allows pooling of days, where purchasers of the pooled days can use them anywhere in the participating countries EEZs.⁴³

The PNA purse seine VDS TAE is based on 2010 effort levels; a year where PNA members considered that reasonable catch rates and economic conditions existed in the purse seine fishery, and which is used as a reference point for the WCPFC agreed interim Target Reference Point for skipjack. These 2010 effort levels (44,033 days) are also reflected in the effort limit for PNA countries (as a group) in CMM 2018-01 Attachment 1, Table 1. PNA Members have an agreed minimum benchmark price, currently set at US\$8,000, for a purse seine VDS day in any EEZ, but typically they are being sold well above that price. Havice et al⁴⁴ report that bilateral VDS days were selling for US\$9,000 – \$10,000 in 2019, while sub-regional pool VDS days were priced at US\$12,500, and days under the US Treaty multilateral arrangement were US\$13,600 a day.

The PNA also introduced the Longline Vessel Day Scheme in 2017, which establishes a TAE for longline effort in all parties' waters, within which it has

41 PNA members include, Federated States of Micronesia, Kiribati, Marshall Islands, Nauru, Palau, Papua New Guinea, Solomon Islands and Tuvalu, *available at* www.pnatuna.com/about-us/.

42 Tokelau, a territory of New Zealand, is a participant in the VDS and an observer to the PNA.

43 Reid, *supra* note 25.

44 E Havice, M McCoy, and A Lewis, (2019) *Market and Industry Dynamics: Western and Central Pacific Ocean Distant Water Tuna Purse Seine Fishery*. FFA, Honiara, Solomon Islands.

allocated longline PAEs.⁴⁵ Similar to the purse seine VDS, vessels participating in the longline VDS are required to pay for each fishing day, and trading between countries is allowed. While there is substantive demand for purse seine VDS days, the longline VDS has not yet been fully subscribed and days are sold at a flat price set by each country.

In addition to limiting fishing days, the PNA has a common set of requirements for purse seine and longline vessels fishing within their EEZs, which include restrictions on FAD use, transshipment at sea, fishing in high seas pockets and requirements for reporting and observers.⁴⁶ While some of these requirements are consistent with those in WCPFC CMMS, some of them (such as the prohibition on fishing in high seas pockets) go beyond WCPFC obligations.

The VDS is complemented by the Federated States of Micronesia Arrangement for Regional Fisheries Access (FSMA) which allows vessels that are based within PNA countries discounted licences and reciprocal access to other PNA countries EEZs.⁴⁷ The intent of the FSMA is to provide preferential treatment for domestic vessels and incentivise domestic economic development initiatives.

3.4 *The Tokelau Arrangement for the South Pacific Longline Fishery (TKA)*

The TKA came into effect in December 2014, with the objective of increasing participant's control of the South Pacific albacore fishery, improving stock management and increasing economic returns. There are 11 countries⁴⁸ participating in the arrangement, which includes interim Total Allowable Catch limits for albacore within the EEZs of each participating country.⁴⁹ It is the responsibility of each participating country to implement their catch limit, and there are no requirements as to how countries do that. The group has been negotiating more detailed implementing arrangements, but these are yet to be agreed. As such, participating countries are currently using a range of different

45 *Palau Arrangement for the Management of the Western Pacific Tuna Fishery – Management Scheme (Longline Vessel Day Scheme)*. Amended October 2016.

46 Texts of the various PNA Implementing Agreements found at www.pnatuna.com/documents/.

47 E Havice and L Campling, *Shifting Tides in the Western and Central Pacific Ocean Tuna Fishery: The Political Economy of Regulation and Industry Responses*, 10 (10) *Global Environmental Politics* 89–114 (2010).

48 Signatories to the TKA are Tokelau, Vanuatu, Australia, Cook Islands, New Zealand, Niue, Samoa, Tonga, Tuvalu, Fiji, and Solomon Islands.

49 Reid, *supra* note 25.

approaches to comply with their voluntary limits, ranging from vessel level quota allocations through to national caps on licences numbers.

3.5 *Marine Stewardship Council (MSC) Certification*

Although not a regulatory tool, a number of tuna fisheries in the Pacific have MSC certifications which involve additional management or traceability requirements for participating vessels. These certifications all have conditions which the certification client (typically an industry group) is responsible for meeting.

There are seven WCPO purse seine fisheries currently certified, including the PNA free-school fishery and the PNG Fishing Industry Association fishery, and eleven certified longline fisheries in the WCPO.⁵⁰ Although only the vessels within the unit of certification are required to meet the requirements and conditions of certification, the growing number of certifications in the WCPO is influencing the introduction of new measures across the fishery, such as the development of harvest strategies and catch documentation schemes.

Korea's largest fishing company, Dongwon Industries, successfully gained MSC Certification for their free-school purse seine fishery (skipjack and yellowfin) in October 2019⁵¹ and their longline fishery (for yellowfin, bigeye and albacore) in June 2020.⁵² These certifications both include conditions that require Dongwon to actively work to ensure that WCPFC harvest strategies (including harvest control rules) are developed for the certified species. The failure of WCPFC to agree and implement harvest strategies and control rules over the next 2–5 years would compromise all MSC certifications of tuna fisheries in the WCPO.

4 *Pacific Island Countries' Regulations and Policies for Foreign Fishing Vessels*

Overlaying the regional and sub-regional regulatory framework are the regulations and policies that apply at a national level when fishing in a coastal State's EEZ. The primary requirement of all coastal States, in accordance with

⁵⁰ See www.fisheries.msc.org.

⁵¹ K Collinson, et al, (2019), *Marine Stewardship Council Public Certification Report: Tropical Pacific yellowfin and skipjack tuna free-school purse seine fishery*, Control Union Pesca Ltd, Hampshire, United Kingdom.

⁵² H Jones, et al, (2020), *Marine Stewardship Council Public Certification Report: Pan Pacific yellowfin, bigeye and albacore tuna longline fishery*. Control Union UK Ltd, Hampshire, United Kingdom.

the United Nation Convention on the Law of the Sea, is that all foreign vessels must obtain an authorisation to access and fish in their EEZ.

There are three primary forms of access agreements for fishing in Pacific Island countries. The most common are bilateral access agreements where a distant water fleet (either the government or an industry association or company) and a Pacific Island country negotiate an agreed payment for fishing access opportunities. There is also a multilateral access agreement between the USA and FFA members which grants USA flagged purse seine vessels access to the waters of 15 Pacific Island Countries.⁵³ The third approach is where foreign vessels are granted access through registering domestically or making onshore investments in Pacific Island countries.⁵⁴ There were 14 Korean owned vessels involved in joint ventures with four Pacific Island Countries in 2019.⁵⁵

Ultimately, agreements are individually tailored depending on the political, economic and environmental considerations of the flag state seeking access, and the country whose EEZ they are seeking to operate.⁵⁶ There are various requirements for the foreign vessels entering into this kind of arrangement, and different potential benefits, depending on the Pacific Island country. It is widely recognised that the terms of access agreements and associated fees are negotiable, and are often linked to the provision of foreign aid and development assistance.⁵⁷

The conditions placed upon the access under any of these approaches would be a mix of mandated conditions (e.g. reporting, monitoring and compliance requirements) and negotiated conditions, such as limits on the number of vessels, fishing days or tonnes of catch allowed.

The fisheries development and management priorities of FFA Member countries have been expressed in the *Regional Roadmap for Sustainable Pacific*

53 The US Treaty was negotiated in 1987 in order to resolve growing conflict between Pacific island states and the USA due to the American refusal to recognise EEZ rights over highly migratory tuna stocks. Negotiations culminated with the adoption of the Treaty on Fisheries between the Governments of Certain Pacific Island States and the Government of the United States of America. The treaty recognised the sovereign rights of the Pacific island States over tuna within their EEZs, and commenced operation in 1988. It has since been renewed three times, with the next renewal due in 2022. Q Hanich, H Parris & M Tsamenyi. *Sovereignty and cooperation in regional Pacific tuna fisheries management: Politics, economics, conservation and the vessel day scheme*, 2(1) Australian Journal of Maritime and Ocean Affairs 2–15 (2010).

54 E Havice, *The structure of tuna access agreements in the Western and Central Pacific Ocean: Lessons for Vessel Day Scheme planning*, 34 Marine Policy 979–987 (2010).

55 Havice, et al, *supra* note 44.

56 Havice, *supra* note 54.

57 *Ibid.*

*Fisheries*⁵⁸ and more recently in the *Pacific Islands Forum Fisheries Agency Strategic Plan 2020–2025*.⁵⁹ Strategies for offshore fisheries outlined in the *Regional Roadmap* include effective zone-based management, reducing IUU fishing, restricting high seas fishing by foreign fleets, improving employment standards, and building processing capacity in the region. These strategies, in particular establishing zone-based management and constraining high seas fishing, contribute to FFA Members broader objective to take control of WCPO fisheries to ensure their sustainable future.⁶⁰

The intention to implement zone-based management has been expressed by FFA members at the WCPFC and is recognised in the CMM 2018-01 preamble. The zone-based management approach involves the establishment of a total limit on catch or effort across participating EEZs, allocating a share of the limit to each of those participating countries, and then each country managing that allocation within their zone. This approach is a deliberate movement away from the historically dominant flag-based approach, where limits and allocations have been based on historical activity by flagged States.⁶¹ The Vessel Day Scheme (VDS) implemented by the PNA countries is an example of the zone-based management approach.

The success of the VDS in dramatically increasing the revenue obtained by PNA countries for access to their tuna resources, has contributed to the intention of FFA countries to implement zone-based approaches in other fisheries, including the tropical longline fishery and the South Pacific Albacore longline fishery.⁶²

Optimising the economic and social benefits that FFA Member countries derive from their tuna resources features in the goals of the *Regional Roadmap* and as an outcome in the *FFA Strategic Plan*. They are committed to rebalancing of the distribution of wealth or “rent” from fisheries resources between distant water nations and coastal States.⁶³

All Pacific Island countries have an interest in maximising the return from the sale of access rights to foreign fleets, or a combination of this and

58 FFA SPC (2015), *Future of Fisheries: A Regional Roadmap for Sustainable Pacific Fisheries*. Pacific Island Forum Fisheries Agency, Solomon Islands, and the Secretariat of the Pacific Community, New Caledonia.

59 FFA (2020), *Pacific Islands Forum Fisheries Agency Strategic Plan 2020–2025*, FFA, Honiara, Solomon Islands.

60 Reid, *supra* note 25.

61 *Ibid.*

62 *Ibid.*

63 Q Hanich, et al, *Research into fisheries equity and fairness – addressing conservation burden concerns in transboundary fisheries*, 51 Marine Policy 302–304 (2015).

promoting domestic fisheries development.⁶⁴ Revenue from licensing arrangements and access fees contributed over \$500,000 million to the economies of FFA Member countries in 2017.⁶⁵ Many Pacific Island countries rely on that revenue, with it representing more than 60% of the GDP of some FFA Members.⁶⁶

The social and economic conditions in each Pacific Island country differ, as does the infrastructure available to support fishing activities. As such, the development and economic interests of each FFA Member varies. While some are primarily interested in government revenue from access fees (particularly those without a large port, such as Tokelau and Nauru), others seek onshore development, transshipment and employment opportunities.

Some Pacific islands have been actively pursuing the development of their domestic tuna fishing fleets, in particular through charter arrangements and reflagging of vessels. Growth over the past two decades has resulted in the combined Pacific Island domestic fleet now comprising of 133 vessels. Pacific Island vessels have dominated the purse seine fishery since 2003, with their 2019 catch of 851,794 mt almost equalling the combined catch of the next five largest fleets (Japan, Korea, Chinese Taipei and USA).⁶⁷ This growth in vessels chartering and reflagging to Pacific Island fleets has been fuelled by the incentives of beneficial access arrangements between Pacific Island EEZs under the FSMA, and Pacific Island vessels exemptions to FAD closures and high seas effort limits provided under WCPFC CMMs.⁶⁸

The FFA *Regional Roadmap* recognises that only some countries have aspirations for increased processing capability and includes a strategy to establish regional processing hubs in two or three FFA countries.⁶⁹ Processing plants in the Pacific Islands currently process around 100,000 mt of tuna, primarily in the larger facilities in PNG, Solomon Islands and the Marshall Islands, although smaller processing facilities also exist in a number of other Pacific Island countries.⁷⁰ Although PNG's processing plants currently operate below capacity, a number of challenges exist to growth in the regional processing

64 Reid, *supra* note 25.

65 FFA Member CCMs (2019) High seas limits and allocation in the Tropical Tuna CMM. *Western and Central Pacific Fisheries Commission, Sixteenth Regular Session, Port Moresby, Papua New Guinea*. WCPFC16-2019-DP06.

66 AD Yeeting, et al, *Implications of new economic policy instruments for tuna management in the Western and Central Pacific*, 63 *Marine Policy* 45–52 (2016).

67 S Brouwer, et al, (2019) The Western and Central Pacific Tuna Fishery: 2018 Overview and Status of the Stocks. *Tuna Fisheries Assessment Report No. 19*, Oceanic Fisheries Programme, Pacific Community, Noumea, New Caledonia; Williams and Ruaia, *supra* note 19.

68 Havice, et al, *supra* note 44.

69 FFA SPC, *supra* note 58.

70 Havice, et al, *supra* note 44.

capability including the attractiveness of the investment environment, land tenure issues, and access to infrastructure (roads and ports), water and labour.

Another priority for FFA Members, expressed at WCPFC and in broader international development fora is climate change, which Island countries consider an existential threat.⁷¹ Tuna are known to be sensitive to changes in temperature and oxygen levels, and are therefore expected to be affected by warming and deoxygenation associated with climate change.⁷² Simulations undertaken by the Pacific Community (SPC) using the SEAPODYM modelling framework found that the impact of climate change on stocks will differ for the four key tuna species, with skipjack and yellowfin tuna predicted to be adversely affected by declines in the stock abundance through the remainder of this century and an eastern shift of biomass. Bigeye is predicted to suffer less of a decline and projections suggest that the albacore stock may benefit from warming waters leading to an increase in the area for favourable spawning conditions. The projections suggest that an increasing proportion of the catch of all four key tuna species will be taken in international waters than at present.⁷³

The forecast movement of fish and fishing effort into the high seas, increases the urgency of FFA members aspirations to progressively restrict fishing on the high seas by foreign fleets. The rationale for this goal is twofold, (1) to improve management of tuna across their stocks, with the high seas currently subject to less oversight and control, and (2) to increase demand (and therefore price) for access in EEZs. The *Regional Roadmap* signals that FFA Members will pursue tighter controls on high seas fishing through the WCPFC, which are likely to include hard catch and effort limits⁷⁴ and more comprehensive MCS.

5 Key Challenges and Recent Developments in Pacific Tuna Fisheries

Regional fisheries discussions in the Pacific have long focussed on the purse seine fishery, being the largest fishery in terms of catch and value, in particular on the management of FADs. There has been a continual increase in the use of FADs since the 1990s, resulting in an estimated 30,700–64,900 FADs

71 President of the Republic of Palau and 46th Pacific Islands Forum Outgoing Chair, H.E. Tommy E. Remengesau Jr's Remarks at the 46th Pacific Island Forum and Related Meetings (2015), available at www.forumsec.org.

72 KC Weng, et al, *Fishery management, development and food security in the Western and Central Pacific in the context of climate change*, 113 Deep-Sea Research II 301–311 (2015).

73 Brouwer, et al, *supra* note 67.

74 CMM 2018-01 paragraphs 28 and 44.

deployed annually in the WCPO in 2016 and 2017.⁷⁵ The proportion of FAD sets vs free-school sets in the WCPO purse seine fishery fluctuates at around 40%, with variations depending on time of year and the location of fishing. Purse seine vessels have a greater reliance on fishing upon FADs further east in the fishery.⁷⁶

While FADs improve purse seine fishing efficiency, they also have negative impacts, including increased catch of juvenile bigeye, increased rates of bycatch, entanglement of protected species and marine debris. Under CMM 2018-01, WCPFC now has in place a suite of FAD management mechanisms, including a three month FAD closure across the fishery plus an additional two month FAD closure in the high seas. An alternative FAD set limit option is also allowed under the tropical tuna CMM, however few countries utilise this option.

FFA members are becoming increasingly concerned at the number of drifting FADs which are abandoned or lost. Approximately 8% of deployed FADs are estimated to end up beaching, while 29–39% are estimated to be drifting deactivated (without any owner tracking their trajectories), so the fate of those FADs was unknown.⁷⁷ These lost and abandoned FADs impact on marine ecosystems and damage vulnerable coral reefs, and contribute to marine pollution due to plastic components. The deactivation of drifting FADs, and subsequent loss, may also breach MARPOL regulations. A recent study has also found that drifting FADs are legally ‘fishing’ throughout all stages of use, with resulting obligations on member States to ensure that they are effectively managed and monitored throughout all stages of use.⁷⁸

PNA Members in particular are continuing to drive progress in FAD management, with current initiatives including a FAD tracking and registration program.⁷⁹ This program improves the ability of authorities to monitor FAD movement, detect when FADs are deployed and fished upon, and better manage the marine debris associated with discarded FADs. Some Pacific Island countries are also pushing strongly for a WCPFC requirement that FADs be

75 L Escalle, et al, (2018), Estimates of the number of FADs active and FAD deployments per vessel in the WCPO. *Western and Central Pacific Fisheries Commission Scientific Committee, Fourteenth Regular Session, Busan, Republic of Korea*, WCPFC-SC14-2018/M1-WP-10.

76 Williams and Ruaia, *supra* note 19.

77 Escalle, et al, *supra* note x?

78 Q Hanich, et al, *Drifting Fish Aggregating Devices (FADs): Deploying, Soaking and Setting – When is a FAD Fishing?*, 34 *The International Journal of Marine and Coastal Law* 1–24 (2019).

79 L Escalle, et al, (2019), Report on analyses of the 2016–2019 PNA FAD tracking programme, *Western and Central Pacific Fisheries Commission Scientific Committee, Fifteenth Regular Session, Pohnpei, Federates States of Micronesia*. WCPFC-SC15-2019/M1-WP-12.

constructed from biodegradable, non-entangling materials. PNA and FFA Members, together with NGOs and other coastal States, are likely to continue to push for improved FAD monitoring, increased use of biodegradable materials, and reduced deployment and discarding of FADs across the WCPO.

A key feature of the current WCPFC agenda is the development of harvest strategies for key tuna species. The intention of the harvest strategies is to provide a decision framework for management responses to changes in the status of stocks. A Harvest Strategy Workplan was first adopted by WCPFC in 2014 and is updated annually.⁸⁰ Progress on adopting the various elements of harvest strategies has been slow, but key elements have been agreed (at least in interim form) for skipjack.

As these harvest strategy discussions progress, it has become evident that in order for them to be effectively implemented, allocations of total catch or effort for each species across the WCPFC member countries are necessary.⁸¹ In recent discussions, WCPFC Member's positions on allocation are increasingly being expressed, including in relation to high seas fishing opportunities, allocations under CMM 2018-01, and potential allocations under a revised CMM for south Pacific albacore.

FFA Member statements and delegation papers to WCPFC repeatedly advocate for greater recognition of coastal State rights in allocations, and equitable distribution of fishing opportunities, particularly in the high seas. Given that CMM 2018-01 includes a commitment to establish hard catch or effort limits and an allocation framework for purse seine in 2020 and longline in 2021, discussions on allocation are expected to be a significant feature of forthcoming WCPFC annual sessions.⁸²

Allocation discussions and the harvest strategy development process have exposed the lack of robust economic information currently available to inform WCPFC processes. As a result, improved economic data collection and monitoring of economic aspects of fisheries will be increasingly called upon to inform managers and decision-makers.⁸³

Despite the lack of robust economic data, the economic losses and risks to sustainable management from Illegal, Unreported and Unregulated (IUU) fishing are well recognised in the region. A 2016 report estimated that 306,400

80 WCPFC (2019b), Attachment H.

81 K Seto, et al, *Resource Allocation in Transboundary Tuna Fisheries: A Global Analysis*, Ambio (2020), available at <https://doi.org/10.1007/s13280-020-01371-3>.

82 K Seto and Q Hanich, *The Western and Central Pacific Fisheries Commission and the New Conservation and Management Measure for Tropical Tunas*, 3 Asia-Pacific Journal of Ocean Law and Policy 146–151 (2018).

83 Weng, et al, *supra* note 72.

mt of product was either harvested or transhipped involving IUU activity in Pacific tuna fisheries, with an estimated value of \$616.11 million USD. The vast majority of this involved licenced vessels misreporting, fishing during the FAD closure or illegally transshipping.⁸⁴ Pacific countries consider this loss as a threat to their ability to maximise the economic benefits that can be obtained from their tuna resources, and a threat to the future sustainability of tuna as a source of food and revenue. As such, they continue to pursue a suite of mechanisms to improve monitoring and control of fishing across the region, with a particular focus on the high seas.

One focus area for reducing the opportunity for IUU activity is transshipment. WCPFC prohibits high seas transshipment, however flag states can be granted exemptions if it has determined that it is impracticable to operate without being able to tranship in the high seas.⁸⁵ With almost twice as many vessels authorised to tranship in April 2019 as those who were unauthorised, this prohibition is widely considered to have been unsuccessful.⁸⁶

FFA Members have repeatedly stated their objective to have all transshipments undertaken in port,⁸⁷ and there have been global and regional calls by NGOs to ban at sea transshipment. Pacific Island countries are opponents of high seas and at sea transshipments. Expressing concerns with the transparency of these operations, the masking of non-compliance, and the potential that this practice enables other illegal activities such as human trafficking and smuggling,⁸⁸ Pacific Island countries would prefer transshipment happen in port where comprehensive compliance checks can be undertaken. In addition, transshipment in port is a significant revenue source for some Pacific Island countries, where fees can be charged for transshipment and broader economic benefits can be derived from activities associated with vessels resupplying in port.⁸⁹

The WCPFC Convention itself requires CCMs to encourage transshipment in port⁹⁰ however at-sea transshipment contributes to the economic viability of

84 MRAG Asia Pacific, (2016), *Towards the Quantification of Illegal, Unreported and Unregulated (IUU) Fishing in the Pacific Islands Region*.

85 Campling, *supra* note 22.

86 MRAG Asia Pacific, (2019), *WCPFC Transshipment Business Ecosystem Study*.

87 FFA Member CCMs, (2018), Views on Paragraphs 28 and 44 of CMM 2017-01. *Western and Central Pacific Fisheries Commission, Sixteenth Regular Session, Honolulu, Hawaii*. WCPFC15-2018-DP09.

88 Campling, *supra* note 22, MRAG Asia Pacific, *supra* note 86.

89 MRAG Asia Pacific, *supra* note 86.

90 Article 29, Paragraph 1, Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean.

larger longline vessels. Given the strong opposition from some distant water fishing nations, it is unlikely that a WCPFC comprehensive ban on transshipment will be agreed in the short-term. Nonetheless, increased scrutiny of at sea transshipment can be expected, including an enhanced monitoring regime (including fishing and carrier vessel observers), verification of transshipment activity and compliance, and additional measures to encourage increased transshipment in port.

Another focus area in the effort to reduce IUU activity is the implementation of electronic reporting and electronic monitoring. The more modern fleets and industry groups are already using electronic reporting mechanisms, however it is not universally implemented, and the data collected isn't always shared with appropriate authorities for fisheries management purposes. Management and stakeholders are increasingly expecting near real-time provision of data, particularly as catch limits become more broadly adopted in national and regional fishing regimes.

There have been discussions on EM at WCPFC for a number of years, with the work currently being led by the WCPFC E-Reporting and E-Monitoring Working Group that reports to TCC. Some companies have already implemented EM on vessels and a number of Pacific Island countries are trialling EM on their domestic longline vessels. While observers have long provided a useful verification mechanism for operational logbook data (electronic and hard copy), coverage of observers on longline vessels remains low. With electronic monitoring technology, it is becoming a more accessible option to monitor longline activities and verify operational data. The suspension of observer requirements amidst the COVID-19 pandemic, due to the risk to observers, has amplified the increased calls for implementation of electronic monitoring across fleets.⁹¹

Attention has increased on the issue of labour standards in fishing and fish processing in recent years. Commercial fishing is considered one of the least safe workplaces worldwide, with fatality rates estimated at 80 deaths per 100,000 individuals per annum.⁹² In 2017 at the United Nations Oceans Conference, over 60 of the world's largest tuna seafood industry operators (as well as a number of NGOs and Governments) committed to eliminating any form of slavery and meeting internationally recognised social standards.⁹³

91 E Havice, L Campling, and M McCoy, (2020) *FFA Trade and Industry News, Volume 13: Issue 3 May – June 2020*. FFA, Honiara, Solomon Islands.

92 G Atzamos, et al, (2018), A new era of fishing vessel safety emerges, *Proceedings of 7th Transport Research Arena TRA 2018*, Vienna, Austria.

93 Campling, *supra* note 22.

A number of private standards also now incorporate human rights matters. After the deaths of three Indonesian fisherman aboard a Chinese fishing vessel in early 2020, Indonesia recently raised human rights abuses in the fishing industry with the United Nations Human Rights Council.⁹⁴

Labour conditions were first addressed at the WCPFC in relation to observer safety, with a CMM on observer safety adopted in 2017.⁹⁵ There are a range of national and international laws and guidelines in place and major industry players are also responding to this increased focus after the uncovering of human rights abuses and trafficking in the tuna industry by NGOs in recent years.⁹⁶ FFA Members have also recently revised their *Harmonised Minimum Terms and Conditions* to include a number of requirements related to crew employment conditions. Scrutiny on port States, flag States and fishers home States to monitor and enforce the existing laws and requirements, and to improve standards, is increasing.⁹⁷

6 Korean Distant Water Fishing Vessels

In order to continue to participate in Pacific tuna fisheries, Korean distant water fishing vessels will need to access fishing opportunities in the high seas, compete for access in EEZs, and comply with evolving regional and national obligations.

6.1 *Drifting Fish Aggregating Devices (dFADs)*

The Korean-flagged purse seine fleet are considered to be modern, efficient and largely profitable, with the highest catch rates of any distant water fleet.⁹⁸ They also have among the lowest use of drifting FADs among major distant water fishing nations operating in the WCPFC.⁹⁹ Over the past decade (2010–2019) a quarter of the sets undertaken by Korea's purse seine fleet have been on drifting FADs which is less than the fishery wide average of 33%.¹⁰⁰ The

94 K Jabiki, (2020) *Indonesia Seeks UN Protection after Deaths on Chinese Fishing Ships*, Nikkei Asian Review, 13 May 2020.

95 CMM 2017-03.

96 Campling, *supra* note 22.

97 A Jaleel, and D Grewal, (2017), *A perspective on Safety and Governance issues of Fishing Vessels. Chapters, 4*, World Maritime University.

98 Havice, et al, *supra* note 44.

99 MK Lee, et al, *Study on the effects and strategies of Korean tuna purse seine fishery affected by conservation management measures of Western and Central Pacific Fisheries Commission*, 52(3) *Journal of the Korean Society of Fisheries and Ocean Technology* 197–208 (2016).

100 WCPFC and SPC-OPF (2020)

proportion of sets on FADs in the Korean flagged vessels sampled in Park et al.¹⁰¹ was 21.9% – 30.8% which accounted for around 21.5% – 45% of catch, suggesting that in some vessels there was no significant difference in catches.

Increased FAD management, including requirements regarding the use of biodegradable FAD materials, are likely to feature in changes to Pacific States' policies and WCPFC regulation. While Korean vessels are in a better position than many fleets to adapt to further restrictions on FAD use, as concluded by Lee et al (2016), the Korean fleet should continue to improve the fishing efficiency of unassociated purse seine sets, and explore and implement effective biodegradable FAD designs.

6.2 *Southern Albacore*

Reductions in South Pacific albacore catch will be needed to achieve the recently adopted interim target reference point of $0.56 SB_{F=0}$. The scale and timeline for reductions, and who is responsible for those reductions has not yet been determined, however an intersessional meeting of the WCPFC has commenced to develop a CMM that establishes a limit on South Pacific albacore.¹⁰² Given albacore accounted for only 4–6% of the Korean longline catch over the period 2014–2019,¹⁰³ any reductions are unlikely to have a significant impact on the Korean longline fleet (although impacts on some individual vessels may be substantive). However, the negotiations and allocation outcomes may establish a precedent for any reductions necessary under future harvest control rules, or target reference points, for skipjack, yellowfin and bigeye.

6.3 *PNA Vessel Day Scheme*

Zone-based approaches, which Pacific Island countries are seeking to progressively implement across all their fisheries, create a demand and competition between those vessels seeking access.¹⁰⁴ The VDS has changed the dynamics such that the access for distant water fishing vessels can now be allocated at the vessel level, rather than being reliant on country-level bilateral

¹⁰¹ YY Park, YW Lee, and DJ Lee, *Analysis on fishing conditions of the Korean tuna purse seiner operating in the western and central Pacific Ocean*, 52(4) *Journal of the Korean Society of Fisheries and Ocean Technology* 356–363 (2016).

¹⁰² *The Intersessional Meeting to Progress the FFA Consultative Draft Conservation and management measure to Establish a Limit for South Pacific Albacore*, available at <https://www.wcpfc.int/meetings/intersessional-meeting-progress-draft-bridging-cmm-south-pacific-albacore-commission>.

¹⁰³ Lee et al, *supra* note 2.

¹⁰⁴ Yeeting, et al, *supra* note 66.

arrangement.¹⁰⁵ This competition for limited days or catch has increased the price of access, and consequentially removes less efficient vessels from the fishery that have a lower capacity to pay. The efficiency and profitability of Korean vessels enhances their ability to pay for increasingly competitive access within EEZs, and to purchase high seas opportunities in the case that any future limits placed on the high seas are allocated and tradeable.

Despite the move toward market based sale of access, many Pacific Island countries will continue to provide preferential access or discounted access rights where domestic fisheries development or other employment of onshore benefits are provided.¹⁰⁶ As such, Korea would benefit from maintaining good relationships with Pacific Island countries, both within the WCPFC forum and at diplomatic levels.

6.4 *High Seas Fisheries*

The implementation of the PNA VDS, the long-standing cooperative efforts of Pacific Island countries, and the pursuit of zone-based management approaches has allowed Pacific Island countries to gain greater control over the tuna resources in the Pacific and greater influence over WCPFC processes.¹⁰⁷ A key area where FFA members are seeking to use this influence at WCPFC is in the push to tighten control of the high seas and implement high seas management measures that are compatible with the mechanisms in place within their EEZs.¹⁰⁸ The WCPFC Convention¹⁰⁹ prescribes that conservation and management measures shall be compatible across the high seas and waters under national jurisdiction, without prejudice to the sovereign rights of coastal States (Article 8).

Korean longliners have increased the proportion of their fishing that is occurring in the high seas, as opposed to in Pacific Island EEZs, over the period 2010–2017,¹¹⁰ while Korea's current high seas purse seine effort is relatively small. Given that climate projections are suggesting that there will be an increased proportion of tuna fishing occurring in the high seas as a result of climate change, access to the high seas will remain important.¹¹¹ In response,

¹⁰⁵ *Ibid.*

¹⁰⁶ Reid, *supra* note 25.

¹⁰⁷ Yeeting et al, *supra* note 66.

¹⁰⁸ FFA Member CCMs, *supra* note 87; FFA Member CCMs, *supra* note 65.

¹⁰⁹ Convention on the Conservation and Management of Highly Migratory Fish Stocks in the Western and Central Pacific Ocean.

¹¹⁰ Campling, *supra* note 22.

¹¹¹ JD Bell, et al, *Pathways to sustaining tuna-dependent Pacific Island economies during climate change*, Nature Sustainability (2021), available at <https://doi.org/10.1038/s41893-021-00745-z>.

there will be a strong push from Pacific Island countries to avoid any disproportionate conservation burden falling on FFA members.¹¹² In 2017, the WCPFC agreed to begin a process for adopting hard limits for the high seas purse seine fishery, and regional limits for the longline fishery.¹¹³ The negotiation of these limits and allocation frameworks will be complex, given the differential and competing interests of many WCPFC Member countries, and they must take into account (among other things) the special requirements of developing States under Article 30 of the WCPF Convention.

During preliminary negotiations in 2019, the Korean delegation expressed concern that its fishing fleets would suffer if they were unable to fish sufficiently in the high seas. Korea suggested exploring the possibility of making PNA vessel days transferable to high-seas fisheries, while making sure that such transferability did not negatively affect PNA sovereign rights or aspirations.¹¹⁴ This would enable distant water fishing fleets to continue paying revenue to PNA members for access to their EEZs, but potentially use these days on the high seas if conditions were more productive there. In this context, Korea would therefore benefit from working proactively with Pacific Island countries (particularly those that do not currently have large domestic fleets) to explore trading and other arrangements that would enable use of any future high seas allocations and mutually beneficial outcomes.

6.5 *Transshipment*

One matter where the interests of the Korean distant water vessels will not likely align with the aspirations of Pacific Island countries is transshipment reform. The Korean fleet transships nearly all of its purse seine catch in Pacific Island port,¹¹⁵ however the longline fleet largely rely on at sea transshipment for catch offloading, refuelling and bait replenishment.¹¹⁶ In 2019, of the 129 transshipments undertaken by Korean longline vessels, only 2 were undertaken in port.¹¹⁷ A complete ban would therefore be untenable to the Korean fleet, however increased transshipment in port accompanied by improved monitoring of at sea transshipments, would go some way to addressing Pacific Islands concerns with transshipment.

¹¹² Bell et al (2021).

¹¹³ CMM, *supra* note x?; WCPFC, *supra* note x?

¹¹⁴ WCPFC, *supra* note x?.

¹¹⁵ Havice, et al, *supra* note 44.

¹¹⁶ Campling, *supra* note 22.

¹¹⁷ Lee, et al, *supra* note 2.

6.6 *Fishing Crew Labour Conditions and Safety*

A key challenge for distant water vessels will be improving labour and employment conditions for fishing crew and observers to meet public expectations, inevitable regulatory changes and the associated likely rise in labour costs.¹¹⁸ A growing chorus of international concern, initiated by a series of media investigations in 2014 and 2015, has spurred a number of multilateral, NGO and industry efforts to improve labour conditions on fishing vessels,¹¹⁹ as well as increased scrutiny, including by individual countries such as Indonesia whose nationals comprise 70–80% of deck crew on Korean tuna longline vessels.¹²⁰ Although the Korean government has implemented a number of reforms since 2012 to address labour issues (including amendments to the Distant Water Fisheries Development Act),¹²¹ it is likely the Government and industry will be expected to go further.

7 Conclusion

The relatively healthy state of stocks in the WCPO, amidst an increasing global population and declining fish stocks in coastal areas and other oceans, will inevitably increase the demand for fishing opportunities in the Pacific. At the same time, management of tuna stocks is being tightened, and Pacific countries in particular are pushing for hard catch and effort limits to be placed across the Convention Area in both high seas and EEZs. The combination of these developments provide opportunities and challenges for Korea, and other distant water fishing fleets.

The Korean fleet have some advantages in the rapidly changing regional fisheries management regime. They have in place advanced electronic reporting,¹²² and increasingly a reputation as a good corporate citizen in regional fisheries, with good compliance performance.¹²³ However, as restrictions inevitably tighten and competition for fishing opportunities grow, the Korean fleet and Korean fisheries diplomacy will need to be nimble to maintain access and economic viability in an evolving fisheries regime.

¹¹⁸ See INTERNATIONAL LABOUR ORGANIZATION, FORCED LABOUR AND HUMAN TRAFFICKING IN FISHERIES, available at <https://www.ilo.org/global/topics/forced-labour/policy-areas/fisheries/lang-en/index.htm>.

¹¹⁹ Havice, et al, *supra* note 44.

¹²⁰ Campling, *supra* note 22.

¹²¹ *Ibid.*

¹²² Havice, et al, *supra* note 44.

¹²³ Campling, *supra* note 22.

In conclusion, the Korean industry is well positioned to strengthen its comparative competitive and engagement in the region, if it is willing to demonstrate its commitment to sustainable development, and engage cooperatively with the development aspirations of the Pacific islands region.