NOO RAAJJE

Maldives Seafood Market Assessment

Challenges and Opportunities for Marketing Maldivian Fisheries Products

KEY TRACEABILITY

VAITT INSTITUTE

Seafood Market Consultancy in the Republic of the Maldives

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1 Executive summary

This report was completed for the Waitt Institute and Noo Raajje, a partnership between the Government of the Maldives and the Blue Prosperity Coalition to protect and value the ocean and its resources in the Maldives to build a bright future for communities, the economy, and the environment. The work has been completed by Key Traceability Ltd, a fisheries consultancy based in the UK and external consultants.

Skipjack (*Katsuwonus pelamis*) and yellowfin tuna (*Thunnus albacares*) account for 98% of all fishery exports globally. Bigeye tuna (*T. obesus*) is the other main 'tropical' tuna caught in the fishery. The tuna fishery in the Maldives is comprised of four different hook and line gears, with the dominant being pole and line with respect to volume. Species caught are dependent on gear type and are destined for different markets.

Fisheries (wild capture and aquaculture) are of vital importance to the wealth and health of the Maldives, its economy, and people. With a population of approximately 300,000, the Maldives is the smallest Asian country in both population and area. The fisheries' economic contribution having only been overtaken in recent times with the development of tourism and complementing industries. With the changing global seafood market landscape brought about by fluctuating fish stock status, ineffective regional management, the development of stricter and more ambitious sustainability customer requirements, changing consumer demands, and finally COVID-19 and its subsidiary effects, the Maldives is facing a challenging time with its most valuable commodity. This expansion of global exports and their limited diversification in terms of both markets and products makes the tuna industry in the Maldives vulnerable to international market trends.

The Covid-19 pandemic has further disrupted trade for the country due to changes in demand and the ability to transport products. A critical part of the current global trading system is the emergence of global value chains (GVC) – with production processes located across different countries. The Maldives has become the starting point for production for tuna products, with export of raw product to countries such as Thailand, Vietnam, or Europe. Less costly production in those countries creates significant competition for domestic production based on the Maldives' higher operating costs at the fishery-level and reliance on imports to complete the production process, which drives up unit cost. The market competitors for the Maldives has local competitors in the Indian Ocean region includes as Sri Lanka, Mauritius, and Seychelles. Other major exporters are not far away in the Philippines and Indonesia. The dominant products responsible for driving tuna production are canned tuna and sushi. While traditionally processed and traded as dried, skipjack tuna is exported either as frozen, fresh, chilled, or canned in modern times and the majority of yellowfin tuna caught in the Maldives is exported. Now, Maldives yellowfin tuna products are air freighted across the globe to international markets within days of harvest, with Japan, United Kingdom, Europe, and the United States of America being the main markets.

Given the dependence on air and ocean freight, the Covid-19 pandemic has further disrupted trade. The flow in trade across all modes of freight have been redirected or even stopped by sudden shifts in demand, supply, and limits on the movement of goods and people. Some ports were closed for

quarantine, which forced cargo ships to re-route, increasing congestion at other ports, or shipments were cancelled entirely. Similar issues were seen for air freight with the cancellation of passenger flights and border closures. Not only was availability affected, but also the cost. For example, ocean freight prices tripled during the pandemic, and issues with transportation still persist now. Countries that have well-developed air cargo connections, combined with good quality customs services and smart borders, are often better at integrating into global value chains

Tuna fisheries have often been associated in the public eye with indiscriminate and large levels of bycatch, including vulnerable species such as sharks and turtles. Fisheries law in the Maldives prohibits any form of net being used, opting to require gears such as troll and pole and line. Given the quantities of bycatch associated with other gears such as purse seine and longline, the predominant method of targeting large pelagics such as tuna provides markets with a more selective and lower impacting source fishery than most fleets in the market. There is also a ban on foreign fleets fishing in the Maldives, as to protect the rights and livelihoods of fishers, their communities, and the country's economy. As a Small Island Developing State (SIDS), the government has opted to further develop the fisheries sector with the balance of economic development and environmental sustainability in mind. This has not made for conducive trading conditions deals with EU countries with advanced fishing fleets such as the purse seiners of France and Spain. The main piece of work set out in this report seeks to explore the current market trends for products which the Maldives currently supplies and identify other markets or recommendations to expand the Maldivian stake in the global tuna fishery sector.

To understand market trends, it was also important to understand direct barriers to the flow of trade for the country. Below is a list of common barriers to international trade:

- Tariff Barriers - These are taxes on certain imports. They raise the price of imported goods making imports less competitive.
- Non-Tariff Barriers - These involve rules and regulations which make trade more difficult. For example, if foreign companies must adhere to complex manufacturing laws it can be difficult to trade.
- Embargo. This prevents all trade between a particular country. For example, the US embargo with Cuba.
- Quotas - A limit placed on the number of imports.
- Voluntary Export Restraint (VER) - Akin to quotas, this is where countries agree to limit the number of imports. This was used by the US for imports of Japanese cars.
- Subsidies – When a government financially supports a local company, giving that company a competitive advantage over foreign organisations.

For the Maldives, tariff barriers are the most significant issue. In particular its graduation from being a "least developing country" to 'developed country' by the UN in 2011 has meant tariff preferences being open to LDCs were no longer accessible to the Maldives. Neighbouring Indian Ocean Island nations such as Sri Lanka, Seychelles and Mauritius are still designated as "developing" and are not subject to such trade barriers, which puts them at an advantage with respect to exporting products over the Maldives. As an example, for the Maldives to sell to the European market, it is subject to a

duty tax of 22 - 24%. Despite this, in 2019, more than 25% of fishery exports from the Maldives arrived in the EU (worth €220 million). This subsequently fell 17% in 2020, but still constituted 96.6 percent of products imported into the EU from the Maldives. In some countries, the Maldives is still seen however as an LDC. This has been factored into the recommendations of pursuit markets in the report.

Concurrent to the products themselves are the systems by which price can be demonstrated and maintained within the market. Quality and traceability are of paramount importance in the tuna industry. The most selective and sustainable tuna fishery would not out compete the need for quality products which have been caught legally. Quality of product drives the market, unfortunately not its sustainability. The Maldives' producers have a strong eye for quality assurance and chain of custody of their seafood commodities. Products are made to their customers' requirements and satisfaction, precluding the need for a national quality and traceability framework.

Lastly, it is not just wild capture fisheries which the Maldives can offer. The tropical clean waters of the many atolls provide prime locations to further opportunity for the Maldives to diversify its seafood market through the development of aquaculture installations and farms. The potential to develop this market in the growing demand of farmed seafood has also been explored in this report under the third objective of this project.

The project has three objectives:

- Design a plan to promote Maldivian fisheries and their products to improve market access and stimulate greater profit margin.
- Recommend opportunities to ensure the quality and safety of the national fisheries products.
- Propose frameworks for value chain development of mariculture products.

The project team conducted interviews with several producers, processors, and exporters in the Maldives, as well as individuals with supply chain and trade expertise in the various countries covered in this work. This served to understand the Maldives' current activities and export destination, processes and investigate whether any changes need to be made in order to reach new global markets. Summary country profiles are provided in the Appendix with specific findings.

Key points and recommendations

Through the online research and industry interviews, the following key conclusions have been drawn. Sustainability has not historically been the primary driver of trade and product prices. Leaders in sustainability have not been financially rewarded and companies that are not managing risk effectively are on an even playing field with those that do.

Seek bilateral or plurilateral rather than multilateral trade agreements - It would be more beneficial to the Maldives to form new relationships, alliances, and trade agreements rather than introduce tariffs of their own, which merely instigates retaliation.

Maldives to remove supply chain 'intermediary' countries - The Maldives export most of their tuna to countries who perform the transformation from the raw product to value-added. The Maldives could produce more value-added products and export the products to the countries directly. For

example, processed skipjack offers a significantly higher unit price than unprocessed exports. This is estimated to be 50% higher for dried skipjack and 250% higher for canned product.

Target specific companies - The main challenge is reaching to the end customers (supermarkets). Direct dialogue with retailers may offer a solution to reaching the consumer market. E-commerce is another option, with more consumers than ever buying online in the wake of the Covid-19 pandemic.

Increase of other fishing methods to satisfy markets - Use of longliners or increased handlining effort to target the sashimi fresh market for higher cost per kilo. With demand for sashimi-quality tuna high in the markets discussed in this report, even if MSC-certification was not sought, there would be a market for the tuna caught.

Transport - Trade deals with countries with major airlines, may prove the quickest way to access new markets or extend existing ones. Some Maldivian exporters have already had success with entering the Australian, Canadian, UAE and US markets. Currently significant volumes of raw tuna product are exported to Thailand for further processing. Direct trade with countries of raw product would allow a larger profit as further processing could be completed in destination countries, boosting that country's canning or processing industry, something that Spain and the US are already nurturing, but which makes them dependent on raw supply. Rapid and reliable transport of component parts is a key consideration for global value chains. Given the Maldives is a major tourist destination, many leading airlines head for Malé, trade deals may be offered on the basis of reduced airfares for exported Maldives products for concessions on tourism for those countries discussed in this report.

Social responsibility - If the Maldives is to effectively market the social sustainability of its fisheries the following recommendations should apply:

- The Maldives should identify the most salient human rights risks within its fisheries and put improvement action plans in place to address them. There should be base line data to be able to inform a risk assessment, this can be collected by conducting social audits in the fisheries together with looking at the data from the certified fishery.
- Take the necessary steps to fully ratify the Cape Town Agreement putting safety at sea at the forefront. The 2019 FishWise Vessel Transparency Report has a recommendation for companies to either engage directly with countries to ratify the agreement or can encourage supply chain improvements to support international agreements. These conventions are used to monitor the situation within the fisheries and minimise the risk of any illegal, unreported, and unregulated fishing, whilst also improving working conditions for fishers.
- Creation of an action plan for the promotion of the social conditions in the fishing industry in the Maldives to show that the human rights issues in-country as not necessarily representative of what is happening within the fisheries.
- Support the expansion of the dual-certified fishery.

Overall, from the research and interviews conducted, Key Traceability recommends pursuing the following markets: include Australia, Canada, China, Japan, United Arab Emirates (UAE), and United States of America (USA). These countries have continued to have demand for tuna products, but do

not charge import tariffs, as the Maldives is either still defined as a Least Developed Country (LDC) or have Most-Favoured Nation (MFN) rates applied.

Traceability and quality assurance processes, although not sitting in a national framework, are advanced and customer focussed. The findings of the report's first objective indicate that the processing companies already fulfil their obligations for supplying high quality tuna across their product ranges. Maldivian tuna can be fully traced, and detailed operational procedures and testing followed. Many Maldives processors are ISO certified for food safety, Halaal certified, and USFDA/EU approved.

Mariculture is still in its infancy in the Maldives, but given the natural habitats and resources, the development of grouper and sea cucumber farms are viable options with investment. Combining grouper and sea cucumber operations may also prove beneficial, with sea cucumbers able to keep the areas under sea cages clean through their deposit-feeding behaviour. There are several challenges which would need to be adequately addressed in order for these ventures to be successful.

Diseases - Unlike wild systems, aquaculture and mariculture production can be affected by disease. Infections by bacteria and viruses at larval stages have been attributed to inconsistent seed supply which limits the growth of fish culture (Hazreen-Nita et al., 2019). Diseases are typically controlled by the eradication of pathogens, treatment with antibiotic or chemotherapeutics, and/or by preventative measures such as the use of probiotics or vaccines. To limit the use of chemical, whether as treatments or prophylactics, good husbandry and operating procedures is essential.

Wild sourcing and brood stock management - For groupers and sea cucumbers, the environmental impacts of sourcing seed and broodstock from the wild has caused issues for coral reef habitats, especially because of the targeting of spawning aggregations and the use of cyanide. Founder broodstock originating from the wild population can be conditioned to live in hatchery tanks under suitable environmental and feeding conditions and is induced to breed. This will be a major consideration for any new installations of grouper mariculture in the Maldives.

Compound feeds - With environmental sustainability being of key focus for the Maldives, a major concern with grouper aquaculture is its continuing reliance on the use of 'trash' fish as a feed source (Rimmer et al., 2016). This is less of an issue in the Maldives, with the use of nets banned by national law, but it raises the issue of how to feed grouper balanced diets to promote optimum health and growth in the grow out phase. In remote islands in the Maldives, pellet feeds may not be available or difficult to source. Fishmeal processors in the Maldives may be able to help with sourcing however, making use of domestic tuna products for domestic aquaculture production. For sea cucumbers feed is not an issue as, as deposit feeders, they have no need to be fed if grown out in local lagoons.

What is important for both types of mariculture is the formation of national management plans, strategies and policies are a prominent part of the national coastal fisheries priorities. The management plan should be developed with the following concepts in mind, ecosystem approach, precautionary approach, community-based fisheries management, and adaptive management, with sustainable harvest for either broodstock or grow out phases at the heart of the plan's objectives.

Implementation of catch and export documentation schemes should also be inclusive within management considerations. Harvesting of individuals from the wild should not take place without the presence of an authorised officer. Work with other government agencies (e.g., customs/border control, and biosecurity).

Glossary

Term	Definition
ASC	Aquaculture Stewardship Council
ATFI	Air Trade Facilitation Index
AZA	Association of Zoos and Aquariums
BICON	Biosecurity Import Conditions (system)
BMF	Blue Marine Foundation
BRC	British Retail Consortium
CAPPMA	China Aquatic Products Processing and Marketing Alliance
CB	Certification Body
CBP	Customs and Border Protection
CCT	Common Customs Tariff
CDP	(UN) Committee for Development Policy
CFIA	Canadian Food Inspection Agency
CMO	EC's Commons Organisation of Markets
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
CO	Carbon Monoxide
CoC	(MSC) Chain of Custody
CONFAC	(Brazil) National Trade Facilitation Committee
COOP	Country of Origin Labelling
CPCC	Control Points and Compliance Criteria
CSR	Corporate Social Responsibility
CSW	Chilled Sea Water
DAWE	(Australia) Department of Agriculture, Water, and the Environment
DIPOA	(Brazil) Department of Inspection of Animal Products
DFQF	Duty-Free, Quota-Free
DWF	Distant Water Fleet
DX	Digital Transformation
EC	European Community
EFFI	eFreight Friendliness Index
ESG	Environmental, Social, and corporate Governance
ETF	European Transport Workers' Federation
EU	European Union
FCO	(US) Fisheries Certification of Origin
FCR	Feed Conversion Ratio
FDA	Food & Drug Administration

FIP	Fishery Improvement Project
FOS	Friend of the Sea
FRDC	Fisheries Research and Development Corporation
FSMA	Food Safety Modernization Act
FTA	Free Trade Agreement
FTUSA CFS	Fair Trade USA Capture Fisheries Standard
GACC	General Administration of Customs People's Republic of China
GATT	General Agreement on Tariffs and Trade
GCC	Gulf Co-operation Council
GFSI	Global Food Safety Initiative
GMO	Genetically Modified Organism
GMP	Good Manufacturing Practices
GSP	Generalised System of Preferences
GTA	Global Tuna Alliance
GVC	Global Value Chains
HACCP	Hazard Analysis and Critical Control Point
H&G	Headed and Gutted
HORECA	Hotel, Restaurant and Catering (sector)
HS	Harmonized System
IATA	International Air Transport Association
IFA	Integrated Farm Assurance
IFC	International Finance Corporation
IHS	Import Health Standards
ILO	International Labour Organisation
IOTC	Indian Ocean Tuna Commission
IPNLF	International Pole and Line Foundation
ISSF	International Seafood Sustainability Foundation
ITA	(US) International Trade Administration
ITF	The International Transport Workers' Federation
IUU	Illegal, Unreported and Unregulated
LDC	Least Developing Country
MAFF	(Japan) Ministry of Agriculture, Forestry and Fisheries
MAPA	(Brazil) Ministry of Agriculture, Livestock and Supply
MDP	Maldivian Democratic Party
MENA	Middle East and North Africa
MFDA	Maldives Food and Drug Authority
MFN	Most-Favoured Nation

MOFMRA	(Maldives) Ministry of Fisheries, Marine Resources, and Agriculture
MPA	(Brazil) Ministério da Pesca e Agricultura
MPI	Ministry for Primary Industries (New Zealand)
MSC	Marine Stewardship Council
NGO	Non-Governmental Organisation
NMFS	National Marine Fisheries Service (of the United States)
NNV	Nervous Necrosis Virus
QA	Quality Assurance
RASFF	Rapid Alert System for Food and Feed
RCM	Remote Container Management
RISE	Roadmap for Seafood Ethics
RSW	Refrigerated Sea Water
RTTP	Regional Tuna Tagging Project
RFVS	Responsible Fishing Vessel Scheme
SAARC	South Asian Association for Regional Co-operation
SAFTA	South Asian Free Trade Area
SAPTA	SAARC Preferential Trade Arrangement
SeaBOS	Seafood Business for Ocean Stewardship
SIDS	Small Island Developing State
SKUDs	Skin Ulceration Diseases
SNVS	(Brazil) Sistema Nacional de Vigilância Sanitária
SOP	Standard Operating Procedure
SSOP	Sanitation Standard Operating Procedures
SSRT	Seafood Slavery Risk Tool
STCW-F	(International Convention on) Standards or Training, Certification and Watchkeeping for Fishing Vessel Personnel
STFVAS	Seafood Taskforce Vessel Auditable Standards
TNC	The Nature Conservancy
TSSS	Tokyo Sustainable Seafood Summit
UMIC	Upper Middle-Income Island
UNCLOS	United Nations Convention on the Law of the Sea
UNSDG	United Nations Sustainable Development Goals
UV	Ultraviolet
VPSS	(Russia) Federal Service for Veterinary and Phytosanitary Surveillance
WCO	World Customs Organization
WCPO	Western Central Pacific Ocean
WTO	World Trade Organization

WWF	World Wildlife Fund

2 Introduction

The Maldives consists of approximately 1,190 coral islands grouped in a double chain of 26 atolls. Within the approximately 56,000 square miles (90,000 sq.km) only 188 of the islands are inhabited by people. Maldives has a population of approximately 300,000 which makes the Maldives the smallest Asian country in both population and area. “In 2018, the national government re-confirmed its commitment towards the development of the fisheries and agriculture sectors by issuing and/or renewing 21-year leases for 15 uninhabited islands dedicated to commercial fisheries, 50 uninhabited islands for commercial agriculture and eight additional uninhabited islands for both commercial fisheries and agriculture” (Ministry of Fisheries, Marine Resources and Agriculture, 2019). Economic development is therefore based on sustainable management of key natural resources, i.e., its fisheries. The fisheries’ economic contribution having only been overtaken in recent times with the development of tourism and complementing industries.

Figure 1. Example of pole and line fishing for tuna in the Maldives (source: Marine Stewardship Council).

Environmental, social, and corporate governance (ESG) is already part of the vision of the Government of the Maldives. To ensure that fishing contributes to the long-term well-being of local communities, the Maldives government is encouraging the environmental sustainability of the sector. As an example, the Marine Stewardship Council’s sustainable fisheries ecolabel translates directly into a price premium for local fishers through its certified skipjack pole and line fishery (Figure 1). Under the Fisheries Act of the Maldives (2019), the use of purse seines, gillnets, and trawls are strictly prohibited and legislation further promotes the use of “environmentally friendly fishing gear and techniques”. This means tuna are targeted through pole and line, handline, longline and troll in the Maldives (FAO, 2021a).

The project seeks to satisfy several objectives:

1. Promote Maldivian fisheries and their products to improve market access and stimulate greater profit margin.

This is the main part of the study. The team have used current knowledge of the country's fisheries, stakeholder mapping, export market characteristics, and consumer trends to create new market profiles. This research has contributed to provide trade summaries per species, and recommendations and strategies to identify new markets to diversify the country's export scope and improve product access (Figure 2).

This work also includes the investigation of the potential of the EU tariff quota regime and how it may be accessed for the Maldives. Tariff quotas are a form of European Union (EU) preference under which limited amounts of certain goods may be admitted to free circulation at reduced or nil rates of Customs Duty and/or Common Agricultural Policy charges. They are approved on the basis of Article 31 of the Treaty of the Functioning of the European Union. The limit may be expressed in units of weight, volume, quantity, or value. The exact terms of the tariff quota will be explored to ascertain if and how the Maldives' fisheries products may be eligible and benefit from this concession.

Both the market diversification work and exploration of EU tariffs has involved internet-based research, information available on fisheries characterisation work, and interviews with producer and governmental organisations in country.

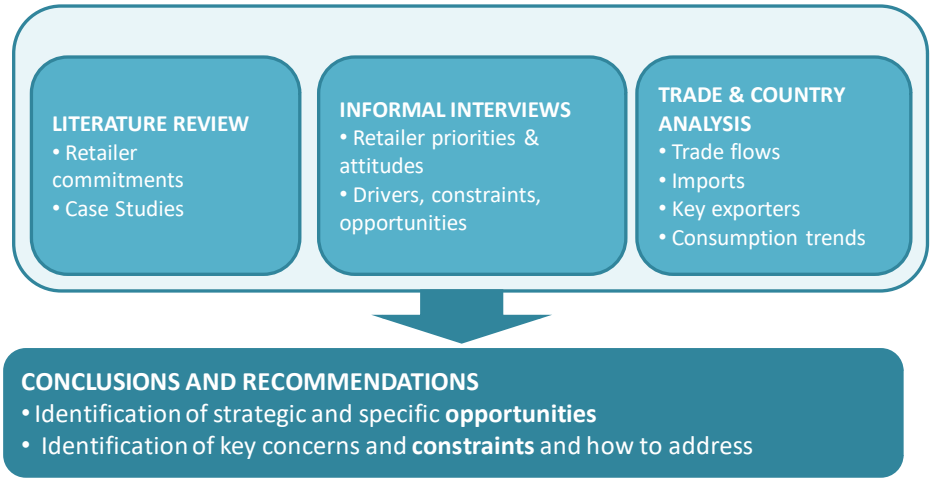

Figure 2. Approach to research for this project.

2. Opportunities to ensure the quality and safety of the national fisheries products.

The work commenced with an initial collection of documentation followed by a preliminary data assessment. Contributing to the project was quality assurance expert, Seema Ali. Based in the Maldives, she brought 25 years' experience in food safety (including laboratory analysis), product handling and quality, having worked in both the tourism and fishery sectors in the Maldives. Seema's network and expertise as former Head of QA at Felivaru Fisheries Complex (FFC) uniquely placed her to deliver the desired work products in the Maldives having written manuals on Quality Assurance at

various levels. Information in the report was gathered through interview and publicly available sources.

3. Frameworks for value chain development of mariculture products.
Using the work products from Objective 2, the team adapted the QA and traceability work to provide training material for value chain development of aquaculture products and explore current certification schemes incentivising sustainability to recommend options for market expansion.

The work included a review of current country aquaculture activities, additional operational options based on local resources and recommendations for engaging with preferred certification schemes, local resorts, and other international markets. Given that post-harvest processing may be an added commodity and source of income for the local economy, this was included in the scope of work.

3 Scope

The scope of this project is to provide consultancy on several aspects of access for the seafood markets of the Republic of the Maldives. This is with the view to recommend opportunities to promote market access, explore the diversification of current value-added products, whilst ensuring quality and safety of those commodities. Further to this, the project aims to suggest potential frameworks for the market development of mariculture resources. Specifically, the project examines the species in Table 1 below.

Table 1. Species included in this project

Species	Wild capture or aquaculture
Tuna: Skipjack (*Katsuwonus pelamis*), bigeye (*Thunnus obesus*), yellowfin (*T. albacares*) tuna	Wild capture
Billfish: Swordfish (*Xiphias gladius*), black marlin (*Istiompax indica*), Indo-Pacific sailfish (*Istiophorus platypterus*), blue marlin (*Makaira mazara*)	Wild capture
Others: Diamondback squid (*Thysanoteuthis rhombus*), sea cucumber (Class Holothuroidea), grouper (*Epinephelus* spp.)	Wild capture & aquaculture for sea cucumber and grouper

4 Objective 1 – Promotion of Maldives fisheries and fisheries products to improve market access and stimulate greater profit margin.

1.1. Formulate frameworks to promote Maldivian fish and fishery products to international markets.
1.2. Assess other potential markets to export Maldives tuna to allow diversification of current product destinations. This will Include the investigation of the potential of the tariff quota regimes for the Maldives and how it may be accessed.

4.1 Current markets and challenges

The Republic of the Maldives is looking to diversify its markets for its tuna fisheries products. For example, pole and line skipjack, yellowfin tuna caught by handline are sold as either fresh or superfrozen products. According to the Government of the Maldives' Strategic Development Plan, the fisheries sector faces several constraints to develop throughout the value chain. These include a range of issues from governance (enforceability of fishing regulations, stock assessment, collection of catch and processing data) and difficulties in creating value-addition to accessing premium markets. While the Maldives has expanded both production and exports since 2000, the boom in global exports has led to a reduced share of global trade since its peak in 2006 (FAO, 2021a). This expansion of global exports and their limited diversification in terms of both markets and products makes the tuna industry in the Maldives vulnerable to international market trends. The Covid-19 pandemic has further disrupted trade for the country due to changes in demand and the ability to transport products. Unlike the canned tuna sector, the pandemic wiped out consumer demand for high value non-canned tuna in 2020, particularly in the hotel, restaurant, and catering (HORECA) sector. In comparison, retail demand for ready-to-eat and ready-to-cook products (frozen sashimi/sushi platers, frozen tuna fillet/steaks) in Japan, North America and Europe was less affected (FAO, 2021b).

Given the Maldives' fisheries law prohibit any form of net being used in its waters, opting to require more selective gears such as troll and pole and line, both of which have limited bycatch compared to purse seine and longline gears (Hall et al., 2017). Furthermore, under the Fisheries Act (2019), foreign fishing is not permitted in Maldivian waters since 2009, not only reducing the likelihood of illegal, unreported, and unregulated (IUU) fishing, but also prioritising the livelihoods of indigenous Maldivians, which rely on fishing for subsistence but also for the country's economy. In 2000, through the Skipjack Industry Development Programme, the Maldivian EEZ was divided into four fishing zones. In zones 1 & 2, tenders were awarded to the companies Island Enterprises and Jausa Fisheries Link Maldives; Horizon Fisheries and Funadoo Tuna Products (now Ecofish) were awarded the tenders in zones 3 & 4. In addition, the Maldives Industrial Fisheries Company Limited (MIFCO) operates in all four zones as a state-run corporate enterprise for the processing and export of fishery products (Huntington et al., 2012). This has not made conducive trading conditions deals with EU countries with advanced fishing fleets such as the purse seiners of France and Spain. The foreign boat ban is part of the Maldivian Democratic Party's (MDP) 'blue economy' pledge, which aims to create an environmentally friendly economic strategy that will at the same time increase household income. As a Small Island Developing State (SIDS) and tourism the most valuable industry, the government has

opted to further develop the sector with the balance of economic development and environmental sustainability in mind.

A critical part of the current global trading system is the emergence of global value chains (GVC) – with production processes located across different countries. The Maldives has become the starting point for production for tuna products, with export of raw product to countries such as Thailand, Vietnam, or Europe. Thailand is the single biggest purchaser at 36.3% in 2018. The other main trading partners are provided below, along with the percentage destinations for products exported in 2018 (Figure 3). This is provided to give a prospective of current and recent markets and help guide the exploration of new international destinations for Maldivian tuna. It should be noted that Thailand and Sri Lanka are 'initial' buyers and transform the product to value-added and then re-export to countries such as the US, UK, and Europe. 96% of all Maldives exports in 2018 were fish, 94% of that skipjack and yellowfin (FAO, 2021a) (Figure 4).

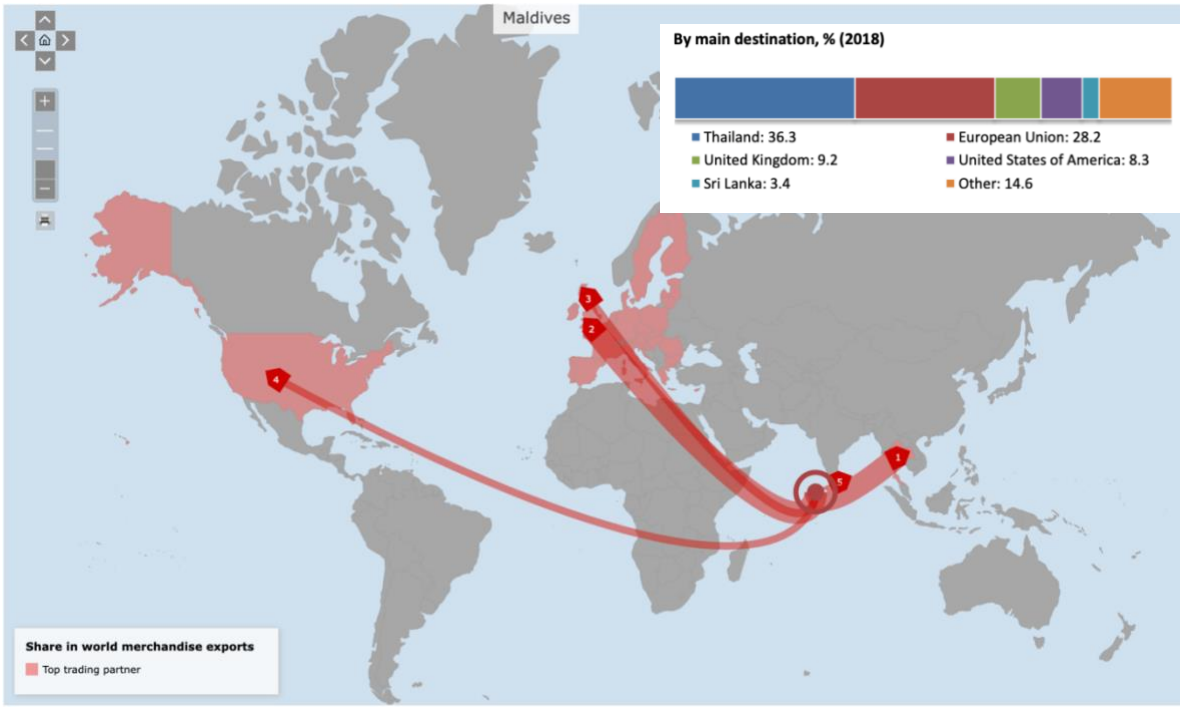

Figure 3. Map of exports from the Maldives and their relative destinations in 2018 (source: WTO website).

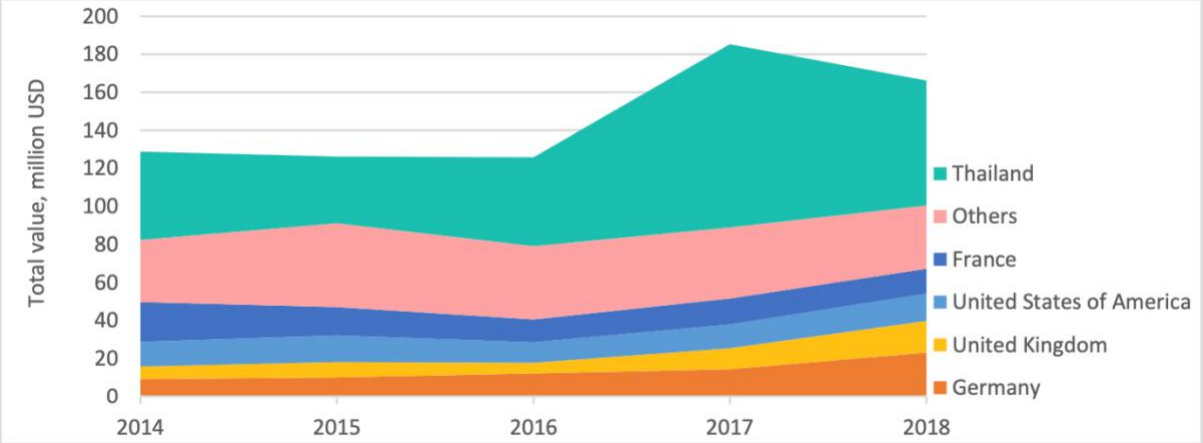

Figure 4. Maldives tuna exports by destination, 2014 – 2018 (source: FAO, 2021a).

A brief description of the Harmonized System (HS) is now given as it is a common practice in the export business and is used with tuna exports. This is a standardised system for classifying globally traded products and is administered by the World Customs Organisation (WCO). This is mentioned in passing here as HS codes have been referenced in other parts of the report. In short, HS codes classify products in order to apply import duty taxes, as well as for gathering other statistics, and is used by customs authorities. Customs authorities can also use the codes to conduct trade negotiations, watch for controlled or illegal goods and to calculate the total cost of imports. Table 2 provides the chapters associated with seafood.

Table 2. HS chapters associated with fish and fish products (source: FAO).

CHAPTER	MAIN PRODUCTS
3	Fish and crustaceans, molluscs and other aquatic invertebrates
5	Products of fish, crustaceans, molluscs and other aquatic invertebrates, not elsewhere specified or included; dead animals of Chapter 3, unfit for human consumption
12	Seaweed and other algae
13	Agar-agar
15	Fats and oils and their fractions of fish and marine mammals; prepared edible fats
16	Preparations of fish, crustaceans, molluscs or other aquatic invertebrates; caviar and caviar substitutes
23	Flours, meals and pellets of fish, crustaceans, molluscs or other aquatic invertebrates, unfit for human consumption; greaves

According to the Maldives Tuna Management Plan (2020) "the strategic location of Maldives in the trade route of the Indian Ocean allowed Maldives to trade skipjack tuna to neighbouring and distant countries. While traditionally processed and traded as dried, skipjack tuna is exported either as frozen, fresh, chilled, or canned in modern times. The major portion of the yellowfin tuna caught in the Maldives is exported, while the rest is consumed locally mainly by hotels and restaurants. In the

modern times, Maldives yellowfin tuna products are air freighted across the globe to international markets within days of harvest, with Japan, United Kingdom, Europe and the United States of America being the main markets".

WTO statistics provide some insight of general fishery products exported from the Maldives were worth US$173 million US dollars, with whole, frozen fish attributing to the majority of that value (Figure 5). More detailed information on tuna exports from the country is again provided in the Maldives Tuna Management Plan (2020).

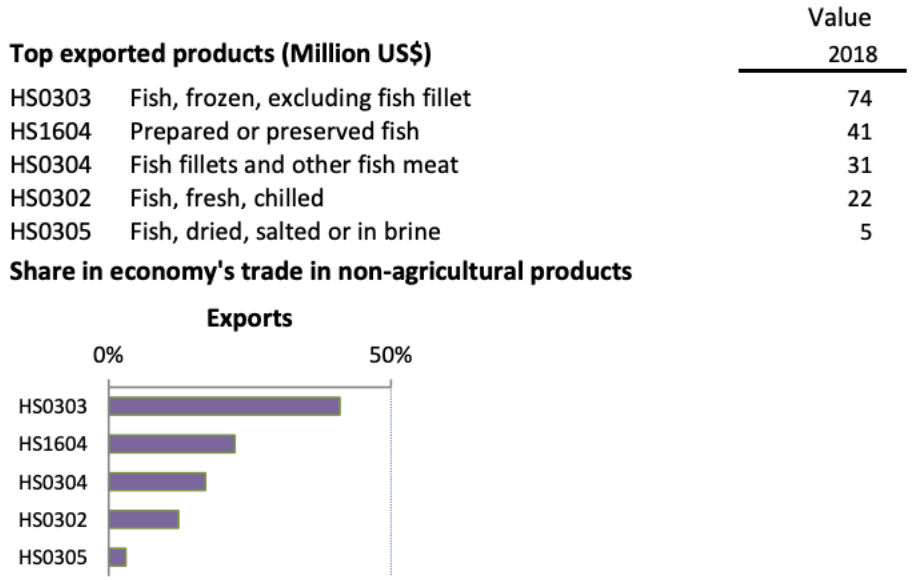

Figure 5. Values and percentages of fish products exported from the Maldives in 2018 (source: WTO, 2019).

Table 3. Exports of tuna products from the Maldives (2015 – 2019) (source: Maldives Tuna Management Plan, 2020).

Product (mt)	2015	2016	2017	2018	2019
Canned	32.70	54.21	291.75	618.97	1,166.60
Dried	2,132.20	1,745.99	1,186.38	1,151.57	1,375.72
Dried/salted/brine	-	12.0	3.25	22.33	23.92
Fresh/chilled	11,095.28	10,975.74	9,617.46	8,357.51	8,311.15
Frozen	25,425.15	28,286.18	53,719.42	45,370.78	37,698.84
Other	2,881.42	2,980.81	4,508.32	7,832.59	6,069.06
Salted	229.10	250.72	148.09	86.58	226.23
Smoked	0.04	282.79	21..36	8.80	48.90
Steamed	12.50	12.00	96.00	-	-
Value (million USD)	**130.898**	**128.77**	**187.48**	**167.81**	**146.07**

The dominant products responsible for driving tuna production are canned tuna and sushi. According to Renub Research (2020), "the increasing popularity and demand for ready-to-cook seafood due to rising awareness regarding their health benefits will likely support canned tuna sales". The traditional markets for canned tuna products such as North America and Europe have slowed in the last decade but rising retail consolidation worldwide has increased canned tuna sales in the traditional developed markets. Retailer consolidation allows brands to save on their transportation costs and reduce compliance fines[1] by taking advantage of a shared supply chain network. This has been permitted by sustaining relatively low prices at the wholesale and retail level allowing consumption to increase.

Global imports of tuna in 2020 by country were examined to help inform the new market focus and the top importing countries are displayed below in Figure 6. Japan is by far the most important market for tuna imports due to the sushi market, followed by the US, which dominates the global demand for canned tuna.

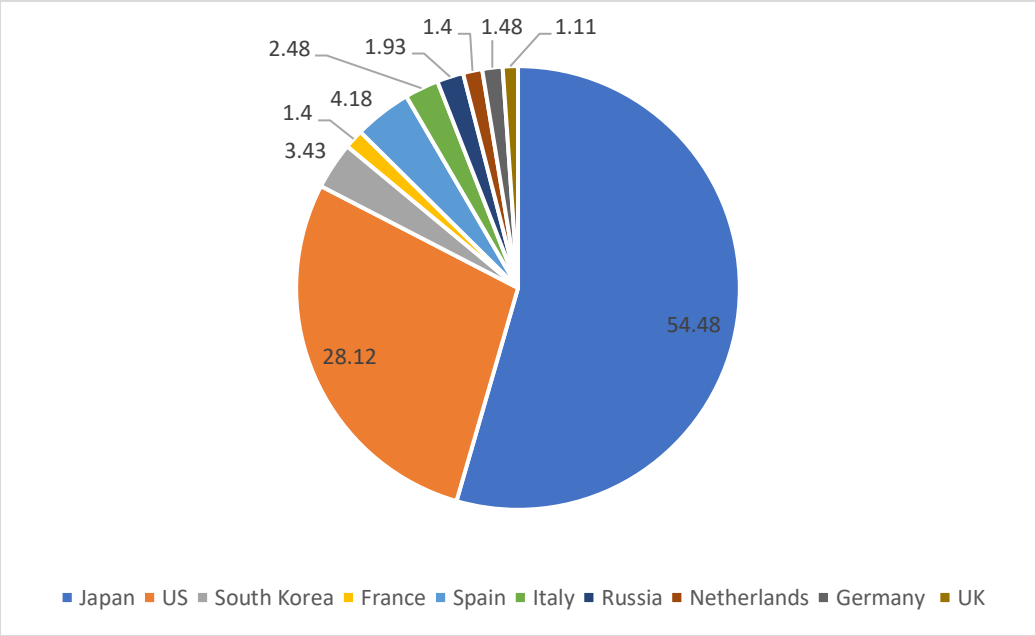

Figure 6. Percentage market share of global tuna imports in 2020 (source: Renub Research, 2020).

The global market for non-canned tuna (mainly fresh/chilled) massively expanded between 2000 and 2019, particularly for semi-processed products such as fresh yellowfin tuna loin (HS code[2] 0304.49) and whole dressed (0302.32). Also value-added frozen fillets, loins, steaks (0304.87) and other product demand has grown, especially in the EU and the USA (FAO and WCO, 2021).

[1] For example, Walmart have in-full (OTIF) policies to require suppliers to deliver full truckloads within a two-day window 87% of the time. Suppliers will be fined 3% of the cost of goods sold if they fail to meet the requirements.

[2] The Harmonized System (HS) of the World Customs Organization (WCO) provides an internationally recognised system of product classification. It is used for many purposes, including import duties, rules of origin, freight documents and statistics. The system is built in layers – sections, chapters, headings, and subheadings. Chapters (two digits) describe broad categories of goods, while headings (four digits) group related products, and subheadings (six digits) list the products themselves (FAO and WCO, 2021).

In 2019, there was an estimated 255,500 tonnes of non-canned tuna traded internationally, with a value of USD 2.7 billion (Infofish, 2021). The top importers were Japan, the USA, and the European Union (EU). Markets have also developed in Eastern Europe, the Middle East, and East Asia. It should be noted that due to the COVID-19 pandemic and the resulting closure of many food service outlets the demand for fresh/chilled tuna has reduced (for example fresh tuna consumption in Japan fell by 30%). Reduction or even temporary suspensions of purchasing tuna products, affected the selling price of fish from fishers to companies/cooperatives/fish collectors. This has further been compounded by the disrupted air freight supply chain as planes were grounded.

The tuna market in the Maldives has local competitors in the Indian Ocean region, such as Sri Lanka, Mauritius, Seychelles. Other major exporters are not far away in the Philippines and Indonesia. Exporter interviews identified prices as the main challenge. According to Horizon Fisheries, all product inputs, minus the tuna are imported, including the packaging, canned media, and most of the labour. The Maldives' primary fishing method of pole and line has higher operating costs associated, which means higher production costs to make a viable product margin. Despite the sustainability and greater economic impact, the tuna fishery has in the country, the additional cost of sustainability is not yet accepted in some regions.

The Republic of the Maldives does not have any trade agreements with any of the countries examined in this report. The formerly signed Free Trade Agreement (FTA) with China in 2018 is no longer active, and to date the Maldives has only signed such an agreement with India, despite previously approaching the US, Japan, and the EU. The Maldives is also signatory to the Agreement on South Asian Free Trade Area (SAFTA), whose other members comprise the People's Republic of Bangladesh, The Kingdom of Bhutan, the Republic of India, the Kingdom of Nepal, the Islamic Republic of Pakistan and the Democratic Socialist Republic of Sri Lanka. Unfortunately, these countries are not major tuna importers and not worth pursuing in the search for new markets, despite the preferential trading arrangements the SAFTA provides.

To summarise the findings of this section of the project, profiles of each country's potential market for fishery products have been provided. The profiles below highlight the types of products, potential barriers, and ease of access that each country could potentially provide. More comprehensive information accompanies each profile. This information was formulated through the literature review, surveys and individual interviews carried out by the team.

4.2 Transportation and Covid-19

For hundreds of millions of people, seafood is an integral part of their livelihood, culture, and food and nutrition security (FAO, 2018). Exacerbating the risk to the commodity's fragility, the Covid-19 pandemic caused significant disruption to the seafood trade. The flow in trade across all modes of freight have been redirected or even stopped by sudden shifts in demand, supply, and limits on the movement of goods and people. Some ports were closed for quarantine, which forced cargo ships to re-route, increasing congestion at other ports, or shipments were cancelled entirely. Similar issues were seen for air freight with the cancellation of passenger flights and border closures. The next section discusses how these the main modes, ocean, and air, been impacted by the global health crisis

and the repercussions for the Maldives supply chain, which is heavily reliant on both air and ocean freights to allow its products to leave its borders.

Depending on the type of product, shelf-stable, fresh, frozen, etc., product can be transported all over the world in the most efficient manner for the market.

4.2.1 Ocean

By sea, tuna can be transported in full trackable containers, either refrigerated or frozen at temperatures as low as -60°C. Remote Container Management (RCM) is also available. This allows the monitoring and control of the container conditions for the duration of the shipment (Maersk website). Depending on the destination of the product, shipping can take longer, but is cheaper than air freight. It takes between 20 and 55 working days to ocean ship product between the UK and the Maldives for example (Excess Cargo website). Chen and Notteboom (2012) proposed that freezer vessels offer the advantages of shorter transport time and better temperature control, while reefer container ships offer lower transport costs and easier in-port transshipment.

The shutdown of some of the world's busiest ports due to the pandemic has caused an event greater delay in global trade. Closures of ports, even when temporary, placed pressure on already high freight costs. Sea freight has increased by 50% (MIFCO pers. comm.) According to the International Finance Corporation (IFC) container volumes handled at Chinese ports in the first months of 2020 dropped 10.1%. This significantly affected exporting countries such as China, Brazil, India, and Mexico and importing nations, for example within the EU. Sea freight cost saw a significant rise from the end of 2020 all through 2021 (Figure 7). According to a Financial Times article in October 2021, "the average global price of shipping a 40-foot (~12 metres) is now close to US$10,000, three times higher than at the start of 2021 and almost times pre-pandemic levels…".

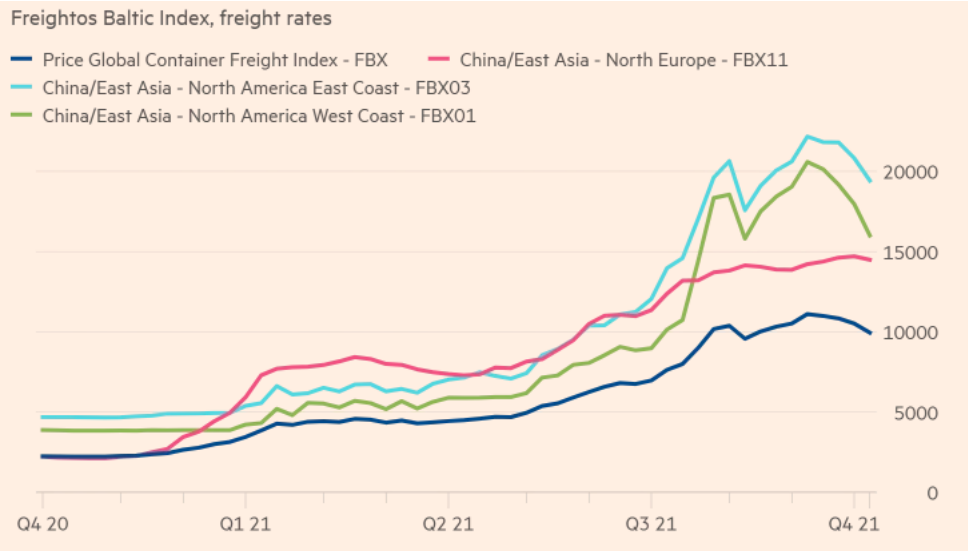

Figure 7. Sea freight costs from the end of 2020 through 2021 (source: Financial Times, October 2021).

Even last year, delays for container ships waiting to come into ports were still being seen (Figure 8).

Figure 8. Number of waiting container vessels (source: Financial Times, October 2021).

4.2.2 Air

Just 1% of global trade moves by air, but that 1% represents 35% of global trade by value, according to the International Air Transport Association (IATA). The demand for air freight is limited by cost, typically priced four to five times that of road transport and 12 – 16 times that of sea transport (The World Bank, 2009). Air carriers transport USD 6.8 trillion worth of goods each year, representing 35% of global trade by value (Bartle et al., 2021). It has been highlighted as one of the factors limiting expansion to new markets, as transport cost and flight availability is limited (Big Fish Maldives, pers. comm.). Increases in costs in transportation sees further impacts the supply chain, especially with countries which do not have major airlines.

Volumes fell by 19% in March 2020 due to a sharp reduction in passenger flights (which carry freight as belly cargo) and the drop in manufacturing in China (Twinn et al., 2021). Under normal circumstances, about 60% of air cargo globally is flown in the belly hold of passenger flights. With hundreds of those jets parked in deserts waiting out the pandemic, airfreight costs have spiralled: rates to North America from Hong Kong are up almost 70% from early January 2020 (Al Jazeera website). Essential goods are typically shipped by air due to it offers the shortest travel time of the three modes, so congestion at airports also caused shipping delays. The overall reduction in capacity is greater than the net reduction in demand, which supports higher air freight rates (Twinn et al., 2021). Since the reduction of passenger flights has reduced airplane belly cargo capacity, companies such as DHL have used charter flights to transport shipments to and from China (IFC, 2019).

Countries that have well-developed air cargo connections, combined with good quality customs services and smart borders, are often better at integrating into global value chains. Covid-19 has caused additional issues for countries like the Maldives. For chilled products (the highest value product by weight), exported by businesses in the Maldives, flight availability and flight charges have been extra burdens to trade in addition to already receiving import duties on arrival to several countries. Shipping these products by sea as an alternative was also not viable options as even if the voyage was short, delays of container vessels getting into port for unloading caused by Covid.

4.3 Trade tariffs, and trade barriers

To understand the advantages and disadvantages of accessing new markets, the report first briefly sets out what types of obstacles can impede trade. Trade barriers are government policies which place restrictions on international trade. Below is a list of common barriers to international trade:

- Tariff Barriers - These are taxes on certain imports. They raise the price of imported goods making imports less competitive.
- Non-Tariff Barriers - These involve rules and regulations which make trade more difficult. For example, if foreign companies must adhere to complex manufacturing laws it can be difficult to trade.
- Embargo. This prevents all trade between a particular country. For example, the US embargo with Cuba.
- Quotas - A limit placed on the number of imports.
- Voluntary Export Restraint (VER) - Akin to quotas, this is where countries agree to limit the number of imports. This was used by the US for imports of Japanese cars.
- Subsidies – When a government financially supports a local company, giving that company a competitive advantage over foreign organisations.

Individual summaries of trade and import tariffs for Maldivian tuna products are contained within the individual country profiles in Section 4.6.

Tariff preferences granted to tuna originated from the Maldives can be historically classified into three major groups.

4.3.1 Least Developing Country category

Historically, the Maldives was identified as a “least developing country (LDC)”, but in 2011, the UN Committee for Development Policy (CDP) upgraded the Maldives from a “developing country” to a “developed” or “upper middle-income island (UMIC)” as it met two of the graduation criteria the CDP reviews every three years. These were that income per capita and Human Assets Index. This resulted in any tariff preferences being open to LDCs were no longer accessible to the Maldives. Neighbouring Indian Ocean Island nations such as Sri Lanka, Seychelles and Mauritius are still designated as “developing” and are not subject to such trade barriers, which puts them at an advantage with respect to exporting products over the Maldives. In some countries, the Maldives is still seen however as an LDC.

4.3.2 Unilateral preferences

The Generalised System of Preferences (GSP) set tariff preferences by developed countries on specific products originating from developing countries. There are 13 countries which grant preferences under the GSP schemes: Australia, Belarus, Canada, the European Union, Iceland, Japan, Kazakhstan, New Zealand, Norway, the Russian Federation, Switzerland, Turkey, and the United States of America. “In practical terms, under the GSP schemes of preference, selected products originating in developing

countries are granted reduced or zero tariff rates over the Most-Favoured Nation (MFN) rates[3] when being exported to a specific developed country. To have the benefit of this tariff reduction, the product exported from the developing country must comply with specific requirements of rules of origin and have a document or statement certifying its origin (FAO, 2021a)."

As an example, for the Maldives to sell to the European market, it is subject to a duty tax of 22-24%. Despite this, in 2019, more than 25% of fishery exports from the Maldives arrived in the EU (worth €220 million) (European Parliament website, 2019). This subsequently fell 17% in 2020, but still constituted 96.6 percent of products imported into the EU from the Maldives.

4.3.3 Agreed Preferences under Preferential Agreements

These are either in the form of bilateral or plurilateral arrangements. Previously the Maldives has had bilateral agreements with China, Qatar, and Thailand. Potential bilateral agreements have also been discussed between the Maldives and Turkey, Kuwait, and Mauritius, although these talks have not resulted in trade agreements being signed.

The Maldives has a plurilateral agreement as part of the South Asian Association for Regional Co-operation (SAARC). SAARC was designed to promote cooperation, development, and progress for the region amongst the countries of Nepal, Pakistan, Bangladesh, Bhutan, India, and Sri Lanka along with the Maldives. A preferential trade agreement called "SAARC Preferential Trade Arrangement (SAPTA)". This was expanded to form the South Asian Free Trade Area (SAFTA) in 2006. Trade between the SAARC countries is free, without duties. Countries within the agreement may however set duties on imports from other countries as they wish. SAFTA has not proven particularly helpful for the Maldives and their tuna industry, as with exceptional of Sri Lanka, there is not really any room in SAARC countries for an expansion of the tuna market.

4.4 Social sustainability in fisheries and ethic market requirements

Social sustainability is the performance of the fishery relating to social issues such as equity, human and labour rights, communities, safety at sea and fisher welfare. Social sustainability in fisheries has become increasingly concerning especially in the distant water fleets, which is less applicable to the Maldivian fisheries. There are systemic human rights abuses which are commonly reported on by news outlets and non-governmental organisations (NGOs) which are ultimately driving change throughout the industry. However, there is a still a large risk of abuses due to the lack of oversight available on fishing vessels.

[3] MFN tariffs are the tariffs countries impose on imports originating from other members of the World Trade Organization (WTO) when entering their territory when there is no lower preferential rate. The existence of preferential rates is usually associated with the category of the country (LDC or a developing country benefiting from the GSP scheme) or the exporting country being part of a preferential trade agreement with the importing country or a group of countries which includes the importing country.

4.4.1 Drivers for social sustainability in fisheries

As social sustainability has become more prominent in the fisheries community there is an increased pressure on industry personnel and seafood buyers to request social requirements to be adopted throughout the supply chains. Policy makers and regulators in ethical markets also set social requirements around seafood trade for instance the US Customs and Border Protection (CBP) has prohibited entry of seafood into the US market based on human rights issues. The European Union (EU) Directorate General has used trade measures in the past on countries that they suspect have human rights issues in fisheries. More recently the European Parliament has announced a similar ban to that of the CBP to ban products in the EU market which have been made by forced labour. To follow this announcement a trade regulation will be enacted to allow for this ban, the EU Parliament has requested the Trade Commissioner to implement the process immediately.

In addition to the above there is a significant push from trade unions, buyers, and industry personnel for the ratification and adoption of International Labour Organisation Work in Fishing Convention 188 (ILO C188) as it applies to all fishermen working on fishing vessels of any size. The International Transport Workers' Federation (ITF) state 'international standards of working and living conditions need to be set' (2021). ITF along with their union affiliates lobby for the ratification and proper implementation of C188 and have a toolkit on how to put it into practice.

Trade unions can also have authority in social sustainability pressing issues which effect the fisheries in the most, but also regarding market access when looking at a broader scope of issues. For example, the European Transport Workers' Federation (ETF), who represent fisheries unions in Europe, and Europêche have adopted a joint resolution establishing benchmark principles aimed at better regulating the proliferation of sustainability labels certifying social conditions on board fishing vessels (2021). The purpose is to stress the importance of ILO C188 which is not to be replaced or substituted by private schemes. This would mean that European market would recognise ILO C188 above any private label or certification scheme for social standards. Within the announcement issued by ETF, Ment van der Zwan states "customers may choose a product labelled as socially sustainable, that in reality is not, over a European product with no such label but that by definition has to comply with higher social standards" (2021).

Specifically related to private companies there are fishing vessel standards which relate directly to the working conditions on board the vessels such as the Thai Union Vessel Code of Conduct (TU VCoC), the Responsible Fishing Vessel Scheme (RFVS), Seafood Taskforce Vessel Auditable Standards (STF VAS), Fair Trade USA Capture Fisheries Standard (FTUSA CFS), etc. While most of these standards do not apply well to small-scale fisheries, they do provide the basic principles which are commonly taken directly from international standard and regulations. The social standards aim to prevent infringement of human rights and the improvement of working conditions. Social impacts in fisheries are an area for continuous improvement and there are minimum requirements, but also best practice approaches, which are and will eventually become more stringent.

Due to the increased spotlight on social responsibility many retailers have been driving change within the industry by adopting sourcing policies which directly affects their buying decisions. The sourcing policies, for example, may include a requirement to only source from sustainable fisheries or Fishery

Improvement Projects (FIPs). Fishery Progress which acts as a hosting website for FIPs has now introduced social requirements for the FIPs as a response to customer requests. Many seafood buyers globally use Fishery Progress to determine which FIPs are performing well and since the adoption of the social requirements, buyers can now begin to have better transparency around the social situation within the FIPs to inform sourcing decisions.

Many buyers are looking more into their supply chains and the risk of forced labour, and more so the recruitment supply chain of any migrant workers. Many of these are based on the UN guiding Principles on Business and Human Rights. In response retailers have adopted sourcing policy commitments, due diligence, and remediation/improvement programmes.

Other drivers of social sustainability in fisheries include NGOs who are increasingly reporting on the abuses which are happening out at sea or those promoting the treatment of fishers. This encourages governments to enforce tighter regulation, for example New Zealand was heavily accused of abuses and has since put in place measures to ensure any employers who are known to operate with slave labour cannot operate in its waters which has enabled them to be able to introduce better labour laws for fishing crew. Buyers are also heavily influenced by NGO reporting and demands as it often results in negative press.

4.4.2 Additional research areas

Other research areas to consider include ongoing social research projects within the human rights/ethical requirements for seafood. There are growing requirements from governmental level all the way down to vessel level requirements (Table 4).

Table 4: Social sustainability research areas which may impact market-based decisions.

Organisation	Research
Global Tuna Alliance (GTA)	Targets on social responsibility to capture buyer expectations. They request buyers and employers to make a public commitment to socially responsible seafood and advises supplier codes of conduct in accompaniment with supplier expectation letters. The GTA is an independent group of retailers and tuna supply chain companies focusing on: 1) transparency and traceability. 2) environmental sustainability. 3) social responsibility. One of the pillars within the GTA's five-year plans includes the promotion of ILO C188 and the Cape Town Agreement.
Global Seafood Alliance (GSA) (formerly Global Seafood Assurances)	GSA is conducting research on the existing grievance mechanisms for fishing vessel crew. Eventually the research aims to map what best practice on certified vessels might look like. There is opportunity for Maldivian fishers/vessel owners to be involved in the project.
FishWise	Identifying key risks in fisheries that buyers would be expecting them to address.

	Roadmap for Seafood Ethics (RISE) is an online resource to help companies navigate the challenges in the seafood sector and create conditions for decent work. They provide actionable guidance, relevant tools and resources, and access to a community of human and labour rights experts.
The US Government Trafficking in Persons Report	This report is released yearly and is a useful tool for retailers and buyers alike to assess the country situation in relation to human trafficking. Fishing is seen as a high-risk industry for human trafficking and is therefore heavily cited. In addition to buyers and retailers, governmental bodies will use this report and potentially use it as evidence for further action. In the case of the Maldives there are a lot of issues relating to migrant workers, particularly Bangladeshi migrants being trafficked through the Maldives. However, this does seem to be in other industries such as construction rather than the fisheries.
Liberty Shared, Monterey Bay Aquarium, Sustainable Fisheries Partnership (SFP)	The Seafood Slavery Risk Tool (SSRT) is a web-based tool to help businesses assess the risks of forced labour, human trafficking, child labour, etc. in fisheries. Version 1 of the tool included a rating which demonstrated the likelihood of human rights abuses happening within that specific fishery or fishing vessel. Ratings are based on credible public sources. Version 2 of the tool is currently in development to take into consideration the complexity of the fisheries.
Fishery Progress	Fishery Progress has recently released a new social policy which is applicable to all FIPs which are held on their website. The policy includes implementing a Code of Conduct, making fishers aware of their rights, and implementing a grievance procedure.
Marine Stewardship Council (MSC)	When applying for MSC assessment the MSC has implemented a self-declaration on forced and child labour, which requires fisheries to provide information on the social status of their fishery with a self-declaration that there is no child or forced labour of any kind. The MSC is also looking to include eligibility criteria to the labour policy and procedures.

4.4.3 Social Situation in the Maldives

Currently, the Maldives is currently Tier 2 on the US Department of State 2021 Trafficking in Persons Report which means the government of Maldives does not completely meet the minimum standards of eliminating human trafficking but are making progress towards doing so. Customers/seafood buyers will be aware of the status of the Maldives regarding the social impacts and forms a large part of their buying decision.

Unfortunately, the Maldives has been penalised with red cards from the EU and US. However, there have been some improvements over the years under the new administration. The fisheries in the Maldives are relatively low risk compared to the issues which are identified within human rights reports; however, this has not been considered by the wider market. As such the Maldives should put in place measures to effectively promote the social situation in within the fishing communities.

4.4.4 Promotion of Maldivian social sustainability in fisheries

The Maldives should be able to effectively market their ethical fishing industry both environmentally and socially. The Maldives is in a good position to have a great story to tell on social impact within its certified fisheries (FTUSA and MSC) due to the connection within the local fishing communities and lack of characteristics which are typical of human rights abuses in the fishing industry. However, more broadly the Maldives would benefit from conducting further social audits on their vessels to determine any systemic issues within the fisheries. In addition, a wider risk assessment of the situation would help to determine the current situation for social sustainability in the fisheries sector, allowing for the Maldives to effectively market their story.

The FTUSA certification ensures that fishers are treated in socially equitable ways and provides benefits to the local coastal communities by completing community development projects. The pole and line fishery is made up of a fleet of 33 family-owned vessels (Seafood Source, 2021). Seafood Source (2019) states 'Horizon Fisheries and Blueyou Trading work together to implement projects in the Maldives, with the latter also acting as the global market access partner for the distribution of Fair-Trade certified products.' For example, as of November 2021, Maldivian Quality Seafood (MQS) achieved a Fair-Trade certified supply chain.

The Maldivian fisheries work closely with the local communities for example the Maldives Fisheries Act which came into force September 2019 which states a fisher's registry should be created to protect their rights and ensure social protection. The Fisheries Act of the Maldives Act 14/2019, aims to 'value fishers and assist persons working in the fisheries industry to seek good income and profit, to formulate a fishers' registry, protect their rights and ensure social protection and pension for fishers, acclimatise youth to fishing and encourage them to enter the fisheries industry, to encourage and pave way for equal participation of both sexes in the fisheries sector.' The Act also states the creation of Fishers Day, at national level dedicated to recognising the contribution of Maldivian fishers and everyone participating in the sector.

The fishers' registry will include fishers, fishing crew, fishing vessel owners, and information of fishing vessels. More and more NGOs are requesting information on specific fishing vessels within fisheries (for example, Fishery Progress), and the creation of the fishers' registry shows the Maldives are conducting their own national level due diligence and management.

The Act sets out plans for a fisheries institute or college to be established and developed to promote the industry. Fishing licences are issued pursuant to this Act and can be revoked if the licence holder defaults the conditions within the Act.

The government of Maldives has also signed to ratify the 2012 Cape Town Agreement but have delayed implementation and therefore have been classified on an amber list. The Agreement is designed to protect the safety of fishing crews and observers on board fishing vessels, including the maintenance and seaworthiness of the vessels (Seafood Source, 2021). The Maldivian government should take the necessary steps to implement the Cape Town Agreement, which is currently a pillar within the GTA five-year plan (referenced in Table 4) which relevant industry personnel rely on for information. The GTA partners can engage through either direct country engagement or supply chain improvements. The GTA five-year plan described what they perceive as the main issues within fisheries including but not limited to, recruitment, lack of safe access to communication methods and remedy, debt bondage, isolation at sea, and abusive conditions. The work programme for the 5-year plan includes ensuring socially responsible seafood supply chains, ILO C188, Cape Town Agreement, and observer safety.

In addition to the Cape Town Agreement, the Maldives have ratified the 1995 International Convention on Standards or Training, Certification and Watchkeeping for Fishing Vessel Personnel (STCW-F) which is applicable to vessels of 24 metres and over. Even though, the Maldivian fishing vessels tend to be on average 15 metres. The Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported, and Unregulated Fishing is in force in the Maldives where crew lists are required and health and safety measures for crew.

In terms of social sustainability and demand, 'awareness campaigns on sustainably-sourced fish have led to rapid increase in demand for pole and line fish' (IPNLF, 2013). The Maldives pole and line skipjack tuna fishery provides employment and livelihoods throughout the island country. Having developed a user system whereby the government only licenses national on-by-one tuna fishing vessels and crew to fish within its waters the opportunity to improve working conditions for fishers. The vessels do not typically spend long periods of time at sea and the coastal community networks rely heavily on the industry. There are very few migrant workers in the fishery and 'the possibility of foreign workers being employed as fishermen currently appears unlikely, both due to political reasons, and as the use of the pole and line method is a local skill' (IPNLF, 2013). The fishery has since become dual certified to Fair Trade USA (FTUSA) certified against the FTUSA Capture Fisheries Standard and the Marine Stewardship Council (MSC). Being FTUSA certified means the fishers within the fishery receive a premium for the fish they catch, and additional income is spent within the communities. The fishers are treated in socially equitable ways, and the coastal communities benefit greatly from the certification by the premiums which are given back (SeafoodSource, 2021). The FTUSA CFS has significant market recognition globally and is a well-recognised ecolabel. Section 3 of the FTUSA CFS related directly to fundamental human rights which are based on the ILO Conventions.

The Maldives fishery is one of the first joint certification which demonstrates environmental and social sustainability coming together and should be promoted as such. The Maldives is also in a good position to promote the mitigation of human rights risks in their fisheries through the following key characteristics:

- The vessels are at sea for a short period, usually returning the same day.
- The vessels are safe and maintained under regulations.

- EEZ fishing only beyond 100 miles from coast for local entities.
- No distant water fishery.
- The ability to govern their waters and properly enforce regulation both environmental and social.
- Few or no migrant fishers.
- Local communities benefiting directly from the fishing industry.
- Fishers are generally literate and have held white-collar jobs before moving into fisheries (IPNLF, 2013).
- Women in the community are engaged in the fish processing.
- Fishers are usually organised in Fishermen's Associations giving them access to freedom of association.
- Fishers are on a share basis.
- The vessel owners are family run, they are not big companies and fishers can engage as they wish to.

The International Pole and Line Foundation (IPLNF) state in their 2013 report that the vessels have evolved introducing radio and navigation systems along with floodlights and diving equipment. The IPNLF work very closely with the fisheries in the Maldives, and they state within the report that it is not uncommon to see the fishers with smart phones or other similar gadgets. This is very common in the fisheries section, but in the Maldives the fishers will have actual communication with their families due to the short trips, it also shows they have access to outside support should they need to contact anyone for any reason.

The EU has previously put a 20% levy on it fish exports for human rights concerns, specifically religious freedoms, this framework for restrictive measures against the Maldives were revoked in 2019 (European Council, 2019). The EU made its decision based on the improvements made in country such as peaceful democratic elections. There is a cultural significance for the Maldives and their fisheries, the methods are part of their history, and their communities heavily rely on the industry. This is something the Maldives can promote and an opportunity to market the fisheries as low risk for human rights abuses.

Usually, human rights abuses within fishing occur when vessels are at sea for extended periods and are made up with a migrant workforce and international standards are developed to address these issues. As mentioned above, the vessels are only at sea for a short period of time, there are no illegal workers, and fishing is seen as an honourable profession which limits the risk of forced labour.

The target import countries mostly do not have ethical market requirements per se; however, the market trends are driven by consumer awareness, amongst other things. There are many campaigns in country which advocate for more sustainable goods which relate to the United Nations Sustainable Development Goals (UN SDGs). This gives the Maldives an advantage from competing nations due to the nature of the fishing operations. Although there are existing risks in the Maldives, the fishing

industry appears to be operating within its ethical boundaries, for example the promotion of the Fair-Trade USA stamp.

4.5 Tuna products and quality

Tuna in the Maldives are predominantly caught by pole and line. According to Huntington et al., (2012) "the fish are attracted to the vessels by throwing live bait into water. Once on the barbless hook, the tuna are swung inboard where they fall onto the deck, from where they are immediately put into holds with ice". The following section discusses the main species in the fishery, for which new markets are sought.

4.5.1 Species

Overall, there was an increase in the demand for canned tuna worldwide, resulting in an increased trend of raw and semi-processed loins (FAO, 2021c). According to FAO (2021a), skipjack and yellowfin tuna account for 98% of all fishery exports. Bigeye tuna is the other main 'tropical' tuna caught in the fishery. The tuna fishery in the Maldives is comprised of four different hook and line gears, with the dominant being pole and line with respect to volume. Species caught are dependent on gear type (Table 5) and are destined for different markets (Figure 9). This is further discussed in Section 4.5.2 below.

Table 5. Tuna catches of the 'tropical tunas' by gear type in 2018 in tonnes (source: FAO, 2021a).

Gear type	Skipjack	Yellowfin	Bigeye
Pole and line	99,886	17,619	221
Handline	209	28,960	46
Longline	4	633	163
Trolling	-	3	0

Figure 9. Images of yellowfin (*Thunnus albacares*), skipjack (*Katsuwonus pelamis*), and bigeye tuna (*T.obesus*) (source: Indian Ocean Tuna Commission (IOTC).

Yellowfin tuna

Yellowfin tuna in the Indian Ocean are considered to be one stock. This is evidenced by the tag recoveries of the Regional Tuna Tagging Project (RTTP) in the Indian Ocean reporting large movements of yellowfin tuna in the Indian Ocean. The average distance travelled by yellowfin between being tagging and recovered is 710 nautical miles and showing increasing distances as a function of time at sea (IOTC, 2018). Yellowfin tuna are fast growing, reaching a maximum length of 240 cm and maturing

at ~100 cm for both sexes. Maturity (50%) is estimated to be between three to five years (IOTC, 2018). Along with skipjack, yellowfin makes up the majority of unprocessed tuna exported globally (FAO, 2021a). Between 2015 and 2019, the Maldives fishery (handline and pole and line) took 12% of the reported yellowfin landed from the Indian Ocean (IOTC, 2020). The yellowfin stock is currently overfished and subject to overfishing. Despite a rebuilding plan having been in place since 2016, catches have actually risen by 11.7% from 2014 to 2019 (IOTC, 2020).

Exports of unprocessed yellowfin leaving the Maldives has increased sizeably in the last two decades, with almost all of it being exported to Thailand. The market for this commodity has fluctuated greatly in terms of both volume and more significantly, price (Figure 10). Between 2017 and 2018 alone the overall value fell 37.5%. Volumes of exports of frozen yellowfin tuna vary much more than the fresh product, likely due to more unstable demand and a higher unit price for fresh, meaning that supply is funnelled through fresh out of preference (Figure 11). Given this, the frozen form may act as a tool to fill eventual gaps between production and existing market demand for fresh or capacity for further processing (FAO, 2021a).

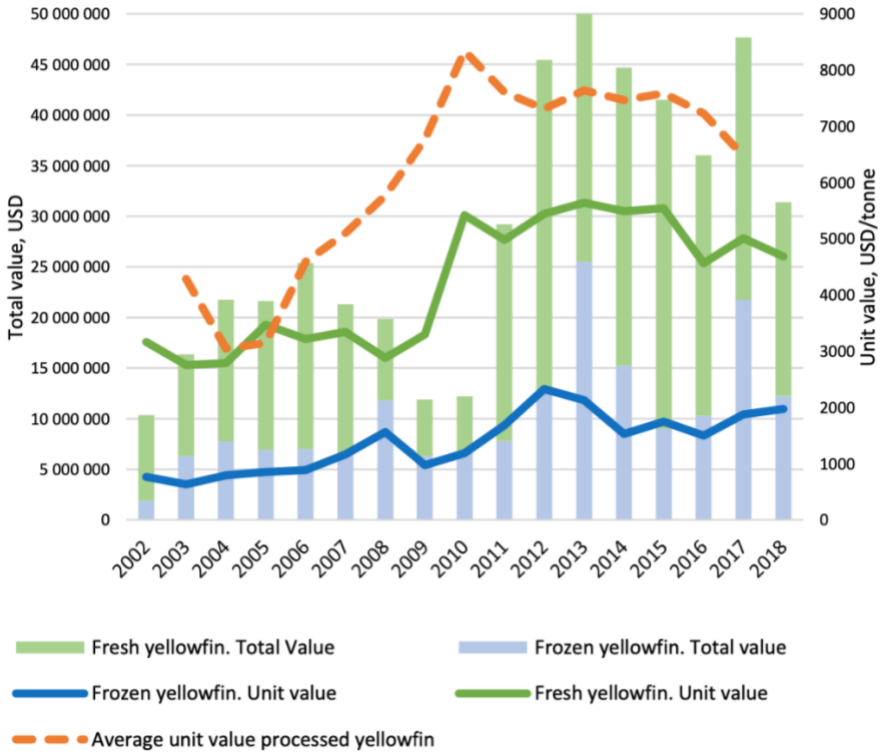

Figure 10. Exports of unprocessed yellowfin tuna from the Maldives (2002 – 2018) (source: FAO, 2021a).

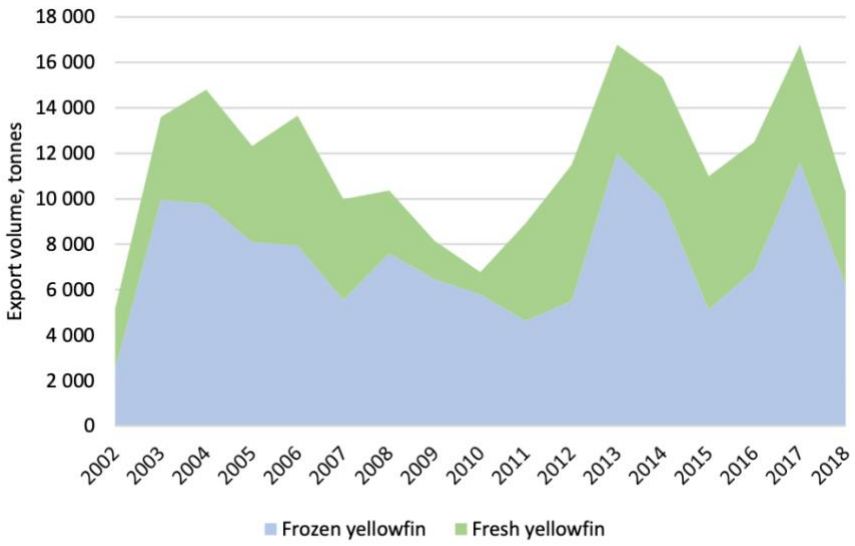

Figure 11. Volumes of exports of unprocessed yellowfin from the Maldives (2002 – 2018) (Source: FAO, 2021a).

As with unprocessed yellowfin, processed yellowfin has also grown substantially since 2002 and was worth $35 million USD in 2018. The US and EU purchase almost all of this commodity, and mostly as fresh loins or chunk (76% of the total value), which have the highest unit value (FAO, 2021a) (Figure 12). The average unit price of unprocessed yellowfin roughly mimics the unit value price of fresh yellowfin loins, indicating the market influence of this product, even if fresh chunks fetch a higher price per tonne (FAO, 2021a).

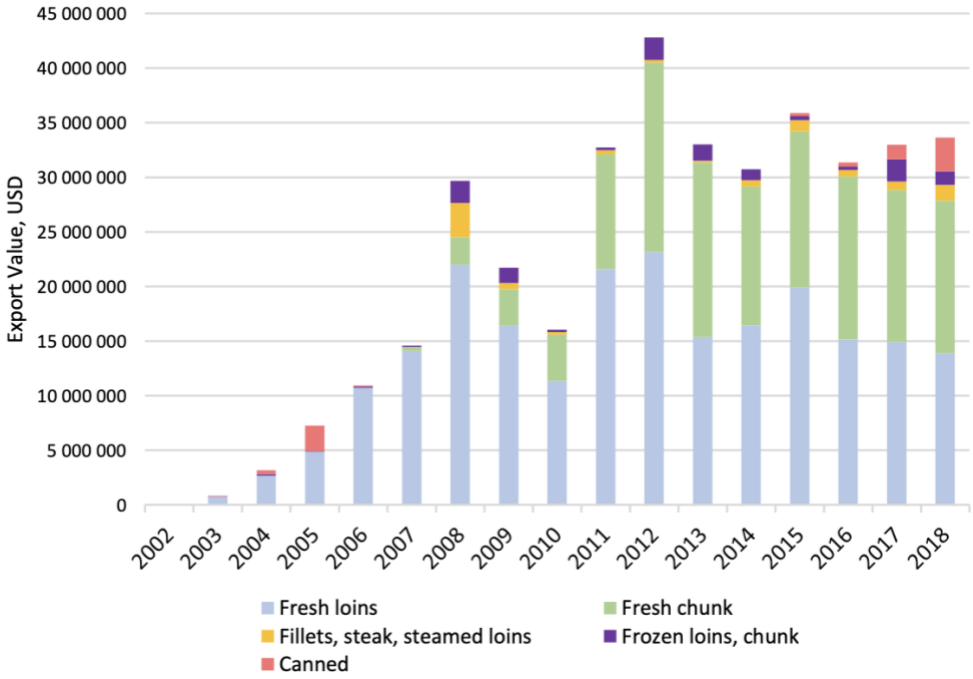

Figure 12. Exports of processed yellowfin tuna from the Maldives (2002 – 2018) (source: FAO, 2021a).

The average unit value for both fresh, processed, and canned and 'other' processed tuna has been on a general downward trend since its peak value in 2010. Canned yellowfin in particular has had a steep decline between 2015 and 2018.

Skipjack tuna

There is one stock of skipjack tuna in the Indian Ocean. They mature quickly, with maturity$_{50}$ recorded at less than two years for both sexes. Unlike in *Thunnus* species, sex ratio does not appear to vary with size. Most of skipjack tuna taken by fisheries in the Indian Ocean have already reproduced (IOTC, 2017). The average weight of skipjack caught in the Indian Ocean is around three to three and a half kilogrammes. This is larger than average size in the Atlantic Ocean but smaller than in the Pacific Ocean (IOTC, 2017).

By value, skipjack represents the largest share of main commercial species and is typically traded in its unprocessed form globally for later processing within the importing country destination (FAO, 2021a). From a market perspective, Maldivian skipjack is known for three main qualities, which make it marketable over other skipjack caught and exported. These are described in FAO (2021a) and are attributed to the dominant gear type in the Maldives' fishery, pole and line. "The first is the higher quality of meat; pole and line put less stress on fish flesh than purse seining, thus preventing damage. This is of greatest interest to processors, as waste may be reduced, and the quality of the final product will be higher. The second factor is the low-effort pattern of the Maldivian fisheries. Having lower by-catch rates and fishing intensity when compared to other utilised gear types, combined with the natural fecundity of skipjack, Maldivian stocks are more resilient. This is of great importance, especially in the context of increasing consumer awareness regarding the sustainability of their fish. Finally, the socially sustainable model of fisheries in the Maldives has been explored in literature but is rarely emphasised in market terms, especially to consumers. It forms a vital and intrinsic part of the Maldivian fisheries and could bring considerable and differentiated benefits."

With respect to product forms of unprocessed skipjack, the vast majority is exported frozen, both in terms of value and production (Figure 13). Fresh or chilled skipjack is limited with respect to trade and therefore unit value. This is mainly to do with distance between the Maldives and markets which would be open to purchasing fresh or chilled product, meaning in terms of market expansion, this product form is not viable as a replacement for frozen skipjack.

Although 47% of skipjack is landed in the Pacific Ocean, the higher quality of fish offered in the Maldives due to its fishing methods means that the prices for Maldivian skipjack are higher than the standard commodity price (FAO, 2021a).

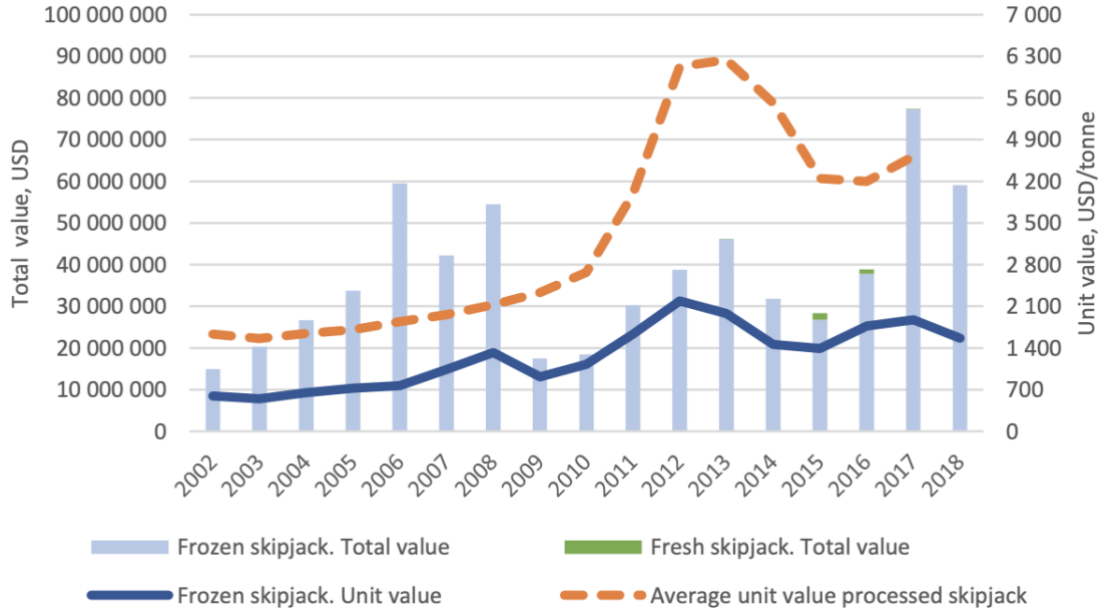

Figure 13. Exports of unprocessed skipjack between 2002 and 2018 (average unit value of processed skipjack for reference) (source: FAO, 2021a).

The main markets for frozen unprocessed skipjack are generally set up for further processing in those countries, and so at a global level, there are few differences in price between markets, and Thailand is the most influential with regards to setting this products' prices. Figure 14 shows that in terms of unit value, Mauritius and Spain import at the highest costs for unprocessed product.

With respect to processed skipjack, according to FAO (2021a) "Historically, the sector may have been disadvantaged by an undervaluation of foreign currency of the official exchange rate of the Maldives, creating artificial price advantages for unprocessed goods. In this case, unprocessed exports sold internationally would be able to be more competitive and generate additional income, reducing incentives to sell to local processors and thus further pushing up the price of raw materials". Whilst volume of canned product has continued grow since 2012, the volume of skipjack preserved using more traditional methods, namely drying, salting, or smoking, continues to decline (Figure 15). The canning industry has seen significant growth in recent years but that is down to increased production volumes rather unit value, which fell by $2000 USD per tonne between 2013 and 2017 (FAO, 2021a).

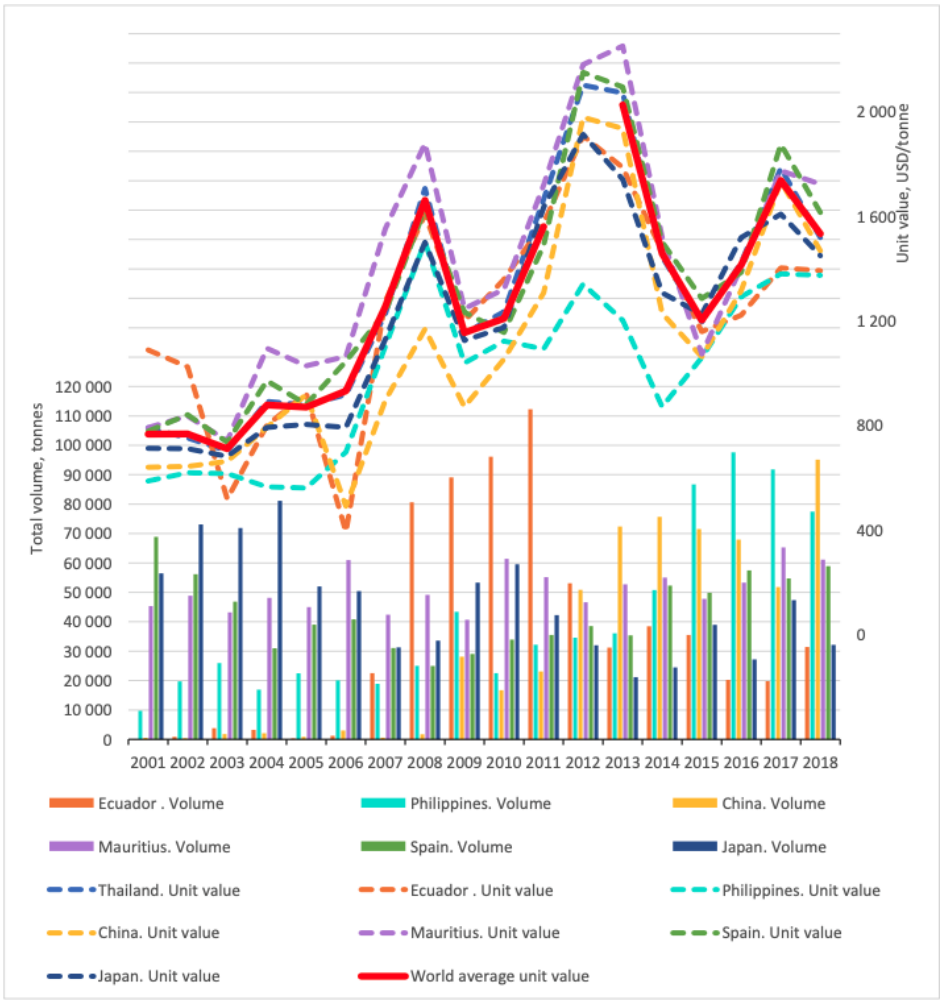

Figure 14. Major importers of frozen skipjack, excluding Thailand from total volume, 2002 – 2018 (source: FAO, 2021a).

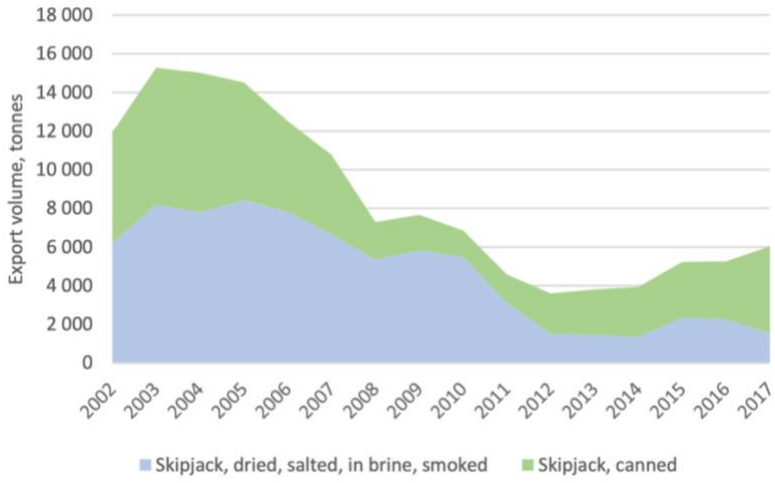

Figure 15. Exports of processed skipjack from the Maldives (2002 – 2017) (source: FAO, 2021a).

Bigeye tuna

Like the other two species mentioned here, one bigeye stock in the Indian Ocean (Chiang et al., 2008). Bigeye grow relatively quickly, attaining a maximum length of ~200 cm. Individuals are considered to be mature between 86 – 88 cm in length, which is approximately at just under two years old (Nootmorn, P., 2004).

Bigeye is sold for the sushi market, either fresh or frozen but not often in value-added form. The market is also dwindling due to reductions in total landings. According to FAO (2021a) bigeye attributed just 0.3% of the total landings in the Maldives and exports fell from 1,481 tonnes in 2014 to 169 tonnes in 2018.

4.5.2 Product forms

As mentioned above, the species of tuna determines the types of product forms made. The main types of products being exported from the Maldives are elaborated on here. Information collected from Maldives exporters, for example Horizon Fisheries report to sell skipjack and yellowfin tuna to Europe, the UK, US, Thailand, Vietnam, Bangladesh, and recently Australia.

Shelf-stable

Pre-packed, value-added products include tuna in retort pouches, cans (with various media) and vacuum packed. Katsuobushi and other dry, sun-dried, or smoked products are also available and are usually destined for the Japanese market and tend to be skipjack tuna. Canned tuna is predominantly skipjack, but yellowfin tuna is also often canned. Skipjack are caught in large volumes. As the quality of the meat is generally not as good as the larger species such as yellowfin and bigeye, so the price by metric tonne is not as high. To make profit, large volumes need to be caught and sold (Neil Radix, BlueYou, pers. comm.). Exports of processed skipjack from the Maldives has fallen since 2003's peak of approximately 15,000 tonnes to around 6,000 tonnes in 2017 (FAO, 2021a).

Chilled

Product forms of fresh tuna include steak, loin, trims, saku block, belly, headed and gutted (H&G), chunk and whole. These are generally comprised of the higher value species such as yellowfin and bigeye tuna (*T. obesus*).

Frozen

Low-temperature freezing is the only effective way to prevent spoilage of fishery products and ensure that the taste and colour requirements are met. Freezing below -5°C is sufficient to kill bacteria and stop the bio-chemical degradation of the flesh, but in order to also preserve the flavour, super-freezing is necessary. This is when tuna are rapidly frozen to temperatures between -60°C and -65°C. In Taiwan, products from the super freezer tuna fishery are mostly sold to Japan for the sashimi market (Yang and Lin, 2017). Frozen products are similar to the fresh products and also include tuna tails and kama (collar).

Fishmeal

Although not destined for human consumption, this too is a market for the Maldives. If just containing skipjack tuna, this too may be marketed as MSC-certified. Destined to be a fertiliser, it is also an

essential ingredient in poultry, and fish feed. According to OECD/FAO (2020), “the price of fishmeal will continue to increase slightly relative to oilseed meals. This results from fishmeal demand exceeding supply due to the expansion of aquaculture production and livestock breeding (mainly pigs and poultry)”. A demand will always be maintained for fishmeal given its value as a component in rearing diets of certain livestock (terrestrial and aquatic) and its relatively high unit price. As it is only used for a select number of species, a market premium has been created over oilseed meals. OECD/FAO (2020) further predict that prices will remain high relative to substitute products, even though a 7.4% decline is projected for 2020 – 2029 because of a decrease in oilseed meal prices.

In El Nino years, price may increase as the dominant source of fishmeal and fish oil, anchovetas will be negatively impacted in terms of catches. Here the Maldives’ fishmeal industry may be able to take advantage of the difference in the price ratio between fishmeal and oilseed meals, given the reduction in supply globally of fishmeal from other sources.

4.5.3 Quality

Quality is of vital importance for fish destined for the human consumer market, and quality is the main determinant of price. The way the fish are killed also affects the quality of the product. For example, rigor mortis reduces filleting yields (Huss, 1995). Further to this, the biology of tunas makes temperature and blood flow control vital for the maintenance of high-quality flesh for market. Their ability to thermoregulate means that a tuna caught in fishing gear will reduce the cooling of its muscles by the blood as it uses all its energy to evade capture. If allowed to struggle to death without immediate cooling, as with gillnets, the tuna meat is left with burned appearance. Wiryanti et al., (1997) note that it is very important to let the tuna stop struggling before being removed from the hook. The reason for this is further stated “Struggling will also have a dramatic effect on the amount of glycogen (stored carbohydrate) in the flesh which would be used up by the struggle. This causes an effect on the amount of Adenosine Triphosphate (ATP) generated in the flesh after death (from the glycogen). When the concentration of ATP falls to a certain level, the fish will enter rigor mortis. Upon resolution of rigor (softening and relaxation of the muscle tissue), autolytic digestion spoilage will start, resulting in changes in the freshness of the flesh. The longer it takes the fish to go into and through rigor, the longer the fish will remain chemically fresh.” Acidic conditions (from lactic and pyruvic acids) build up in the flesh of the tuna, this causes visual deterioration. Bleeding of fish also significantly reduces post-mortem production of lactic acid. For example, to achieve the best value tuna a spike should be used to kill the tuna quickly by inserting it into the brain area located on the top of the head between the eyes. Destroying the neural canal following death will further contribute to maintaining higher grade tuna as it stops the biochemical reactions which contributions to flesh deterioration (Blanc, 1996). Additionally, the removal of the gill operculum, gills, guts, and gonads and bleeding the fish improves the appearance of the flesh and keeps the fish fresh. Blanc (1996) states that “During the tuna's struggle before it is hauled aboard, the blood attains a high organic waste (lactic acid) content and rises in temperature (up to 35° Celsius in some cases). Bleeding removes the waste and cools the fish's body. The fish can then be refrigerated more quickly and will have better-quality flesh”. With this in mind, the best fishing method to catch tuna is line fishing (Gopal et al., 2008).

For tuna such as yellowfin, bigeye, and albacore, for quality to be maintained for the sashimi market, it is important for fishers to have the correct equipment, for example gloves, foam pad/mat to lay the fish on, club to stun, spike to kill, sharp knife to bleed and gut the fish, stiff brush to scrub out the gill cavity (Blanc, 1996). Figure 16 provides instructional diagrams of the landing and killing of large tunas.

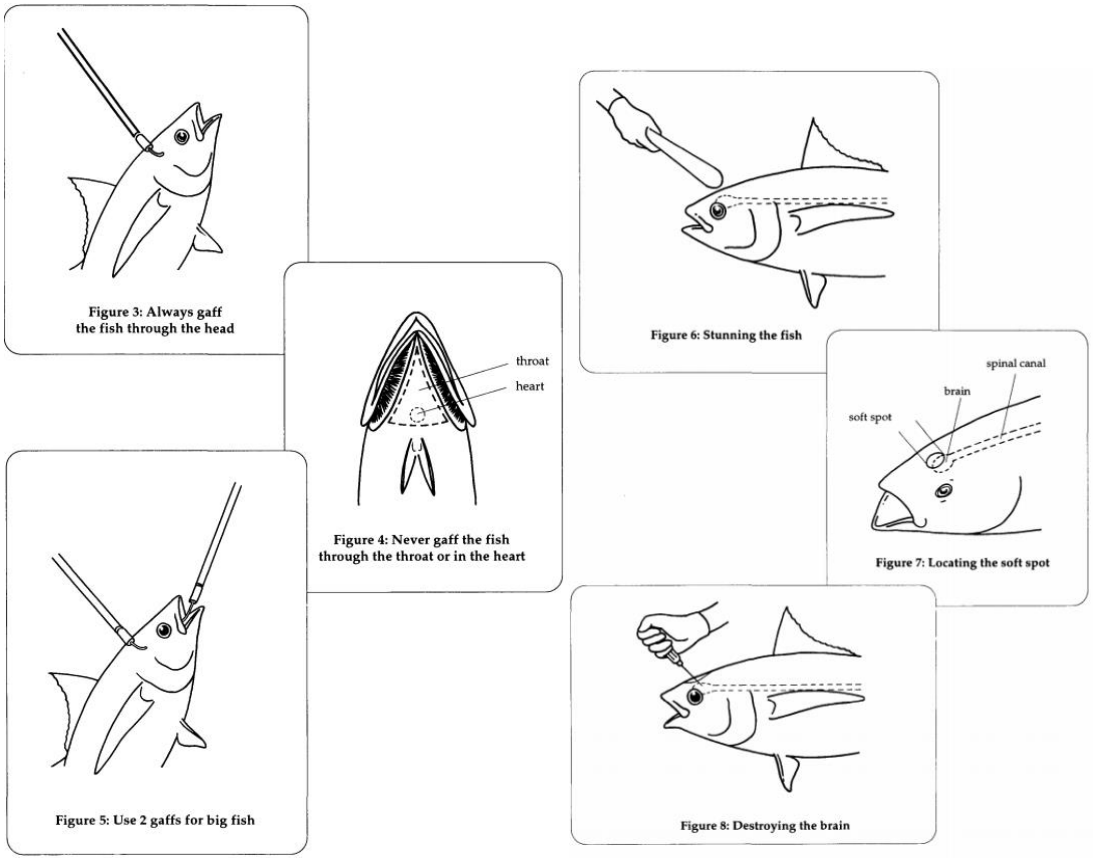

Figure 16. Techniques for safe handling and killing of large tunas (source: Blanc, 1996).

As discussed in Section 4.5, tuna caught by pole and line is deposited directly into the fish holds without killing. In other pole and line fisheries, if the tuna is to be marketed fresh, a club (like a wooden baseball bat) or an iron bar is used to kill the fish as soon as it is hoisted aboard, similar to the techniques displayed in Figure 16 (ICCAT, 2008). Speed and accuracy are needed in processing tuna for export for the sushi market.

4.6 Country profiles

Specifically, the team were asked to investigate the following international markets: Europe, the US, Brazil, Canada, China, Japan, Russia, Australia, New Zealand, and the United Arab Emirates (UAE). All these countries are members of the World Trade Organization (WTO), arguably the organisation responsible for shaping regulatory framework for international trade. According to the FAO website (2021) “The World Trade Organization (WTO) serves member countries as the natural forum for negotiating and setting rules for trade between them on a multilateral basis and as the locus for settling trade-related disputes that may arise. The WTO trading system is based on principles of transparency, predictability, and security for all its member countries, following a general approach of non-discrimination.

The country profiles below discuss the entry requirements for products being exported, advantages for the Maldives, i.e., where their products may be marketable given the country's trading trends, markets, or alignments with what the Maldives has to offer. The profiles also discuss barriers to trade for the country, for example if there is not a demand for the Maldives' products or if there are export requirements or duties precluding export.

4.6.1 Australia

The latest market profile from FAO (2021d) is for 2018. Tunas, skipjack, and bonito were reported as the biggest import for the country, worth US$ 238,509,000. These were in the form of prepared, preserved, whole or in pieces (HS 1604.14). According to Keyway Trade Services (2019), significant sources of imports of canned tuna come from Thailand, of which some originates from the Maldives, which cans two thirds of the canned tuna around the world (Figure 17).

Figure 17. Photograph of the Coles supermarket in Adelaide, Australia (source: Key Traceability).

Seafood forms a significant part of the Australian diet – Australians eat around 25 kg of seafood per person every year. Tuna (largely canned) remained the single most valuable imported finfish with a total import value of $303 million in 2016 – 17 (Seafish, 2019a).

4.6.1.1 Current situation and product entry requirements

To protect Australia's environment, the Australian Department of Agriculture, Water, and the Environment (DAWE) regulates products imported into the country. If permitted into Australia, some products require an import permit. Biosecurity Import Conditions system (BICON) is used to determine whether a commodity requires a permit. It also informs the exporter of import conditions, requirements for supporting documentation and whether treatment is required.

DAWE administers the Biosecurity Act 2015, Export Control Act 1982, and various other Acts to protect Australia's animal, plant, and human health status and to maintain market access for Australian food and other agricultural exports.

Illegal, Unreported and Unregulated (IUU) fishing

Requirements are listed in the "Minimum documentary and import declaration requirements policy" (Australian Government, 2017a). All documents presented to the department for assessment must have a unique consignment-specific link. Examples of consignment identification include:

- Container numbers.
- Bill numbers.
- Commercial invoice numbers.
- Lot codes.
- Preferential tariff certificate numbers.
- Packing list numbers.
- Letter of credit numbers.

Where a document does not contain one of the accepted forms of consignment identification, a numerical link to another document that does contain appropriate consignment identification must be present. Examples of acceptable numerical links include:

- Order numbers.
- Reference numbers.
- Any other internal reference numbers used by overseas companies.
- Vessel/voyage references.

If the cargo is coming by vessel, a "vessel cleanliness certificate" must be issued by a qualified marine surveyor and serves to indicate that "all vessel holds were inspected and found clean and dry with no previous residues and suitable to load the intended goods".

Certificates of origin are also required, which must contain exporter details, consignee details and a description of the goods. This is required in order for the product to be a recipient of the benefits of the GSP scheme (discussed below in Section 4.6.1.3). Other Rules of Origin for the Maldives are that the fish must be obtained by hunting or fishing in the Maldives by Maldivian-flagged vessels. A declaration of the origin must be stated on the commercial invoice or using an additional completed "Form A (Combined Declaration and Certificate of Origin)".

The Australian Tariff is based on the International Convention on the Harmonized Commodity Description and Coding System (HS) to which Australia is a signatory.

Quality and labelling

The Australia New Zealand Food Standards Code applies to fish and fish products under Standard 2.2.3. To avoid incorrect species identification, the Australian Fish names Standard exists. Under Standard 1.4.1 and Schedule 19 of the Australia New Zealand Food Standards Code are also relevant to fish products as they list the contaminants and natural toxicant limits are provided. Products must be in compliance with these limits to be sold on the Australian market.

Sustainability

The Foreign Policy White Paper (Australia Government, 2017b) promotes sustainable development and advanced human rights, as the country follows the United Nations Sustainable Development Goals. Both of which are aligned with the Maldives' sustainable development vision. This also translates into retailers' sustainability commitments to their customers. The largest supermarket chain in Australia, Woolsworths requires its fresh seafood to come from third-party certification schemes. In the case of wild-capture seafood, this means from an MSC fishery, comprehensive FIPs, or tools developed by World Wildlife Fund (WWF) or Fisheries Research and Development Corporation (FRDC). Yellowfin and skipjack imported by Woolworths branches must also be sourced by pole and line (or FAD-free). Coles, another popular and large supermarket chain has had a sustainable seafood sourcing policy since 2015. To be sold in a Coles supermarket, wild-caught seafood must either come from an MSC-certified fishery or have been assessed through the Coles Wild Seafood Assessment Framework. At present, Coles purchase yellowfin and skipjack from the western central Pacific Ocean (WCPO), where there is normally independent observers on all purse seine vessels, but this is not currently operating due to the Covid pandemic until further notice.

"Consumers will be increasingly mindful of their purchases. More and more shoppers are choosing products that are sourced responsibly and are good for their bodies and the environment. Retailers that have placed health or sustainability at the core of their business from the beginning are continuing to thrive (Seafish, 2019a)."

4.6.1.2 Barriers

According to the most recent figures (2019), Australia is exporting to the Maldives, but not in large volumes relative to other countries (1.16% of its products went to the Maldives in 2019). As Australia does not have any investments in the Maldives and vice versa (DFAT, 2020), there is not already a trade relationship established from which to build (OEC, 2019). There is also a pre-existing FTA with Thailand, a directly competing country, which entered into force in 2015 (Australian Border Force website). Additionally, Thailand already supplies the country with canned tuna, so for canned product, the Maldives would have to outcompete on price. Focus is therefore better placed on the fresh and frozen products of the larger tropical species caught in the Maldives.

From an operational exporting focus, as discussed above Australia has strict quarantine regulations issued by DAWE. This includes packaging of consignments. DAWE assesses the biosecurity risk posed by imported goods from two main perspectives: commodity and non-commodity concerns.

Commodity concerns represent the inherent likelihood of those goods introducing an exotic pest or disease to Australia, and non-commodity concerns consider the container origin, packaging, transportation and unpack destination among other factors, in determining the level of biosecurity risk posed (Australia Government, 2016). The Maldives is considered a "high risk" country according to the "Country Action List" for issues of biosecurity. As a result, sea containers and breakbulk cargo arriving from or transshipping though these high-risk countries and ports are subject to mandatory inspection by DAWE.

4.6.1.3 Advantages

Of the animal products exported by the country, 23.64% is constituted by fish fillets (9.94%) and process fish (13.7%) (OEC, 2019). Export figures have grown 347% from 2014 to 2019 (OEC, 2019). These figures demonstrates that there is still a growing and significant demand for imported seafood products. As mentioned above, sustainability is a big driver for the Australian Government and retailers.

From a trade perspective, the Maldives is also listed as a "Least Developed Country" under Part 2 of Schedule 1 of the Customs Tariff Regulations, 2004 and are subject to special rates under the GSP. According to Schedule 3, Section I, Chapter 3 of the Customs Tariff Act 1995, the Maldives can export fish (live, fresh, chilled, frozen, fillets, dried, salted or in brine, smoked, meals and pellets) for free.

Despite being a "high risk" country with respect to biosecurity, there are no restrictions on direct shipments to Australia for Maldivian tuna products.

4.6.1.4 Social

In Australia there is a general promotion of sustainable goods through their efforts to implement the United Nations Sustainable Development Goals. The Seafish (2019) export guide for Australia states retailers in the country and looking increasingly to independent third-party certification schemes to demonstrate sustainable sources such as MSC. By purchasing seafood products from sustainable fisheries, retailers show they are committed to community values.

4.6.1.5 Next steps

Although there is a market for canned tuna, it is unlikely that the Maldives can outcompete Thailand on price, given production costs are more expensive than Thailand. Focus should therefore be on the higher quality fresh and frozen products such as yellowfin and bigeye tuna, or even other billfish. Horizon Fisheries have already had success in trading with Australia. Seafish (2019a) present various channels for seafood to reach consumers in Australia (Figure 18).

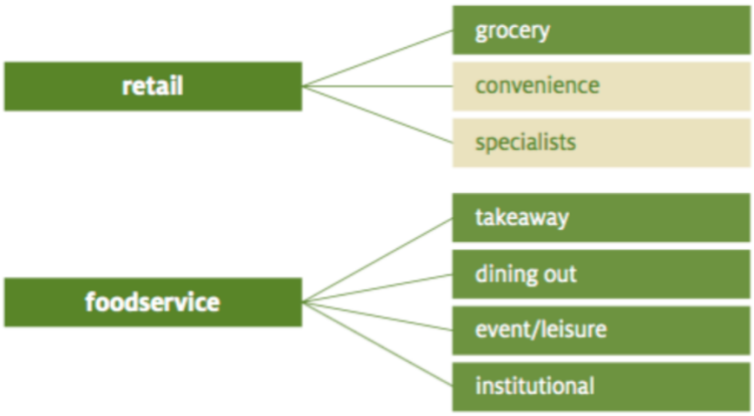

Figure 18. Channels to consumers in Australia (source: Seafish, 2019a).

Overall, the local seafood industry is highly reliant on frozen processed imported product and this commodity meets a large proportion of Australia's domestic needs. There are a lot of costs associated with the import process, but for large volumes of fresh or frozen tuna, this may be worth it. Seafish (2019a) also list the following costs that should be taken into account when considering exporting to Australia:

- A purchase or manufacturing cost.
- A cost of delivery to the warehouse at the shipping port.
- Handling at the shipping port.
- Any export customs duty.
- Documentation charges and other on the shipper side.
- Maritime (or airfreight) Cost, Insurance, Freight.
- Documentation charge.
- Import customs clearance.
- Delivery to the consignee's warehouse.
- Any import duty.
- An import GST (Goods & Services Tax).
- Costs of dispatching to interstate warehouse.
- Costs of storage (renting a warehouse).
- Costs of marketing, including advertising.
- Sales costs.
- A cost of the final delivery.

Wholesalers form an important conduit for remote catch to reach major markets, and this includes the sourcing of imports of fresh and frozen fish and fillets. There is little retail concentration in the fresh seafood market. A more and less costly route would be direct trade with the retailers themselves. Major chain retailers (such as Woolworths and Coles mentioned above) have large national store networks covering all inner city, suburban and regional centres. These companies have their own distribution services and centres which remove the need for the Maldives exporters to provide those services through wholesalers.

4.6.2 Brazil

4.6.2.1 Current situation and product entry requirements

Several organisations are involved in importing fish and seafood into Brazil. The important ones are the National Health Surveillance Agency and the Ministry of Agriculture, Livestock and Supply (MAPA). These are integrated with the Sistema Nacional de Vigilância Sanitária, which is Portuguese for National System of Health Surveillance, SNVS. SNVS is involved in the imports of perishable products, such as fish and seafood. Additionally, the Ministério da Pesca e Agricultura (Ministry of Fishing and Agriculture (MPA)). MAPA has now implemented an electronic system for the product and label registration of animal products, including seafood. For an exporter to register using the electronic system it must first be approved and listed by MAPA. Following this, the company must sign a declaration letter, in English and Portuguese, indicating their legal representative.

Illegal, Unreported and Unregulated (IUU) fishing

From research conducted, there is nothing specific to confirm legal landing status of exported fish. However, the shipment must be accompanied with the original bill of lading and original commercial invoice signed by the exporter.

Quality and labelling

The Brazilian requirements for the importation of animal products are defined by article 486 of Decree no. 9,013, dated March 29, 2017. Under Article 5, Animals destined for slaughter, meat and its derivatives, fish and its derivatives, eggs and its derivatives, milk and its derivatives and bee products and its derivatives are subject to inspection. Good Manufacturing Practices (GMP) are expected to be conducted throughout the production flow through systematised hygienic-sanitary and operational conditions and procedures. This to ensure the safety, identity, quality, and integrity of products of animal origin. Authorisation to enter into Brazil is made on the following conditions (Ministério da Agriculture, Pecuária e Abastecimento website):

- They come from countries whose health inspection system has been assessed or recognised as equivalent by the Department of Inspection of Animal Products (DIPOA).
- They come from establishments eligible to export to Brazil.
- The have been previously registered by DIPOA.
- They are labelled in accordance with the specific legislation.
- They are accompanied by a health certificate (submitted in Portuguese) issued by the competent authority in the country of origin, under the terms agreed bilaterally.

“The procedures for recognising health inspection systems and the eligibility of foreign establishments, authorisation of imports, reinspection, checking and transit of imported animal products are regulated by Normative Instruction no. 34, dated September 25, 2018, and by Normative Instruction no. 35, dated September 25, 2018 (Ministério da Agriculture, Pecuária e Abastecimento website).”

Fish and fishery products from wild capture fisheries must be caught and handled onboard the boats to the hygienic standards established by the exporting country. Landing, packaging, preparing, storage, and transport must also be conducted hygienically, and the exporting country’s standards be at the least the equivalent of Brazil’s “Standards and Codes of Practice of the Codex Alimentarius”.

Physical conditions of fish and fish products must adhere to the following conditions as listed in the "Public health requirements for imports of fish and fishery products from wild fisheries":

- Frozen fish and its products not to defrost during storage, and the temperature in the muscle thickness is not higher than -18°C.
- Fish and its products should be kept at a temperature as close as possible to 0 °C (melting ice).
- Frozen fish and its products have not been added phosphates or similar before freezing.
- Where the frozen fish has been glazed the declaration of net content of the frozen fish labelling is exclusive of the weight of the glaze and the packaging.

Sustainability

According to WWF last year, Brazilian consumers are not as aware of sustainability as elsewhere, for example the US or Europe, although this may be changing in the private sector. Sodexo, Brazil's largest foodservice company already sources most of its wild-caught seafood from MSC-certified fisheries. Other positive steps include a signed concession agreement with Forever Oceans and the Secretary of Aquaculture and Fisheries of the Ministry of Agriculture, Livestock and Supply. This is with a view to put Brazil back "on track to be an emerging leader in sustainable seafood production" (Newswire, 2022). Little other progress has been made by the Federal Government against the UN SDG 14 "Conserve and sustainably use the oceans, seas and marine resources for sustainable development".

4.6.2.2 Barriers

Brazil's imports of canned tuna has decreased throughout recent years, unlike other South American countries. Colombia for example was the largest importer of canned tuna in the Americas, with 70% of its supply coming from Ecuador (FAO, 2021b).

According to OEC (2019), there is no trade between the Maldives and Brazil. The country does import from India and Sri Lanka. Brazil has been part of the Mercosur since 1991 (a customs union initially among Argentina, Brazil, Paraguay, and Uruguay). Mercosur signed a preferential trade agreement with India in 2004 that is currently being expanded.

Brazil is also ranked 124 out of 190 countries in the World Bank's 2020 Ease of Doing Business Report. Brazil can be a challenging market for doing business, partly due to a complicated regulatory environment. U.S. companies also cite high tariffs, an uncertain customs system, high and unpredictable tax burdens, and an overburdened legal system as major hurdles to doing business in Brazil (ITA website). For specifically, there are lots of steps to getting the product into Brazil. This includes, but is not limited to, assessment and recognition of the equivalence of foreign inspection schemes, formalising of official diplomatic channels, organisation of official veterinary mission to perform an assessment of the foreign inspection scheme. Once the missions have been completed and the actions taken by the health authorities of the foreign country deemed satisfactory in complying with the official recommendations, the process will be submitted to the Division for Equivalence Evaluation (DEQ/CGCOA) for conclusion of the assessment of the request to open the market and, if approved, negotiations on exports health certificates to be used. The Maldives is not

yet listed as an eligible country to export animal products to Brazil (Ministério da Agriculture, Pecuária e Abastecimento website).

According to the Government of Canada website "Brazil has indicated that all the information on the certificate, including the first page and description of the product (in particular the information in the fields Means of Transport, Conditions for transport/storage and Description of the product, Type of packaging and Number of packages), must be in Portuguese. Where applicable, information on the first page should appear in both English (or French) and Portuguese. The exporter is responsible for providing this information in both English (or French) and Portuguese to the CFIA. The exporter remains responsible for the accuracy of the Portuguese translation provided at the time of request for certification".

If the Maldives is approved as an eligible exporting country, the Privacy Shield Program indicates that "imports are subject to several taxes and fees in Brazil, which are usually paid during the customs clearance process. There are three taxes that account for the bulk of import costs:

- Import Duty (abbreviated in Portuguese as II).
- Industrialised Product tax (IPI).
- Merchandise and Service Circulation tax (ICMS).

In addition to these taxes, several smaller taxes and fees apply to imports... Import duty is a federally mandated product-specific tax levied on a CIF (Cost, Insurance, and Freight) basis. In most cases, Brazilian import duty rates range from ten to 35 %."

Brazil is focused on starting new free trade and preferential trade negotiations and finishing the ones in progress. The US, Canada, South Korea, Singapore, Mexico, and India are the priority targets for collaboration with Brazil.

4.6.2.3 Advantages

In 2020, Decree n.10.373/2020 recreated Brazil National Trade Facilitation Committee (CONFAC) focus on the promotion and implementation of measures aimed at simplifying and reducing regulatory burden related to trade procedures, in line with the provisions contained in WTO's Trade Facilitation Agreement (TFA).

To attract investments, some Brazilian states grant tax incentives, consisting of total or partial reductions of ICMS on imports, which minimize tax costs of foreign trade operations.

Due to COVID-19, the Brazilian federal government have decided to temporarily reduce by 10% the Import Tax rates on 87% of the tariff codes that make up the Mercosur Common Nomenclature (NCM), covering goods such as beans, meat, pasta, cookies, rice, construction materials, among others. The reduction, the most comprehensive ever adopted in the country has the objective of helping to alleviate one of the negative economic consequences of the Covid-19 pandemic, which was the increase in prices in various sectors of the economy and for the final consumer (Ministry of Economy website).

4.6.2.4 Social

Brazil has seen ethical requirements in-country for their own exports, such as Fair-Trade nuts, but this has not been mirrored by the fisheries sector or for their imports. There are emerging initiatives such as Independent Brazil, a company specialised in international negotiation, with extensive market experience, always looking to improve the offer of products and services to meet the needs of the Brazilian and international market.

4.6.2.5 Next steps

The Ministry of Foreign Affairs is responsible for negotiating trade agreements, along with other members of the Chamber of International Trade. The Ministry of Economy directly supports the Ministry of Foreign Affairs in negotiations.

4.6.3 Canada

4.6.3.1 Current situation and product entry requirements

The country is a reliable market for seafood. In 2017, the annual consumption of fresh and frozen fish and seafood was 8.71kg per person, which was up from the 2010 figure of 1kg. Canada's Food Guide recommends eating two servings of fish per week (Seafish, 2018). Imports in Canada have increased by 8.5% in recent years to 27,255 tonnes, which largely supplied by Thailand (83% of imports) FAO (2021b).

Pursuant to subsection 16(2) of the Customs Tariff, makes the annexed General Preferential Tariff and Least Developed Country Tariff Rules of Origin Regulations. This is the main piece of legislation through the Customs Act (1985), which lists the requirements on duties imposed on products entering Canada. To be eligible, goods must be shipped directly to Canada, although transshipment is permitted. As with Australia, there are rules of origin and certificate of origin which must be followed and demonstrated through a bill of lading to a consignee in Canada.

Illegal, unreported, and unregulated (IUU) fishing

The Minister of Health's mandate letter (December 2019) introduced a commitment to develop a boat-to-plate traceability programme for fish and seafood products. The Canadian Food Inspection Agency (CFIA) is undertaking this work along with Agriculture and Agri-Food Canada, and Fisheries and Oceans Canada. The commitment surrounds the following three areas: consumer protection and food safety, sustainability and fisheries management related to traceability and combatting global IUU fishing, and market trade access.

CFIA has a number of tools available to prevent, detect and deter fish species substitution and fish and seafood misrepresentation in Canada.

Quality and labelling

The way food can be sold to consumers in Canada is mandated by several laws and regulations. For example, the Food and Drug Regulations require that most pre-packaged foods carry a label and that the ingredients appear on labels in decreasing order of proportion. Further to this 11(1) of the Safe

Food for Canadians Regulations (SOR/2018-08) requires imported foods in consumer ready tamperproof packaging to be manufactured, prepared, stored, packaged, and labelled in a manner consistent with sections 47 to 81 of the regulations. This covers identification, reduction and elimination of hazards, sanitation, hygiene, contamination, and pest control regulations, preventative controls, unloading, loading, and storing.

Adding colouring to tuna, for example the practice of injection carbon monoxide (CO) into fresh product to mask the deterioration of freshness caused by oxidation of the tuna flesh is illegal in Canada unlike in its neighbouring United States.

Sustainability

"Interest in sustainable seafood is growing and Canadian consumers are increasingly looking at product labels for certification from organisations such as Marine Stewardship Council (MSC), Ocean Wise, Friends of the Sea and Aquaculture Stewardship Council (ASC) (Seafish, 2018)". As of 2016, most Canadian food retailers had partnered with a non-governmental organisation to help align and source seafood from sustainable sources as part of the companies' broader corporate and social responsibility policies (Table 6).

Table 6. Retailers, their NGO partnerships, and sourcing commitments as of 2016 (source: Govender et al., 2016).

Canadian retailer	Key NGO partner	Seafood sourcing commitments
CO-OP	SeaChoice	**Wild:** All fresh and frozen SeaChoice *green* or *yellow*, or MSC. **Farmed:** All fresh and frozen SeaChoice *green* or *yellow*, or in a credible certification (ASC, BAP 2* or higher, Naturland). **Tuna:** Not included in commitment but have delisted Yellowfin and working toward sourcing from sustainable fisheries, FAD-free. More information[28]
BUY-LOW FOODS	SeaChoice	**Wild:** All fresh and frozen SeaChoice *green* or *yellow*, or MSC. **Farmed:** All fresh and frozen SeaChoice *green* or *yellow*, or in a credible certification (ASC, BAP 2* or higher, Naturland). **Tuna:** Not included in commitment but working toward sourcing from sustainable fisheries. More information[29]
Sobeys	SFP	**Wild:** MSC. **Farmed:** BAP 2* or higher. **Tuna:** ISSF. Seafood Watch *yellow* and *green* or *red* with FIP/AIP. No endangered species. More information[30]
SAFEWAY	SeaChoice	**Wild:** All fresh and frozen SeaChoice *green* or *yellow*, or MSC. **Farmed:** All fresh and frozen SeaChoice *green* or *yellow*, or in a credible certification (ASC, BAP 2* or higher, Naturland). **Tuna:** Private-label tuna now under Sobeys Compliments brand. More information[31]
THRIFTY FOODS	Ocean Wise	Offer Ocean Wise-labelled seafood products
Loblaws	WWF & Jeffrey Hutchings (independent scientific adviser)	**Wild:** MSC or equivalent. **Farmed:** ASC or equivalent, or closed- containment. **Tuna:** ISSF, increase MSC canned assortment. Member of: IFFO and GSSI. Support MPAs, FIPS, AIPS. MSC and ASC chain of custody-certified for seafood fresh counters. Delisted species identified as "species at risk". More information[32]

metro	N/A	**Wild:** MSC or equivalent. **Farmed:** BAP (favours higher stars). **Tuna:** Private brand canned tuna – pole and line skipjack. Looking into FAD free. In house traceability & sustainability policy[33]
COSTCO WHOLESALE	WWF US (through parent company)	**Wild:** MSC or equivalent. **Farmed:** ASC or equivalent. **Tuna:** ISSF. Support FIPs, traceability. More information[34]
Walmart	SFP	**Wild:** MSC, or working toward, or in FIP, or in accordance with the Principles of Credible Sustainability Programs developed by The Sustainability Consortium. **Farmed:** BAP 2* or higher, goal of 4 star, or in AIP. **Tuna:** ISSF or MSC and traceable. Support FIPS & AIPS & MPAs & closed-containment aquaculture. Won't knowingly source from IUU fisheries. More information[35]
Overwaitea Food Group		N/A
Longo's	N/A	"Catch Conscious" program in-store. No formalized commitment but have de-listed species such as shark, Chilean seabass, orange roughy, skate and monkfish. More information[36]
WHOLE FOODS MARKET	Seafood Watch, The Safina Center	**Wild:** All is Seafood Watch (SeaChoice) green or yellow, or MSC. **Farmed:** Created Quality Standards for Aquaculture. Wild Caught Link[37] Aquaculture Link[38]
MarketPlace	Ocean Wise	Offer Ocean Wise-labelled seafood products. Salmon: Sell only wild salmon. More information[39]
CHOICES markets	Ocean Wise	Offer Ocean Wise-labelled seafood products. Tuna: Private label tuna meets Ocean Wise standard. Salmon: Ocean Wise recommended only. Working toward 100 per cent Ocean Wise seafood by summer 2016. More information[40]

4.6.3.2 Barriers

According to figures presented by Seafish (2018), three of the Maldives competitors (Thailand, Vietnam, and India) are already ranked in the top five countries importing to Canada. This attributes to 21.4% of the market share in 2017. With respect to trade, The Maldives is no longer a beneficiary of the GSP, having been excluded from the list in 2015. Distance is currently a factor with air transport constraints of cost being negatively affected by Covid-19.

4.6.3.3 Advantages

As with other countries discussed in this report, there is a growing consumer demand for healthy food. According to Seafish (2018), there is a trend in consumers purchasing organic and sustainable seafood. Furthermore, nearly 33% of Canadians are willing to pay a premium for healthy products. They are responsibly aware when it comes to knowing where their food originated, making traceability equally important. By 2031, 25% of Canadians will be over 65, so this consciousness is set to continue. Top imported fresh and chilled fish were topped by salmon, halibut, and tuna.

Relating now to trade, unlike GSP, under MFN tariffs, tuna, and tuna—like species can still be imported into Canada for free if in fresh, chilled, frozen or fillet form. Imported prepared forms of tuna and their relatives on the other hand are charged at 7%. Given whole and primary processed product may enter the country without tax, there may be a market for skipjack and yellowfin to enter the country. Exports to Canada grew substantially between 2014 and 2019 from US$616,000 to US$1.62 million dollars

(OEC, 2019). Fish and their products may be exported into the country without duties (N.Radix, BlueYou pers. comm.).

According to IATA "It is widely accepted that integration into GVCs is made easier by moving goods across borders quickly, reliably and cost effectively. The consideration of speed and reliability are all the more vital in the context of air cargo (and indeed fresh tuna). The Air Trade Facilitation Index (ATFI) was developed to capture the dimensions of trade facilitation that are most important to air cargo. It aggregates measures of actual performance on trade facilitation as well as existence of supporting legislative framework". Canada is ranked in the top ten countries globally for ease to move produce across borders. This, in conjunction with an expanding import market, zero duties on fresh and frozen raw tuna products, makes the Canadian market an attractive one for Maldivian high-quality yellowfin and bigeye.

4.6.3.4 Social

SeaChoice.org (2016) for Canadian imports and exports states that Canada has a responsibility to ensure the seafood they produce and import from elsewhere is ecologically and socially sustainable. SeaChoice's vision is for Canada to be positioned as a global leader in environmental conservation and social responsibility in seafood production and procurement. The main aim is to shift Canadian suppliers and retailers away from unsustainable sources to more sustainable options for seafood. The SeaChoice provides a best choice ranking system and works directly with Canadian retailers to influence more sustainable options. They state that 'market demand has a critical role to play in encouraging ecologically and socially sustainable fishing and aquaculture practices and reducing or eliminating unsustainable practices.' The ranking system shows that Canada's exports are usually more sustainable than the seafood imports, the site states this is particularly down to the traceability of imported seafood.

4.6.3.5 Next steps

Canada have FTAs with many countries and may be open to discussions with the Maldives Government on this topic. As can be seen from Table 6 many major retailers have sourcing commitments for wild capture seafood, many which use MSC as the only ecolabel for wild-caught fish. Given skipjack's certified status in Maldivian waters, this would be in demand with many retailers. Some also buy FIP products, and with yellowfin in a comprehensive FIP, again, deals with individual companies may be available through discussion. Some exporters in the Maldives have already had success with exporting to Canada (Big Fish Maldives, pers. comm.).

As with other countries discussed in this report, e-commerce is continuing to be on the rise in Canada, so there are now new routes for products to enter Canada. Busy lives, combined with a demand for healthy food, all major Canadian retailers now have mobile apps to deliver to the 90% of Canadians who use the internet (Seafish, 2018). Maldives exporters could target specific retailers in Canada to other a range of tuna products from discounted canned tuna to high-end sushi-grade products. Unlike the US, there are only two major national grocery chains (Loblaw's and Sobeys), both with sustainable sourcing policies and a handful number of regional retailers. Buying is centralised for the most part, with larger chains distribution centres directly supplied by an importer-distributor.

4.6.4 China

In 2021, China's export market share is 10.30% but due to a declining national fleet may look to satisfy demand elsewhere. China is one of the world's leading seafood processing country, receiving subsidies from the government, and having negotiated supply deals from Papua New Guinea (PNG) and Indonesia in exchange for the country's investment. For example, last year Fujian Zhong Hong Yu Ye Co. signed an agreement with Papua New Guinea Fisheries Minister Lino Tom to invest in a new fisheries-focused industrial park. This was thought to align with the PNG government's goal of increasing activity for value added tuna products in the country (SeafoodSource, 2020). PNG has in recent years been looking for a free trade deal with China, and in June 2020, the Chinese ambassador in Port Moresby, Xue Bing signed an agreement to ensure seafood from PNG can be exported directly to China.

4.6.4.1 Current situation and product entry requirements

China is a large and growing market for seafood. Its imports for unprocessed skipjack tuna in 2017 constituted 8% of the global import trade by value (FAO, 2021a). Russia, the United States, and Canada are the three largest exporters of seafood to China (Seafish, 2019). China offers multiple channels to distribute products, for example, food services and retail. E-commerce is growing in popularity, no doubt accelerated by the Covid-19 pandemic.

The Bureau of Import and Export Food Safety is responsible for the importation and exportation of food products, their quality, inspection, and quarantine in and out of China. The country requires all companies to register on the General Administration of Customs People's Republic of China (GACC) approved importers list to bring seafood into the country. Additionally, all importers of seafood must obtain third-party certification of compliance with the relevant standards, laws, and regulations to maintain listing status and access to the Chinese market. Documents required for shipping include:

- Contract.
- Invoice.
- Bill of lading.
- Label in Chinese.
- Health Certificate.
- Packing list.

A certificate of origin and import permit may also be required.

Illegal, unreported, and unregulated (IUU) fishing

Not much information could be found on this subject. China ranks as the "worst performer" with respect to IUU fishing, although the country has sanctioned some IUU offenders (Anderson, 2020) and it further revised its fisheries law, to strengthen penalties and enforcement capacity against such activities. With respect to this and how it relates to seafood entering the country, trade is not affected. The import of fish into China requires original documents to be signed, stamped, and couriered to China, but this is likely to be for quality purposes rather than to prove the fish was caught legally.

Quality and labelling

Export Health Certificates are required for seafood shipments coming into China. Exporters must also provide full and correct details of all facilities involved in the production process, including processing plants, freezer vessels, transportation vessels, factory vessels, and cold stores. China's most recent Food Safety Law was implemented on 1st October 2015. It covers ingredients, testing methods, manufacturing, contact substances, packaging, and nutrition labelling.

Seafish (2019) state "Since joining the World Trade Organisation in December 2001, China has implemented and modified hundreds of food and agricultural related regulations and standards. These have included changes in food laws, labelling requirements, packaging and container requirements, food additive regulations, multiple commodity regulations, commodity specific regulations, and specific procedures". All imported foods entering China must have labels in Chinese, which are compliant with the country's labelling requirements. The following information must be labelled on the seafood packaging:

- Standard name of the food.
- Ingredients and the net weight and volume of each.
- Nutrition labelling (unless exempted).
- Name and address of manufacturer and distributor.
- Production date and best before date.
- Storage requirements.
- Country of origin.
- Quality grade.
- Barcode.
- National standard, industrial standard, or company standard code(s) relevant to the product.

Sustainability

This subject has not been of high priority in the country to date. According to Johnson (2020), "In 2018, China spent US$5.89 billion on subsidies to keep its distant water fishing (DWF) fleet. 60% of the DWF catch was sold in-country.

4.6.4.2 Barriers

China has multiple free trade agreements, including with countries directly competing with the Maldives' seafood exports. For example, China and Papua New Guinea (PNG), which includes seafood. PNG's total exports are worth US$2.82 billion to the country and 25.5% of its exports arrive in China (OEC, 2019). There is potentially an FTA between China and India, although this was not disclosed to the WTO (World Bank website) and its in-force status is unknown.

That said, there have been cases of issues with Chinese investments. Trade relationships built on investments from Chinese companies in west Africa do raise warning flags. Anderson (2020) writes "An investigative story run in late 2019 highlights the Gambia's struggle with Chinese investment in fishmeal and fish oil (FMFO) processing plants that threaten the country's food security. The promise

of jobs for locals has not materialised, and resistance is growing amid overfishing and pollution that is blighting the country's tourism industry".

4.6.4.3 Advantages

Between 2014 and 2019 the export market to China grew by 7.64 thousand per cent, which is a value of US$ 30 million dollars. Imports predicted to further increase over the next decade by 5.6%. China may be the world's biggest exporter of seafood, but its share in global exports of fish for human consumption is projected to decline to 18% by 2029 (OECD/FAO, 2020). It also remains one of the leading importers of seafood for human consumption, along with the EU, US, and Japan. Imports are predicted to further increase over the next decade by 5.6%. The country is further anticipated to remain the largest importer of fishmeal, projected to account for 44% of total fishmeal imports by 2029 (OECD/FAO, 2020).

Given the dominant market for seafood and emerging trends in online purchasing of seafood provides new ways of getting Maldives tuna to Chinese consumers. China is the second largest catering and food service market in the world and its online retail market platforms like Alibaba, Tmall and JD.com offers new ways to meet customer demands. Consumer awareness of health makes seafood preferential to traditional meat options. Fresh and frozen preferences over canned seafood is shown due to previous contaminated seafood scandals (Seafish, 2019b), but there is still a market for canned fish. Seafish (2019b) further add "The rise in popularity of international restaurants and supermarkets, including Carrefour, Tesco, and Lotte Mart, in China has meant that consumers are now enjoying a selection of seafood which span beyond the traditional varieties local to China. In tandem, it is also increasingly common for Chinese supermarkets to have a designated import section. While the majority of seafood eaten in China is still Chinese, a significant proportion of it is now imported from international suppliers. The popularity of e-commerce means that even those consumers without easy access to a supermarket with a well-stocked fresh seafood section, or a traditional wet market, can now order fresh seafood - including imported seafood - and have it delivered quickly to their homes". New retail merges online and offline shopping, enabling consumers to be reached at times and locations that best suit them, while delivery to those customers that cannot, or do not, make purchases offline is expedited through logistics services that make use of the latest technology available. China offers a dynamic yet constant market for Maldives tuna. Whilst sustainability might not be a key selling point, quality certainly is.

4.6.4.4 Social

There are currently no known ethical market requirements for China, however this may change in the future. China is bound by many demands from importing countries, but on the domestic market there isn't so much of a requirement regarding social sustainability.

During this study Jane Bi from Global Seafood Alliance was interviewed due to her in-depth knowledge on Chinese markets, Jane explained that China enjoys having a story to tell and so ethically sourced seafood would be attractive to them to be able to market it products in this way.

The China Aquatic Products Processing and Marketing Alliance (CAPPMA) non-profit organisation coordinates relationships between domestic enterprises and international parties and to ensure sustainable fisheries development.

4.6.4.5 Next steps

The Embassy of the Maldives in Beijing quotes it will "assist in building a presence in the Chinese market and aim towards the expansion of the existing import and export market between the two countries". This would be a starting point for promotion of tuna products or further trade deals. It can "further strengthen and promote trade relations between Maldives and China, the Embassy will provide necessary information on business opportunities in the Maldives, to the business community in China and introduce Maldives as a profitable destination for trade and investment".

As a general next step and important step, the Maldives exporters should focus on building relationships through personal contacts and can be aided by finding a Chinese partner or distributor. Participating in trade shows and sending samples to China may also be helpful. As discussed above, E-commerce is most likely an untapped market for Maldives tuna. Specific focusing of companies such Alibaba, Tmall and even retailers like Tesco could offer a new avenue. Whilst product types may not need further expansion, a change in packaging or how the product is presented may also be another option to put Maldives tuna ahead of its competitors. Packaging, particularly if the products are often sold as gifts, is very important and is a reasonably well-established practice.

Success with business in China is about flexibility, patience, but most of all building strong relationships to facilitate trade. The Maldives offers high quality tuna products, especially with the trend of fresh fish increasing in the health-conscious consumer market. Maldives exporters could also target companies in China for the sale of their fishmeal.

4.6.5 Europe

4.6.5.1 Current situation and product entry requirements

Several countries in Europe are known for importing large volumes of tuna. One third of processed exports from the Maldives arrive in the European Union, for both skipjack and yellowfin. This makes the EU market a significant destination for the primary tuna species caught in Maldivian waters. For canned tuna, countries like France have moved production to other countries which have lower production costs and are close to where the vessels land. Spain relies on imports of raw material for its own canning industry and faces the same issue as France. In 2018, approximately 2% of tuna imports came from the Maldives, but imports and their respective unit values have been declining since 2012. In contrast, total tuna imports by France have been steadily increasing since 2002. Fresh chunk and fresh loin are the main processed exports from the Maldives, representing 90% of the value of processed yellowfin exported to France. Most unprocessed exports are fresh rather than frozen, and is exclusively yellowfin (FAO, 2021a). Countries such as Italy, Spain, and Switzerland buying both yellowfin and skipjack from the Maldives, with the latter attributing the largest imported value to canned skipjack. For Germany, the majority of product was in unspecified prepared or preserved form (FAO, 2021a). Maldivian exporters such as Horizon Fisheries are currently exporting canned tuna and tuna in retort pouches to countries in the EU. The positive demand trend for processed/canned tuna persisted in the EU market during the first nine months of 2020 (FAO, 2021b).

Common Customs Tariff (CCT) applies to the import of goods into the European Union. "The tariff is common to all EU members, but the rates of duty differ from one kind of import to another depending on what they are and where they come from. The rates depend on the economic sensitivity of products (European Commission website, 2021)". Tuna loins are subject to 18%, whole fish, 22% and 24% for processed products e.g., canned, pouches, pre-cooked loins (Ensis, pers. comm.). To export into Europe, there are multiple standards to which products must conform. These include quality, proof of origin, packaging and labelling and in some cases sustainability sourcing and corporate social responsibility (CSR) certificates. These are discussed in detail beneath the country profile.

Illegal, unreported, and unregulated (IUU) fishing

Council Regulation (EC) No. 1005/2008 provides legislation for the EC to address IUU fishing as a Contracting Party to the United Nations Convention on the Law of the Sea (UNCLOS) and as an objective of the common fisheries policy (EC No. 2371/2002). This aim is to ensure exploitation of living aquatic resources that provides sustainable economic, environmental, and social conditions. In line with its international commitments, and given the scale and urgency of the problem, the Community required the adoption of new regulatory measures designed to cover all facets of IUU fishing. Essentially that the trade in fishery products with the EC shall not include those sourced from IUU fisheries.

To make this prohibition effective and ensure that all traded fishery products imported into (or exported from) the EC have been harvested in compliance with international conservation and management measures and, where appropriate, other relevant rules applying to the fishing vessel concerned, a certification scheme applying to all trade in fishery products with the Community was required, i.e., catch certificates. Further to this, to facilitate enquiries pertaining to fishing vessels presumed to have carried out IUU fishing and prevent the continuation of the alleged infringement, those fishing vessels should be subject to specific control and inspection requirements by Member States.

Quality and labelling

Council Regulation (EC) No. 1379/2013 serves to "foster market stability and a closer correlation between supply and demand" and are aimed to "enable consumers to make informed choices by being provided with clear and comprehensive information on the origin and method of production of the products". It further integrates the provisions of Reg. (EU) No. 1169/2011 and acts as a tool to prevent frauds and illegal fishing. Use of an eco-label is also promoted within the regulation.

Council Regulation (EC) No. 1169/2011 provides the labelling requirements for produce sold in the EU to inform customers. It is therefore mandatory to state the origin of the product. If frozen such as loins, the date of first freezing. Proportions of other ingredients or media contained in value added products must also be stated.

Council Regulation (EC) No. 104/2000 is concerned with implementing common marketing standards to keep unsatisfactory quality off the market and facilitate commerce based on "fair competition". The regulation states the need to support sustainable fishing and "comprise such measures as will ensure that the supply is better matched to demand, in terms of both quality and quantity." In the

case of tuna, a "Community producer price", which is representative of production areas in the EC, is used to determine price levels to be fixed every year using technical data[4]. This prevents excessive price variations from on fishing year to the next. This piece of legislation also fully suspends the common customs tariff duties for certain tuna products[5]. This is because the EC production is insufficient, this maintains supply of raw material for production in the food processing industry. It further requires that the suspension of duties should not result in supplies from "third countries[6]" being offered at abnormally low prices. Article 30 safeguards the Community market if one or more products in the Regulation is "affected by, or is threatened with, serious disturbance…". Measures are then applied to trade with third countries until such disturbance or threat has ceased.

Council Regulation (EC) No. 853/2004 outlines specific hygiene rules for foodstuffs. Most importantly it stipulates that "operators carrying out any stage of production, processing, and distribution of food after primary production and associated operations must put in place, implement and maintain procedures based on hazard analysis and critical control point (HACCP) principles. Additionally, any fishery product shall undergo freezing at -18°C or below, with the exception of the canning industry, where whole tuna initially is tolerated to be frozen in brine at -9°C.

Council Regulation (EC) 1333/2008 Article 6.1 authorises the use of food additives if, amongst other conditions, it does not pose a safety concern to the health of the consumer nor mislead the consumer. In the EU it is illegal to modify the colouring of tuna through the practice of injecting carbon monoxide (CO) to mask the deterioration of freshness caused by oxidation of the tuna flesh. Both conditions are not met for CO. Whilst it allows the maintenance of the cosmetic appeal of the tuna meat indefinitely, it does not prevent the spoiling process. In a treated product, CO treatment may also conceal degradation associated with potential risk of scombroid syndrome (Marrone et al., 2015). It further misleads the consumer regarding the freshness of the product.

Sustainability

Lastly, in Europe other commitments are also important, for example sustainability for wild-capture and cultured products. The most widely accepted and known is the Marine Stewardship Council (MSC) and its pre-cursor, fishery improvement projects (FIPs). Providing proof that the product has been sourced from a sustainable fishery is an attractive marketing quality. Major producers and retailers like Walmart, Thai Union, Nestlé, and Mars now have sustainable sourcing policies, this includes tuna from either a MSC certified fishery or from those who are in FIPs, aspiring to meet the MSC fisheries standard.

[4] Average of prices recorded for a significant proportion of EC output on wholesale markets or in ports during the three fishing years immediately preceding the year for which the price is fixed, taking into account trends of production and demand. Additionally, considerations of stabilisation of market prices, support of producers' income and consumers' interests are taken.

[5] Annex III - Tuna (of the genus *Thunnus*), skipjack (*Katsuwonus pelamis*) and other species of the genus *Euthynnus*, fresh, chilled, or frozen, intended for industrial manufacture of products falling within heading No. 1604.

[6] A country that is not a member of the European Union as well as a country or territory whose citizens do not enjoy the European Union right to free movement, as defined in Art. 2(5) of the Regulation (EU) 2016/399 (Schengen Borders Code).

4.6.5.2 Barriers

The Maldives is no longer a GSP beneficiary since the beginning of 2015. Under MFN tariffs, fresh, chilled, or frozen products are taxed still taxed. The EU is bound by the World Trade Organisation (WTO) rules and therefore cannot offer preferential rates without entering into an FTA covered under Article XXIV of the General Agreement on Tariffs and Trade (GATT).

4.6.5.3 Advantages

Imports by the European Union are projected to increase over the next decade by 4.9%. The European seafood market should not be mistaken for a single market. Europe is made up of a diverse group of countries with separate but interrelated markets. The European seafood market is usually divided into three main regions: the southern, north-western, and eastern Europe. Success in Europe depends on an understanding of the needs of the different target markets.

Canned tuna saw the largest demand among the canned fish segment in Europe in 2020, with a total import value of $2.5 billion. With the onset of the COVID-19 pandemic, this affinity towards tuna has increased. It is a familiar fish that is easy to prepare and known to many Europeans. This presents plenty of opportunities for non-European canned tuna exporters to enter the European market (CBI, Ministry of Foreign Affairs).

4.6.5.4 Social

There are many campaigns for the promotion of ethical goods in the EU, especially from European trade unions who are pushing for countries to ratify ILO C188. These groups such as the ETF will often work to lobby the European Commission to be inclusive of their social demands.

European countries also have their own initiatives for sustainable seafood which include social requirements such as Fair Fish in Switzerland, Friend of the Sea in Spain and Italy, Naturland in Germany, etc. All of which vaguely mention communities or social sustainability.

4.6.5.5 Next steps

Despite all being members of the EU, different countries have different demands and tastes. For example, sustainability is a ‘hot’ issue in the Netherlands and almost a condition to introducing new seafood products on to the market. Retailers are pressurised by consumer groups to follow sustainability guidelines. Despite centralised legislation on quality, traceability and of course trade tariffs, it is worth exploring European countries where sustainable tuna is important like the Netherlands and Germany, where questions on origin and sustainable processing is of equal importance. Although the volume of trade is not high, the Maldives can offer the EU articles for export that would prove very attractive to the European market. In doing so, a premium price could be offered for fresh, chilled, or frozen, intended for industrial manufacture of products falling within heading No. 1604 of Regulation (EU) No 1379/2013 (which is exempt), and if higher volumes of the right product could be sold (products with lower production costs like uncooked loins vs. the high production cost of canned tuna), some of the tariffs could be recouped.

The issue is that "the EU considers new FTAs only when certain economic, social and environmental conditions are met by its trading partner(s), for instance every new FTA would have a dedicated chapter with legally binding provisions on sustainable development (European Parliament, 2019)". Without the willingness of the Maldives government to meet the conditions of the EU and negotiate an FTA, tariffs on tuna will remain in place.

4.6.6 Japan

4.6.6.1 Current situation and entry requirements

Japan held 54.48% of the import share of tuna in 2020, which equated to US$ 717.03 million dollars. This is projected to rise to US$1,122.49 million by 2027 (Renub Research, 2020). Figure 19 provides a breakdown of the species and types of products exported to Japan from the Maldives, which were various forms of skipjack and to a lesser extent, yellowfin tuna. In recent years, exports of dried skipjack to Japan have developed, with very high and consistent unit values, at USD 10,036/tonne in 2017. Annual exports have usually stable at a little over 200 tonnes (FAO, 2021a).

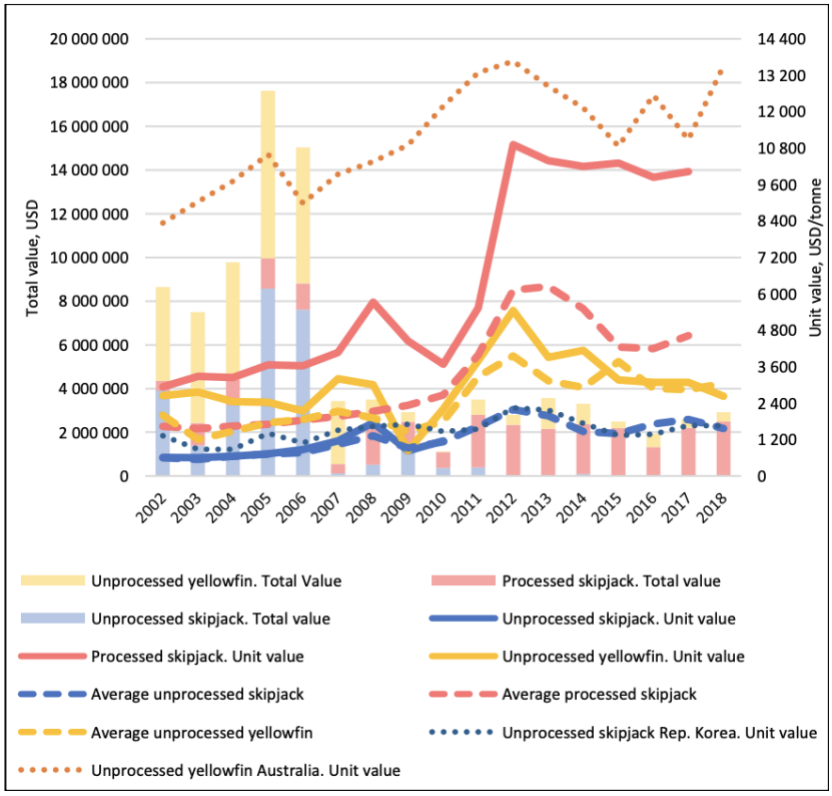

Figure 19. Maldivian tuna export to Japan (2002 – 2018) (source: FAO, 2021a).

The Covid pandemic has detrimentally affected Japan's sashimi trade, particularly in the HORECA sector. FAO (2021b) attributed this to cancellations and postponements of social functions and ceremonies, resulting in a 60 – 70% drop in revenue in the restaurant sector. Although there was an increase in home consumption, it was not significant enough to offset the impacts on the HORECA sector. Sashimi tuna imports into Japan declined by 16.6 percent during January - September 2020 in comparison with the same period of 2019. Air-flown fresh tuna imports dropped significantly (-31

percent). For frozen tuna, whole/dressed fish imports were 18% lower, while frozen fillet imports declined by 11% during this period (FAO, 2021b).

Preferential trade is further discussed in Section 4.6.6.3 below, but products from the Maldives are eligible in Japan for the GSP. In order for any products to be eligible for the preferential tariff treatment, in principle a "Combined Declaration and Certificate of Origin (Form A)" issued by the beneficiary is needed. This certificate of origin is called the "Combined Declaration and Certificate of Origin: Form A," or for short, "GSP (Generalized System of Preferences): Form A". According to the Japan Customs website, "The certificate has to be issued, at the time of exportation, by customs authorities or any other officially-authorised entities or bodies such as the Chamber of Commerce and Industry of the country of origin, based on the declaration made by the exporter who exports the goods concerned". The certificate is valid for one year from the date of issuance. Products must enter Japan directly, although transshipment is permitted with the necessary bill of lading and other accompanying documents to maintain traceability.

Illegal, unreported, and unregulated (IUU) fishing

Regardless of duties, seafood products must state the country of origin and whether the product is wild capture or farm sourced. Recent legislative actions in Japan have been commended by several environmental NGOs, Seafood Business for Ocean Stewardship (SeaBOS), the Global Tuna Alliance (GTA), and the International Seafood Sustainability Foundation (ISSF). In 2020, the Japanese government passed a new law which will bring Japan into alignment with the EU and US barring produced sourced from IUU fishing reaching their consumer market. The "Improvement of Domestic Trade of Specific Marine Animals and Plants Act. The law introduces measures to ban the importation of seafood sourced by IUU fishing. Further to this the prevention of seafood sourced illegally within or outside Japan from being traded in Japanese markets enables the elimination of unfair competition and secures income that is supposed to be brought to fishing operators complying with existing rules and regulations. It lastly mandates information sharing and transaction recordkeeping for selected species.

Quality and labelling

Importers must further notify the Ministry of Health, Labour, and Welfare of the products entering the country under Article 27 of the Food Sanitation Act (2010) in order for those products to be sold legally. The Food Sanitation Act also provides the necessary criteria for the labelling of food under Chapter IV. Importers are required to submit two copies of the import notification to the Food Sanitation Inspections division of the Quarantine Station for the import. If no problems are found following an examination and inspection at the quarantine station, the product will be permitted to enter the country.

The names of foods, country of origin for fresh fish and preservation methods for processed marine products must be contained on the food label. Whether a product is fresh or has previously frozen it is mandatory to report in Japan. The addition of colouring to tuna, for example the practice of injection carbon monoxide (CO) into fresh products to mask the deterioration of freshness caused by oxidation of the tuna flesh is also illegal in Japan.

Sustainability

This is discussed further below under Section 4.6.6.3 below, but in recent years customer demands for sustainable product is on the rise.

4.6.6.2 Barriers

In Japan, a decline in imports is projected to accelerate by 9.2%, as younger generations favour meat over fish and the decline in population accelerates (OECD/FAO, 2020). A steep rise in the retail price for fresh seafood from around 2013 has led to decrease of purchase volume for fresh seafood (Seafish, 2020). Swartz et al., (2017) also noted a consumer preference in Japan found strong preference for domestic products and for wild-caught seafood over farmed. Given there are only five MSC-certified fisheries in Japan, three of which are albacore and skipjack tuna, and only one fishing in the Japanese EEZ, it is not surprising that there is not a premium on MSC products in Japan. MSC is seen as less valuable given the lack of domestic sourcing, but also its quality. A lot of the seafood is imported frozen, and is therefore lower quality for sashimi, which is best fresh. The sources of tuna and billfish entering Japan are mainly coming from Taiwan (26%), China (15%), and Korea (10%) (Seafish, 2020a), presumably as longline is the favoured fishing gear for these nations, as it yields the highest quality of tuna for the sushi market. Australia and Malta make up a further 13% (Seafish, 2020a), likely due to its supply of bluefin tuna species.

To export to Japan, Maldivian fishery products are subject to import duties. Under MFN tariffs, fresh, chilled, frozen, fillets of tuna and tuna-like species are subject to a tariff of 3.5%, and prepared or preserved tuna and tuna-like products at 9.6%. The Maldives is also still a GSP beneficiary in Japan, although it is not seen as an LDC and so are still subject to, albeit reduced, tariffs. Under its GSP scheme, reduced tariffs by Japan aim to help them increase export income, advance industrialisation, and promote economic development. Skipjack and other bonito shipped in airtight containers are taxed at 6.4% and prepared or preserved tuna and tuna-like species, except skipjack and other bonito in airtight containers at 7.2%.

4.6.6.3 Advantages

Although not directly tariff or trade related, sustainability and social responsibility have not been such a big market driver in Japan as in other countries discussed, although this may be changing. According to Swartz et al., (2017) “Historically, Japan was the largest fishing nation in the world with fleets operating across many of the world's productive fishing grounds. Following the decline of its distant water fisheries and the collapse of some key domestic stocks (e.g., Pacific pilchards), Japanese seafood market has since become increasingly reliant on imports; as of 2013, it was the primary destination for seafood caught around the world.” Japan presently does not have many MSC fisheries or Aquaculture Stewardship Council (ASC) farms. In 2015, only 3% of seafood stocked by Aeon was either MSC or ASC (Yoshida, 2015). This is in stark contrast to other leading seafood importing retailers in various developed countries, such as Walmart, who commits to sourcing 100% of its seafood from MSC and FIPs by 2025. Since then, however AEON set 10% MSC and ASC sourcing goals for 2020. As with Canada, China, and other countries in this report, the need for faster food with high nutritional value has increased the consumption of canned seafood products in Japan.

Despite this, the theme of the Tokyo Sustainable Seafood Summit (TSSS) 2021 was "Build Blue Economy Toward 2030, Changing Japanese Seafood Industry by Digital Transformation (DX) and ESG Investment". Held since 2015, the TSSS has grown into one of the largest events on seafood sustainability in Asia. Exhibitors and speakers in 2021 included David and Lucile Packard Foundation, WWF Japan, SeaBOS, Thai Union, AEON, MSC, EJF, as well as organisations representing aquaculture such Global Seafood Alliance, ASC and GlobalG.A.P. The Maldives may therefore be able to fill that demand. The Japanese Fisheries Agency (JFA) and the Ministry of Agriculture, Forestry and Fisheries (MAFF) have launched the 'Fast Fish' project and aim to increase seafood consumption by promoting seafood development of seafood product to match consumers' various demands (Seafish, 2020a).
In an article in SeafoodSource, NGO Ocean Outcomes were quoted as saying "While Japan is probably around ten years behind how the U.S. and E.U. markets see sustainability, change is definitely taking place and progress is most certainly being made… Another reason to say Japan is ten years behind is to illustrate or provide a measurement to show how the U.S. and EU seafood markets have developed. But it is important to stress that we cannot simply copy and paste a successful solution from the West – that happened in the United States or the E.U. – and drop it into Japan and expect it to work. The environment is different and so the solutions need to be different as well.".

There has already been some investment and trade by Japan in the tuna industry in the Maldives. Japanese vessels fished in Maldivian waters until 2010 under a joint-access agreement, with implications for trade between them (FAO. 2021a). A further example, a subsidiary of Yamaki, Yours Maldivian Addu Katsuobushi Pvt Ltd (YMAK) is stationed in Hithadhoo of southernmost Addu City currently. In 2019, the company reportedly produced 200 metric tonnes of katsuobushi with locally sourced skipjack (ATUNA website). The benefit of the company's base is that skipjack can be caught locally and purchased directly from the fishers. Fish are therefore landed within hours of catching. The fishing method of pole and line also serves to preserve quality when compared to the use of purse seine or gillnets. In 2019, President Ibrahim Mohamed Solih had further meetings with Yamaki Company Limited to discuss expansion of the company's ventures in the Maldives. Japan is also in the top ten countries in the world on the ATFI, just ahead of Canada (Section 4.6.3.3).

4.6.6.4 Social

There are currently no known ethical market requirements for Japan. Despite the growing number of certification schemes and ethical requirements in Europe and North America, there has been little progress in Japan (Swartz, et al., 2017).

However, Japan has an initiative called 'Pride Fish' which is aimed to increase seafood consumption and promote the domestic fisheries and fishers. Although this is targeted towards the domestic market, it shows that Japan sees fishing as an important aspect to their culture and therefore may be more interested in seafood from the Maldives where the situation is very similar in fisheries where there is a strong community aspect.

4.6.6.5 Next steps

Based on market share alone, Japan is an option for additional markets due to its high demand for high quality tuna products. Given the Maldives also exports sushi-grade tuna, this should be the focus

of talks with new buyers. Tuna and tuna-like species are not under "Import Quotas" as prescribed under the Handbook for Agricultural and Fishery Products Import Regulations, so there are no limits on how much tuna can be imported into the country. Consumers are increasingly turning from fishmongers to supermarkets as their preferred outlet to purchase seafood. This will in turn likely have an impact on consumers' choice. Supermarkets mainly sell fillets and slices, and less whole fish, so the Maldives could look to provide tuna which has undergone primary processing, bringing fillets, steaks, and loins to market.

If the Maldives would consider changes to fishing gear utilised, i.e., the discrete use of longliners, trade deals could be made through the purchase of Japanese longline fishing vessels and bait. In conjunction with this, ensuring handling practices from fishing activities to transport of raw fresh or frozen product prioritise quality for the sashimi market. Or changes in fishing gear may open up a larger supply of high-quality sushi-grade tuna, for example through the use of longline gear.

To gain presence in Japan, there are several trade shows at which Maldives exporters could exhibit. The Japan International Seafood and Technology Expo, next held in June 2022, has sections for sushi and marine ecolabel companies. Seeking partnerships with NGOs such as The Nature Conservancy (TNC), WWF Japan or Ocean Outcomes could also be a way to expand Maldivian product promotion options, as the organisation works with the market in Japan towards becoming more sustainable.

4.6.7 New Zealand

4.6.7.1 Current situation and product entry requirements

In New Zealand imports of tuna have increased, aided by the consumer preference for canned black meat[7] of tuna. To import seafood products companies must either be registered as a food importer with the Ministry for Primary Industries (MPI) or use a registered food importer. There are also other standards and requirements. Biosecurity requirements are detailed in the "import health standards (IHS)". The IHS informs the importer of the biosecurity requirements to import it, including getting manufacturers' declarations and zoosanitary certificates when required. Registered food importers must also meet food safety requirements under the Food Act 2014. These include:

- Confirming the safety and suitability of food they import.
- Safely handling and transporting food.
- Meeting specific requirements for foods identified as presenting a higher risk to consumers, also known as foods of high or increased regulatory interest.

Pursuant to section 22 of the Biosecurity Act 1993, there is a health standard for the importation into New Zealand of cooked fish for human consumption. Once the consignment has been given biosecurity clearance into New Zealand, it is the importer's responsibility to ensure (where relevant) that the consignment complies with the Animal Products Act 1999. All costs involved with documentation, transport, storage and obtaining a biosecurity direction and/or biosecurity clearance shall be borne by the importer or agent.

[7] Black meat is left over from the export white tuna meat.

Illegal, unreported, and unregulated (IUU) fishing

New Zealand legislation provides a framework for the implementation of international obligations relating to international fisheries, for example the RFMOs to which it belongs. In 2014, it became the ninth country to ratify the FAO's Agreement on Port State Measures to Prevent, Deter and Eliminate IUU Fishing. In combination with catch documentation schemes, the MPI staff inspect close to 50,000 import consignments each year (MPI website). In order to import into the country (and be a beneficiary of the GSP scheme), product coming into the country must be able to confirm its origin, in this case the Maldives.

Quality and labelling

Both the common and scientific name of the species on the outer (transportation) packaging of fish and fish products for human consumption. As with Australia, there is an authorised list of fish names. Fish product labels must also comply with the general labelling rules and the Australia New Zealand Food Standards Code.

Sustainability

Almost 50% of the fish caught in New Zealand is MSC-certified (MSC website), but that does not necessarily translate to consumer awareness. However, the retail industry has sustainable seafood as part of its product requirements. For example, supermarket conglomerate "Foodstuffs", whom have a number of brands in New Zealand include seafood in their Corporate Social Responsibility (2020). They work with the MSC to inform their Responsible Seafood Standard. For their own brands Foodstuffs only purchase MSC-certified skipjack tuna. Equally the Woolworths New Zealand is part of the Woolworths Group in Australia and has multiple brands in the country and also has a responsible seafood sourcing policy. These examples demonstrate that the largest retail companies in the country have a strong commitment to sustainable seafood and of course quality foods.

4.6.7.2 Barriers

There is no existing trade agreement with New Zealand. In 2019 just 0.056% of its exports were bought by the Maldives. This amounted to US$ 22.7 million dollars, of which nearly 80% was wood products. Other competing countries such as Thailand, India, Sri Lanka, Vietnam, and Mauritius all received larger portions of New Zealand's exports (1.73%, 1.11%, 0.67%, 1.33%, and 0.15% respectively (OEC, 2019).).

Trade appears not to be reciprocated with no Maldivian products imported in return (OEC, 2019). Between 2014 and 2019 the export market fell 90.5%. Additionally, only 10.6% of animal products imported into New Zealand were fish (2.03% fish fillets, 8.59% processed fish), indicating that there may not be a lucrative enough demand to establish conducive trade agreements. New Zealand already has a longstanding FTA with Thailand, signed in 2005, which is still in force. Under Chapter 3 of the FTA, fish and their products can be traded free of tariff charges. This specifically includes tunas caught in the Maldivian fishery.

4.6.7.3 Advantages

In New Zealand, the Maldives is still listed as an LDC. Under both MFN tariffs and the GSP scheme tuna and tuna-like species can be imported into the country without facing import tariffs (FAO, 2021). In order to qualify under the GSP scheme Rules of Origin, as with other countries discussed in this report the product leaving the Maldives must be obtained by fishing directly in Maldivian waters and transported directly to New Zealand. Transshipment and temporary storage in a bonded area is however permitted.

4.6.7.4 Next steps

The Exporter Association could speak directly to companies such as Foodstuffs, as their sustainability commitment to MSC-certified skipjack suggests that the Maldivian product would be in demand and there would not be any import duties on anything exported to New Zealand.

4.6.8 Russia

Imports of tuna into Russia have grown between 2014 and 2020 and is set to double from by 2027 if projections remain accurate (Figure 20). The country imports fresh, frozen, and dried tuna products is a popular seafood, sourced significantly from southeast Asia, for example Vietnam (Renub Research, 2020). A Free Trade Agreement was signed between Vietnam and the Eurasian Economic Union in 2015, removing tax from Vietnam exporters sending fishery products to Russia (The Fish Site, 2015).

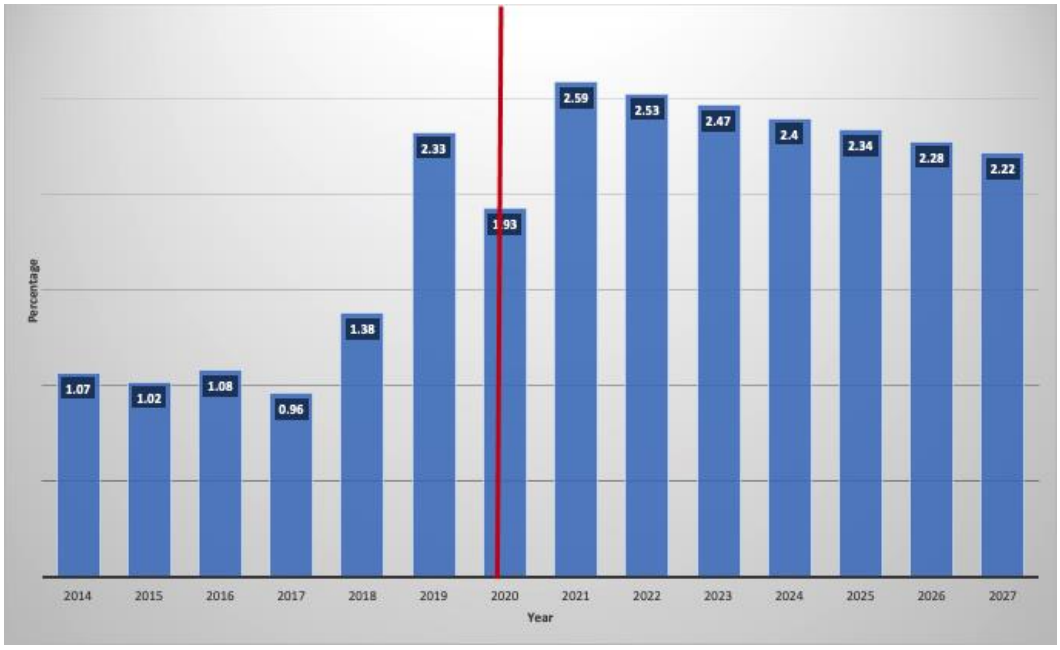

Figure 20. Global import market percentage of Russia for tuna (2014 – 2020) and projected values (2021 – 2027). Red light denotes year of report (source: Renub Research, 2020).

It is unclear what the impacts of the Ukraine-Russia conflicts will be for the tuna industry, but the situation has already affected other areas of the seafood industry and not just for Russia. According to Seafish (2022) "Russia accounts for over 40% of global whitefish production, although it's likely to be nearer 45% following the reduction in the US pollock Total Allowable Catch (TAC). It is the primary producer of Alaskan pollock (almost 60% share following the US TAC reduction) and produces over

30% of the global Atlantic cod supply and 25% of haddock". The UK is probably the most heavily reliant on imports to satisfy the whitefish domestic demand. In April, the UK planned to impose sanctions (35% export tariff for shipping to the UK) on Russian whitefish, but this was delayed due to the impact on the British seafood industry. Russian's seafood sourcing has also been restricted. For example, the EU has banned the import of Russian seafood (SeafoodSource, 2022). For Russia, import of products have also become more difficult and costly due to sanctions imposed on the country by the likes of the EU, the US, the UK, Vietnam, and Japan. This may leave an opening for Maldivian product if the country is willing to do business with them.

It is also not just direct trade of seafood product which is likely to be affected. Russia also accounts for almost 60% of the world production of sunflower oil, although the impact could be some time being seen. In response to sanctions imposed by EU, sunflower seed and oil exports were banned. This inevitably will have an impact on the tuna canning industry, even if it is only for one of the product lines which uses oil as the can media.

4.6.8.1 Current situation and product entry requirements

The price of tuna varies greatly in Russia depending on the product. Fillets of yellowfin are being sold for RUB 1,695.10 per kilo Fishnet to consumers, which is just over US$22 per kilo. As with other countries, there are specific requirements that fishery products must fulfil when being imported into Russia. Customs payments generally include import/export customs duties, taxes, and customs processing fees.

Federal Law No. 289-FZ, applied since September 4, 2018, established the specifics of customs regulation in Russia in accordance with the provisions of EAEU law. The following elements must be included in order to gain a customs declaration.

- Country of origin certificate.
- Transport documents, for example bill of lading and air waybill.
- Commercial documents, such as invoices and documents for payment for the goods.
- Technical information about the product. The document should come from the manufacturer of the product. For example, quality certificates, safety data sheets and must reflect the data that is mentioned in the declaration to confirm the HS Code.
- Documents confirming the declared customs value. The minimum list of documents is as follows: price list (official offer of the seller), export declaration of the country of the seller with translation, documents for setting previously released goods under this contract for accounting, and if the delivery is the first under the contract, then a letter stating that the delivery is the first and you cannot provide such documents.

Illegal, unreported, and unregulated (IUU) fishing

No information could be found surrounding ways Russia check imported tuna have not been caught illegally other than a certificate of origin is required with any shipments and in order to get through customs.

Quality and labelling

There are a large number of regulations and standards regarding quality and safety of food products, including seafood, in Russia. All establishments wishing to export fish and seafood to the Russian Federation must be approved by the Russian authorities (Federal Service for Veterinary and Phytosanitary Surveillance (VPSS) – Rosselkhoznadzor) (Seafish, 2012). New rules for veterinary-sanitary inspection of aquatic biological resources will come into force in Russia in March 2022. Presently health certificates of shipments are required (VPSS website).

Labels for canned and preserved seafood should provide the product name, ingredients, name and address of manufacturer, grade (if any), net weight, nutritional content and value, storage requirements, date of production, shelf life, and Russian certification number. In the context of fresh or frozen fish, legal labelling requirements are set out in State Standard GOST R- 51074-2003.

Sustainability

Not much information could be found about the need for sustainable seafood in customer demand trends, but there are now several whitefish fisheries in Russia certified against the MSC fisheries standard. This is more likely to make domestic products more marketable internationally.

4.6.8.2 Barriers

The export market to Russia fell 98.6% between 2014 and 2019 (OEC, 2019). In 2016, Russia was ranked 129 out of 136 countries in the World Economic Forum's "Enabling Trade Index" for foreign market access, and 133 out of 136 countries for tariffs faced by exporters. Figure 21 shows the most problematic factors for importing into the country from the 2016 report.

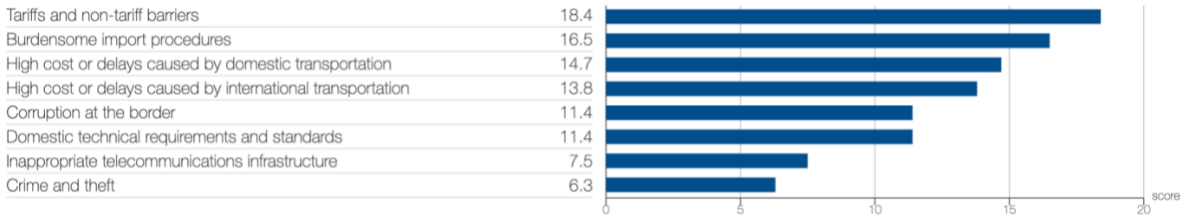

Figure 21. Most problematic factors for trading with Russia (source: The Global Enabling Trade Report 2016). From the list of factors, respondents to the World Economic Forum's Executive Opinion Survey were asked to select the five most problematic factors in their country and to rank them between 1 (most problematic) and 5. The score corresponds to the responses weighted according to their rankings.

The standard import duty for fish is 10% regardless of product form. Fishmeal is charged at 5% (Russian Federal Customs Service).

4.6.8.3 Advantages

Imports of fish is projected to be stronger than compared to the last decade. Russian imports were particularly low between 2014 and 2019 as a result of economic sanctions related to the conflict in Ukraine and during the next decade a change of trading routes and partners is expected (OECD/FAO, 2020). According to Seafish (2012) "Interest in more 'upmarket' seafood varieties can be seen just as clearly in the catering sector, where the most striking development is a proliferation of sushi bars. In Moscow there are an increasing number of specialist fish restaurants".

Further to this, there is currently a ban on imports of food from the United States, Australia, Norway, Canada, and the European Union imposed in response to Western economic sanctions has also resulted in a large decline in fish imports and higher consumer prices. This again provides an opportunity to provide tuna and tuna products to Russia. These are more likely to be tuna for sashimi and sushi, with the cuisine becoming more popular in the country (N. Novikova, ForSea Solutions, pers. comms.). Russia already has a free trade agreement with Vietnam, which is a leading exporter of fish for human consumption and a competitor of the Maldives, but Vietnam appears to be exporting fish such as farmed *Pangasius* and surimi. China is also a dominant exporter to the country but the main product here is Alaskan pollock (Seafish, 2012).

4.6.8.4 Next steps

Currently there are two companies in the Maldives who are authorised by VPSS to export fish into Russia. These are VEDRO and the Platax Group (VPSS website), both of whom export tuna to Russia, there has already been some success in reaching this international market. Platax for example specialise in exporting to Russia, offering products such as chilled yellowfin to frozen skipjack, destined for sushi restaurants or as bulk containers.

E-commerce is another market which seems to be trending, with the likes of Fishnet offering a wide range of products for delivery all over Russia. Many of the products on this website are coming from China, but there is certainly a market for Maldives product, especially in fresh and frozen form, such as loins, fillets, and saku fillet. There is less of a market for canned tuna, so exporters should focus on the higher quality, larger species for trade.

4.6.9 United Arab Emirates (UAE)

The UAE is a member of the Gulf Co-operation Council (GCC) which includes Saudi Arabia, Oman, Kuwait, Bahrain, and Qatar. The country has a population of approximately ten million people, of which over 80% are expatriate (Seafish, 2020b). Additionally, 80% of food is imported and only 30% of seafood is sourced domestically.

As a Muslim nation, tuna's halal status was considered briefly. As a fish with scales tuna are considered halal ("Lawful to you is what you catch from the sea and (use) it for food as provision for yourselves and for the travellers…" – [Qur'an 5:96]). Further to this and the method of slaughter "'A man asked the Prophet: 'O Messenger of Allah, we travel by sea, and we take a little water with us, but if we use it for Wudu', we will go thirsty. Can we perform Wudu', with seawater?' The Messenger of Allah said: 'Its water is a means of purification, and its dead meat is permissible' (Sunan an-Nasa'i 59. Book 1, Hadith 59).

4.6.9.1 Current situation and product entry requirements

Back in 2014, the Middle East and North African (MENA) region was reported to consume 50 kilos of seafood a year by capita. (SeafoodSource website, 2014). In 2014, the GCC imported 56,436 tonnes of prepared tuna and skipjack, valued at more than US$263.5 million (Market Access Secretariat (Canada), 2015). In 2019, 1% of the Maldives total exports arrived in the UAE. In five years, the export market grew 139% to a value of US$2.52 million dollars (OEC, 2019). According to Seafish (2020b),

consumers are increasingly demanding convenient food. Frozen fish imports reportedly grew substantially in 2019 (Seafish, 2020b).

To import fishery products into the UAE, levies must be paid depending on the source and destination of the goods being moved, applicable laws and perhaps most importantly, whether there are any trade agreements between the UAE and exporting country (International Trade Administration website, 2021). For most food items, the tax is 5%. Products entering the country need to be registered with either ZAD or the Dubai Municipality. Only locally registered companies can complete such registrations.

Illegal, unreported, and unregulated (IUU) fishing

No information could be found surrounding ways UAE check imported tuna have not been caught illegally.

Quality and labelling

A health certificate for the incoming product must be supplied with each consignment, authorised by the Government Entity. The original certificate is submitted to the inspect at the port of entry during consignment inspections. Labelling must be in both Arabic and English or just Arabic. The label must show the following information:

- Brand name.
- Product name.
- Ingredients.
- Production and expiration dates.
- Names of food manufacturer, packer, distributor, or importer
- Net weight or volume
- Country of origin
- Product barcode
- Lot (batch) number
- Mentioning the ingredients which may cause allergies
- Language of the label should be in Arabic. Approved stickers could be used to translate the food labels.

Sustainability

There appears to be a growing awareness amongst consumers of buying fish from sustainable fisheries, but otherwise not much information was found on sustainability requirements or markets in UAE.

4.6.9.2 Barriers

There are no current trade agreements between the UAE and the Maldives, so trade talks may need to be held between governments to gain preferential tariffs or free trade. From an operational perspective, to sell in the UAE an agent or a distributor is mandatory. Agents are hired to distribute, offer, negotiate the sale or purchase of goods on the foreign company's behalf in the UAE market.

Termination of agents is extremely difficult due to amendments to Federal Law passed (Commercial Agency Law) in 2015. The amendments prevent the termination, or non-renewal, of a commercial agency unless the principal has a material reason to justify the termination or non-renewal (ITA website).

4.6.9.3 Advantages

There is also already a good trade relationship with the UAE, which in 2019 provided 24% of the Maldives imports (OEC, 2019). UAE's strategic positioning between Europe, Africa, and Asia means that the country is easily accessible to 33% of the world in four hours and 80% of the world in eight hours (Seafish, 2020b). It also has links with major shipping routes and is host to a thriving tourist trade as one of the world's leading destinations for high quality hospitality and food. Additionally, consumers are increasingly seeking healthy and convenient food options, such as canned tuna (Seafish, 2020b).

Given the reliance on imported food, one of the major priorities of the UAE government is to encourage local production to achieve sufficiency by 2051. Seafood security will not happen overnight, and this may translate into an opening for trade deals with country easily accessible to the Maldives by air or sea. UAE is the highest consumer market for seafood among the GCC countries. Although not the most popular imported fish (salmon), tuna is in the top five. With international visitors seeking luxurious foods such as sushi and sashimi, the Maldives is also well-placed to provide fresh and frozen loins of yellowfin and bigeye tuna to meet the demand.

Given the need for fast delivery of products, the ease at which products can reach the customers' destination is important. According to IATA: "A key aspect of the quality of air cargo services relates to the ability to undertake transactions electronically. Electronic processing of cargo transactions can create time savings, reduce costs and administrative burdens as well as offer possibilities of enhancing the service offering. The eFreight Friendliness Index (EFFI) measures actual penetration of electronic transactions in air cargo shipments and logistics chains". The UAE is the top performer on the EEFI and could come into consideration when the impacts of Covid on air freight subside.

4.6.9.4 Social

There are currently no ethical market requirements for seafood imports in the UAE, however an 'emerging trend is consumer interest in sustainability. In the UAE, the government launched a campaign in partnership with the WWF entitled 'Choose Wisely', educating consumers on the sustainability of fish' (Seafish, 2021). This initiative is similar to other ranking systems which includes a colour code based on how sustainable a particular seafood source is. There is no direct mention of social sustainability on Choose Wisely, however given the growing trend of environmental sustainability, social sustainability may follow.

4.6.9.5 Next steps

Retailers such as super- and hypermarkets are the most reliable and important channels for fresh fish, on volume purchasing ability alone, but also the ability for such establishments to maintain high quality produce. There are several routes to entering the market in the UAE. "Most of the larger

distributing companies cover all sectors in the trade, including hotels/service industry and retail. The majority of hotels in Dubai prefer to buy products through a well-established local distributor. In addition, a good distributor should be able to offer advice on the local market, product potential and detailed import regulations. The average importer mark-up on food products is about 10-15 percent. Most distributors supply the retail and/or the food service industry including hotels, restaurants, catering companies and airline companies. Some larger well-established distributors supply the retail industry and describe themselves as sales and marketing support service companies. They work extensively around the year on product launches, advertising, public relations, events, and exhibitions (Seafish, 2020b)". Well-known seafood distributors in the UAE include "The Deep Seafood Company", "Fresh Express", "Wet" and "Asmak". Ensis have already had success with sending their tuna to Dubai (pers. comm.).

4.6.10 United Kingdom

4.6.10.1 Current situation and product entry requirements

The value of Maldives exports of tuna into the UK almost tripled between 2017 and 2018. In 2018, the value of tuna exports were $14.3 million USD and canned skipjack entering the country attributes to 38% of total exports of that product. As can be seen in Figure 22, processed skipjack in the dominant product being imported into the UK.

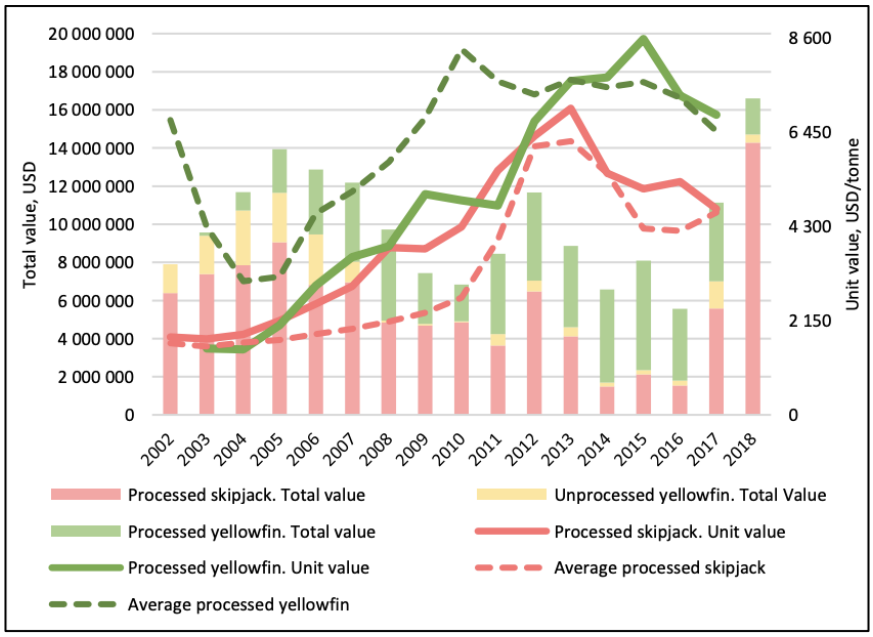

Figure 22. Maldivian tuna exports to the United Kingdom, 2002 – 2018 (source: FAO, 2021a).

Favourable markets in the UK and Northern Ireland (and Germany) in 2018 attributed to 75% of exported processed skipjack from the Maldives (FAO, 2021a). Maldivian exporters such as Horizon Fisheries are currently exporting canned tuna to the UK.

According to DEFRA, (2021) "To import most fish to the UK from another country (excluding EU fish into Northern Ireland), you'll need to get a validated catch certificate from the competent authority of the country where the fishing vessel is registered or licensed".

The format of catch certificates will vary depending on which exporting country produced them, but they will all ask for specific information such as:

- Vessel details.
- Species and commodity code.
- Weight.

If your fish has been processed or stored in a country other than where the fishing vessel is registered or licensed, you'll also need the following documents - they'll need to be endorsed or issued by the competent authority in that country:

- Processing statement.
- Documents showing the fish was stored before export.

These documents help combat illegal, unreported, and unregulated (IUU) fishing. UK freight imports will be checked by port health authorities in Great Britain (England, Scotland and Wales) or fisheries authorities in Northern Ireland."

Non-EU, non-European Economic Area (EEA) or non-European Free Trade Association (EFTA) countries, such as the Maldives, can only enter their product into the UK at a border control post (i.e., specific sea ports or airports identified by the UK government).

4.6.10.2 Barriers

Following Britain's departure from the European Union on 31 December 2020, Maldivian exporters found themselves imposed with a tariff of 20% in the U.K. market. The Maldives re-joined the U.K. Commonwealth in February 2020. According to an interview with the High Commissioner, Dr Faizal, the Maldives co-champions the Commonwealth Blue Charter Action Group on Sustainable Coastal Fisheries. But it is the only small island development state (SIDS) on which the United Kingdom imposes an import tariff. All the other Commonwealth SIDS have zero tariffs on their tuna exports on the basis that they are either part of a trading bloc or they have specific economic partnership agreements (EPAs) with the United Kingdom. Ahmed Shiaan, Ambassador of the Republic of the Maldives to the EU and non-resident Ambassador to the UK at the time commented in 2017 on the prospect of trade in the face of Brexit. Instead of two parties being involved the Maldives and the EU, it is actually 28 (now 27 without the UK), i.e., the Maldives and the 28 states of the EU. "This compounds complication: the deal must satisfy 28 sets of differing needs and priorities. If one nation feels an industry of theirs is threatened, the bloc moves as one, closing ranks and pricing incoming goods out of competition. Bilateral free trade agreements are preferable; two parties, two sets of needs, one solution (Brexit Central website, 2017)".

4.6.10.3 Advantages

The export market to the UK continued to grow up to 2019, which were the latest figures found. OEC (2019) valued the 2019 export market at $11.9 million USD. According to FAO (2021a), the MSC

certified status of Maldives skipjack has created a stable source of value-added exports for the Maldives due to consumer awareness.

In December, the UK signed a free trade agreement with Australia and has a deal in principle lined up with New Zealand (UK Government website). In the latter stages of 2021, the UK also began talks with the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) and is in the process of trying to secure trade deals following Brexit.

4.6.10.4 Social

In the United Kingdom, many retailers have responsible sourcing policies which include social sustainability such as Tesco whose suppliers are bound by the Tesco Ethical Trade Requirements. They are working with Sustainable Fisheries Partnership to undertake a human rights risk assessment of the UK supply chains.

Food originating outside the UK needs to have been produced to the same minimum standards as the ones that apply throughout the EU (Seafish, 2021). There are initiatives such as the Yonder and the Food Ethics Council which promote sustainable food imports. The Food Ethics Council is a specific advocate for ethical policy for food. In January 2019, the UK ratified the International Labour Organisation Work in Fishing Convention 188 indicating that labour rights are becoming increasingly important in the UK market.

The Trade and Agriculture report March 2021 recommends that to 'align with public attitudes for ethical trade, the UK should include a labour chapter and Corporate Social Responsibility (CSR) provisions in all FTAs.' This is something that UK also wants to be a leader on domestically in addition to imports. In addition, the Food Ethics Council 2021 states 'questions are increasingly being asked of the UK government and Devolved Administrations about what food the UK should or should not import in the future, from where and under what conditions.' As a result of this, the Trade and Agriculture Commission are being given a more active role in scrutinising trade deals. NGOs also play a significant role in influencing UK retailer decisions (Table 7).

Table 7: Organisations in the UK influencing trade imports for ethical requirements.

Organisation	Description
Seafish	Tools for Ethical Seafood Sourcing signposts stakeholders to resources that can help businesses manage and reduce the risks associated with labour issues and worker welfare.
Seafood Ethics Action Alliance (SEA Alliance)	The SEA is a group of businesses working together to ensure ethical supply chains. The alliance will agree on best practice solutions to ethical issues within the supply chain. It refers to the British Retail Consortium's Illegal, Unreported and Unregulated Fishing Advisory Note (2015) and ILO C188.

UK Government – Modern Slavery Act 2015	Modern Slavery Act 2015 - Seafish guidance on how companies can consider the content of the act within their supply chain – the Act requires large corporations to report any risks of slavery and/or forced labour within their supply chains.
Sustainable Seafood Coalition (SSC)	Voluntary Code of Conduct on Environmentally Responsible Fish and Seafood Sourcing – 'members have policies that consider social and ethical challenges in seafood sourcing in their supply chains.' – relevant to own-brand products – the Sustainable Seafood Coalition is a partnership of UK businesses. Their vision is that all seafood sold in the UK comes from sustainable sources. 'supply chain buyers have tremendous leverage to set and promote new norms.' – members represent all sectors of the UK seafood supply chain. There are 46 members in the UK who have signed up to the Codes of Conduct.

4.6.10.5 Next steps

Both exports and imports have decreased in and out of the EU following Brexit from January 2021. 52% of all trade in the first ten months of 2021 were with non-EU countries. As mentioned above in Section 4.6.10.3, the UK is open to discussions on trade deals. The Maldives mainly imports fuel, aircraft, wood, prefabricated buildings, iron and steel, telecommunication equipment, vegetables, and cement, some of which may be able to be satisfied by UK exports (Figure 23), as trade would be mutually beneficial. The Maldives sustainable tuna products in exchange for the UK's fuel, manufacturing materials and equipment.

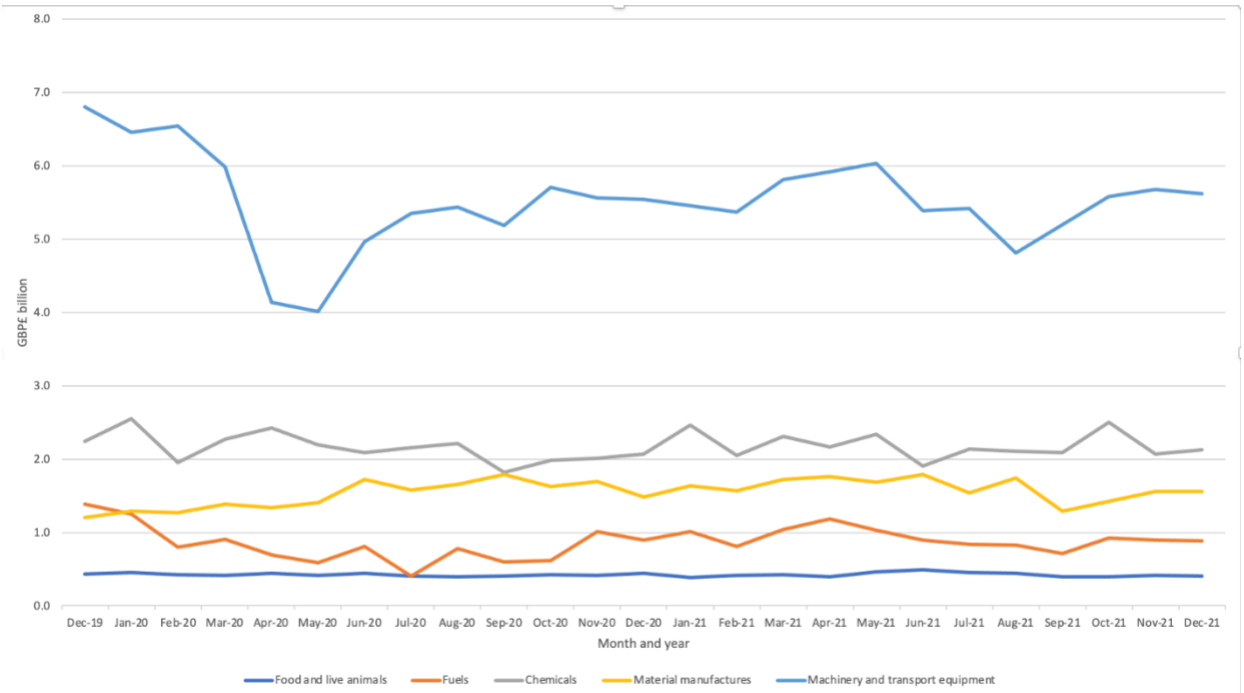

Figure 23. Non-EU goods exported by the UK by commodity December 2019 to December 2021 (source: Office for National Statistics)

4.6.11 United States

4.6.11.1 Current market

Strong demand for processed tuna persisted in the North and South American markets in 2020. In the United States of America, the largest market supplies were dominated by Thailand (53%) (FAO, 2021a). According to Renub Research (2020), there was a 17% increase in imports of canned tuna products in 2020 as a result of the COVID-19 pandemic. In addition to canned products, consumption of sushi, including sashimi is increasingly popular. There has been an upward trend in the amount of product in terms of value and volume towards 2018 (Figure 24). Imports by the US are projected to increase over the next decade by 3.9% (OECD/FAO, 2020). "The United States is a key market for unprocessed yellowfin, with exports worth USD 8.1 million, the majority of which was fresh. Unit values are high, with unprocessed yellowfin from the Maldives standing at 17,471 USD/tonne in 2018, the highest of any significant exporter" (FAO, 2021a).

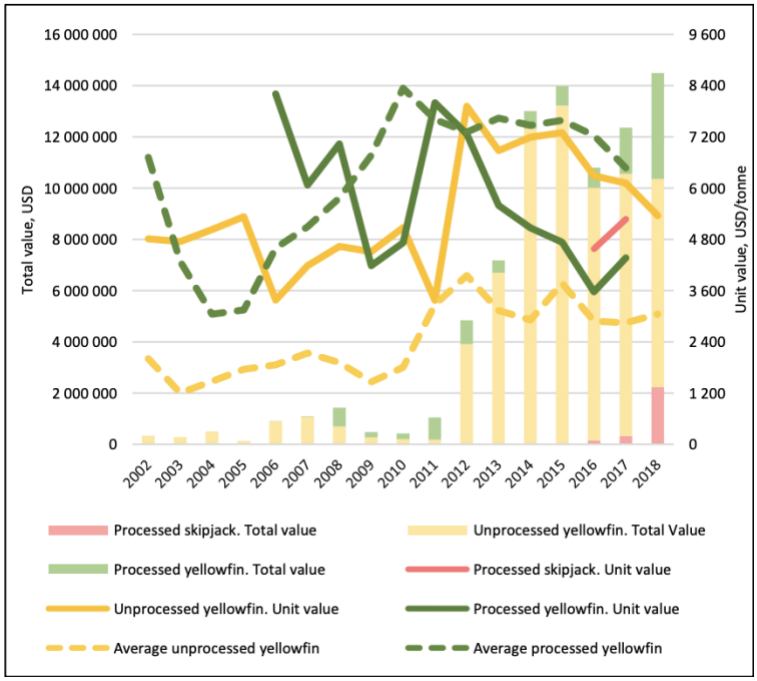

Figure 24. Maldivian tuna exports to the United States, 2002 - 2018 (source: FAO, 2021a).

With respect to value-added products, the most valuable was canned yellowfin, which was worth $3 million USD in 2018. Canned skipjack does not have the same export history as yellowfin, being exported for the first time in 2016. It was however worth a significant value to the Maldives at $2.2 million USD in 2018 (FAO, 2021a)".

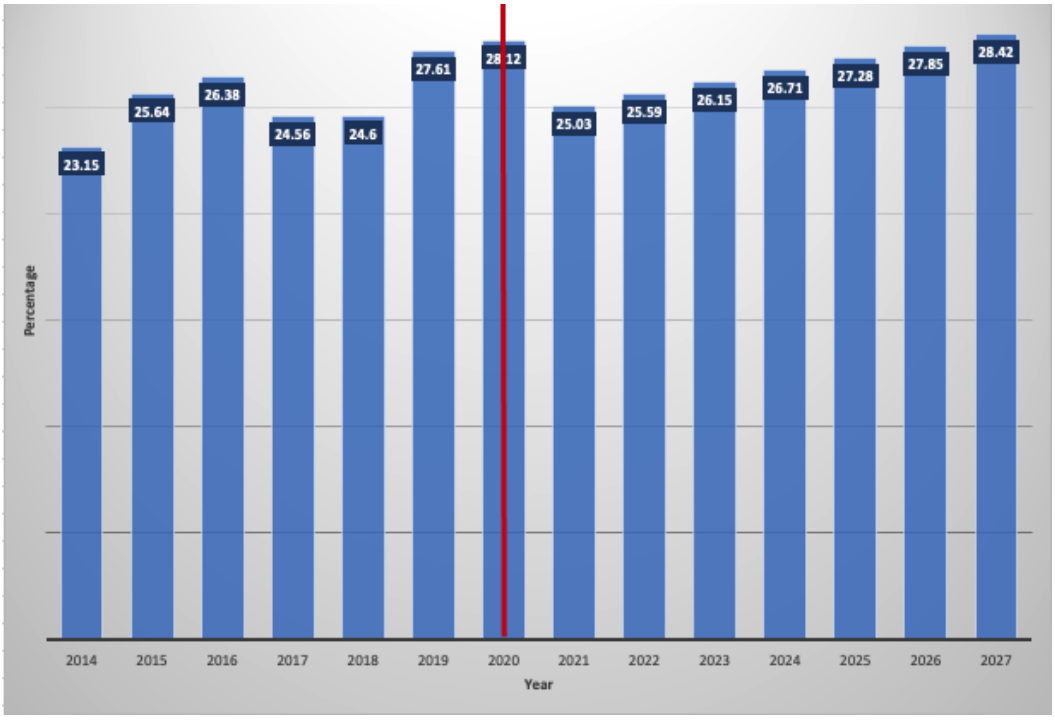

Figure 25. Global import market percentage of the US for tuna (2014 – 2020) and projected values (2021 – 2027). Red light denotes year of report (source: Renub Research, 2020).

The US is still the largest import market for air-flown fresh tuna, sourcing fresh tuna from the likes of the Marshall Islands and Federated States of Micronesia in the western and central Pacific Ocean. The import market has grown in value from $231.7 million USD in 2014 to $370.1 million USD in 2020. It is projected to be $679.9 million USD by 2027 (Figure 25) (Renub Research, 2020).

The US market is characterised by at least three options for first sale of imported tuna (and other pelagic species); one) auction / wholesale market, two) importing company, and three) branch office of exporter. The whole fish or loins can be sold at auction and the price determined by demand and supply at that time. However, these wet fish auctions are becoming less popular and instead buyers go to the importing company or exporter branch office. Importing companies will have agreements with suppliers all around the world and then wholesale to retail or food service customers. Websites such as Fish Choice list US seafood importers and can be a link to buyers. Since prices for fresh products vary greatly these sources can provide information on the latest prices and trends.

Other longline tuna companies / countries facilitate international trade via branch offices in the USA. These offices can deal with import requirements and also set up a network for facilitating sales and deliveries. Some examples of this in practice can be found online for example from central America or the Pacific Islands where similar species, products as found in the Maldives are exported to the USA via a branch office located in the market.

Maldivian exporters such as Horizon Fisheries are currently exporting canned tuna and tuna in retort pouches to the US.

4.6.11.2 Current product entry requirements

There are several regulations which imported products should conform with in order to be permitted to enter the US.

Illegal, unreported, and unregulated (IUU) fishing

All tuna and tuna products (other than fresh tuna) imported into the United States must be accompanied by a NOAA Form 370, Fisheries Certificate of Origin (FCO) and an International Fisheries Trade Permit. The FCO must include information such as the type of fishing gear, total net weight, trip dates, name of the harvesting vessel, details of the importer and exporter, species description, product form, and the dolphin-safe condition of the shipment.

Quality and labelling

The Food & Drug Administration (FDA) is responsible for the safety of all fish and fishery products entering the United States. They require compliance with its seafood HACCP regulations. Additional regulations affect processors and important subject to the seafood HACCP regulation. For imported seafood the FDA may inspect foreign processing facilities, sample seafood arriving in the US, and inspect seafood importers, amongst other checks. The FDA conducts its seafood safety oversight activities in conformance with its statutory authorities, which have recently been expanded by the Food Safety Modernization Act (FSMA). Part 123 of the Code of Federal Regulations (CFR) covers sanitation and process controls for fish and fishery products.

Since tuna flesh turns brown on freezing it is possible to add carbon monoxide gas (CO) to the fresh tuna before it is frozen in order to turn it pink. The frozen 'pink' tuna can then either be sold frozen or defrosted without it becoming discoloured. Unlike in other countries discussed in this report, CO can be injected or packaged with the tuna to induce the pink colour (DAWR, 2018).

A further consideration is that fish are one of the eight foods identified by US Congress in the Food Allergen Labeling and Consumer Protection Act (2004). There are therefore strict requirements on what information labelling of fish products must include, including on foodstuffs imported into the country. Country of Origin Labelling (COOL) regulations must also be followed.

Sustainability

In addition to the anti-IUU document requirements for catch, the shipment must also be accompanied with its statement and certificate as to its "dolphin-safe[8]" status. According to Harvard Law School, "Under the Biden Administration, U.S. regulators are on the verge of mandating greater transparency from all companies on their sustainability initiatives. While many companies have a long history of focusing on sustainability issues, communicating those initiatives to stakeholders is a relatively new endeavor. And stakeholders are evolving their demands for company sustainability disclosure faster than ever before, especially on critical issues like climate change and diversity". ESG themes and metrics matter to US enterprises, for example retailers, so sourcing seafood from selective and

[8] "In order for tuna to qualify as "dolphin-safe" in the United States, U.S. regulations require a written statement from the captain of the vessel, in most fisheries worldwide, certifying that no purse seine net or other fishing gear was intentionally deployed on or used to encircle dolphins during the fishing trip in which the tuna were caught, and that no dolphins were killed or seriously injured in the sets or other gear deployments in which the tuna were caught (NOAA website)."

responsible fisheries is being prioritised. Large retailers such as Walmart have sourcing policies which asked suppliers to supply either MSC-certified, FIP and other standards to ensure sustainable production and sourcing throughout the supply chain. Tuna producers such as Thai Union and StarKist also require similar commitments from their seafood suppliers.

4.6.11.3 Barriers

Any fish, including tuna, packed in an oil, products will be subject to a 35% tax. This is because the oil in the can or pouch itself is taxed. This was initiated to protect the domestic canning industry which suffered from competition from imports rendering US tuna packing unprofitable. The tax also sought to equalise the difference in production costs between the US and competing companies at the time, such as Japan (US Tariff Commission, 1953).

Other preserved products are also subject to import taxation, but not as significant as the above example. Prepared or preserved tunas and skipjack in airtight containers, and not in oil are subject to a 6% tax. These additionally have specific quantitative limits set by the National Marine Fisheries Service (NMFS) of the United States

4.6.11.4 Advantages

The US market was the third fastest growing export market for the Maldives between 2014 and 2019. It grew 85.2% to a value for the country of US14.7 million dollars (OEC, 2019). Even through the 2020 and the Covid pandemic imports from the Maldives significantly increased 52%. The Maldives has contributed minorly to the total volume of imported frozen tuna fillets into the country (201 tonnes in 2020 compared to 11,295 tonnes of the same products from Indonesia in the same year) but the with supplies down from the major importers (Indonesia, Vietnam, and the Philippines), a gap in the market may be available for Maldivian products (FAO, 2021b). On top of that, and contrary to the situation with canned tuna, fresh and frozen products do not receive duties when being exported in the US. This means the Maldives will receive a higher price per kilo. This is because the Maldives is still a GSP beneficiary.

As a pole and line fishery, all tropical tunas caught in the Maldives EEZ and therefore their products can be sold to the US with confidence with respect to being “dolphin-safe”. Tuna caught in India, Sri Lanka and other countries bordering the Indian Ocean have additional requirements under the Dolphin Protection Consumer Information Act due to the prevalence of the use of gillnets in the country and the gears’ association with cetacean mortality. As the Assistant Administrator for Fisheries in the US has not determined any observer programmes for and tuna vessels in the above-named governments to be acceptable, tuna caught in India and Sri Lanka are not permitted to enter the US. The Maldives therefore has a market advantage over their neighbours through the fishing practices already employed. In addition, sustainable seafood has a real place in the US market, and this is unlikely to change, leaving a place for Maldivian tuna at the US seafood table.

4.6.11.5 Social

The US prohibits any shipments to enter the country if there is evidence of forced labour on board the vessels. Both the US Customs and Border Protection (CBP) and ‘the importing/exporting community

have a shared responsibility to maximise compliance with laws and regulations. In carrying out this task, CBP encourages importers/exported to become familiar with applicable laws and regulations and work together with the CBP Office of Trade to protect American consumers from harmful and counterfeit imports by ensuring the goods that enter the US marketplace are genuine, safe, and lawfully sourced' (CBP, 2021).

The CBP (2021) states that any 'merchandise produced, mined, or manufactured, wholly or in part by means of the use of convict labour, forced labour, or indentured labour under the penal sanctions is prohibited from importation, provided that a finding has been published to section 12.42 of the CBP Regulations.' The CBP issues Withhold Release Orders (WRO) to prevent imports produced in whole or in part in a foreign country using forced labour.

4.6.11.6 Next steps

Products to target exporting into the US are chilled and frozen product forms. These could be whole, H&G, fillets, loins etc. Prepared or preserved tuna and skipjacks, whole or in pieces, not in airtight containers, not minced; except in bulk or in containers over 6.8 kg, and not in oil would also be suitable for free entry into the US.

There are several options for routes into the US which other exporters may have success. Directly to retailers is one such opportunity. Given the US's preference for canned albacore, sale of fresh and frozen tuna products will have more success than canned skipjack. The use of importers is also a viable option. Importers sell products obtained (at a marked-up price) to a distributor, wholesaler, chain warehouse or foodservice distributor. The distributor will sell product into retail outlets. Most distributors are specialised, as some deal with certain supermarket chains, independents, etc. Sales brokers are another option. Working on a commission basis would be and may also charge retainers to work on introducing new products from smaller companies. Typical grocery commissions range from two to five per cent of the product's wholesale price.

Lastly, to raise US company awareness of the high-quality tuna products the Maldives can offer, exhibiting or merely trade shows such as the Seafood Expo in Boston is a useful event. Held in March each year, it brings together more than 20,000 buyers, suppliers, and other seafood industry organisations.

4.7 Conclusion

The Maldives has relatively high production costs when compared to other competing countries. Baseline costs are hampered by the country's geography and reliance on importing materials to produce final tuna products. As some countries are not willing to pay for sustainability, the production costs either have to come down, the quality improved, or initiate FTAs to reduce the cost per kilo the exporters are paying.

Sustainability has not historically been the primary driver of trade and product prices. Leaders in sustainability have not been financially rewarded and companies that are not managing risk effectively are on an even playing field with those that do. In the case of tuna, the primary driver is different

depending on the type of product. For fresh tuna, quality is paramount when it comes to trade. Essentially the most environmentally and ethically caught fresh product could not garner a premium or potentially sell on the market if it were not of good quality. The same is true to a slightly lesser extent for frozen tuna. For canned products, as the quality of the fish is not as good to be sold fresh or frozen, its destination is as value-added products. Here volume is the most important attribute (N.Radix, BlueYou, pers. comm.).

Seek bilateral or plurilateral rather than multilateral trade agreements

When there are only two or a small number of parties involved in a trade agreement, these are easier to ratify. As tariffs help the domestic producers of those countries, imposing the tariff by making the local product more competitive on the global market. It would be more beneficial to the Maldives to form new relationships, alliances, and trade agreements rather than introduce tariffs of their own, which merely instigates retaliation. The Maldives can export to Australia, Canada, China, Japan, and UAE, and the US without paying import duties. All of which have demands for tuna products, in particular high-quality chilled and frozen tuna such as yellowfin. The successful conclusion to the yellowfin FIP in the Maldives would also boost sales from the sustainability aspect, but as long as fisheries are in comprehensive FIPs, retailers will still source from those fisheries. Equally, as discussed above, quality of product will garner the premium, not its sustainability certification.

Covid-19 has made trade more difficult for the Maldives, again linked to its location. Increasingly the ability of countries to effectively compete in global trade depends on their ability to source intermediate goods cost-effectively from imports and similarly have the ability to export goods to other countries. Rapid and reliable transport of component parts is a key consideration for global value chains. Given the Maldives is a major tourist destination, many leading airlines head for Malé. Perhaps trade deals may be offered on the basis of reduced airfares for exported Maldives products for concessions on tourism for those countries discussed in this report.

Maldives to remove supply chain 'intermediary' countries such as Sri Lanka and Thailand.

The Maldives export most of their tuna to countries like Thailand and Sri Lanka, who perform the transformation from the raw product to value-added. Horizon Fisheries for example ship their whole frozen tuna to Thailand. One suggestion would be for Maldives to produce more value-added products themselves and export the products to the countries directly. As discussed earlier in the report, processed skipjack offers a significantly higher unit price than unprocessed exports. This is estimated to be 50% higher for dried skipjack and 250% higher for canned product. The proportion of skipjack processed in the Maldives has fallen from 30% in 2010 to just 13% in 2017 of the total volume of skipjack exports (FAO, 2021a).

Target specific companies

The Maldives exporter Ensis, the main challenge is reaching to the end customers (supermarkets). As mentioned in a number of country profiles, direct dialogue with retailers may offer a solution to reaching the consumer market. For example, in 2016 BlueYou Consulting made a market exclusivity agreement with Norpac Fisheries Export for the promotion and sales of their Philippines branded tuna for the US retail and food service market. Other options for retailers may be in Canada or the US, which demand high, no import taxes, and sustainability commitments, there is certainly a market for

raw fresh and frozen tuna. E-commerce is equally another option, with more consumers than ever buying online in the wake of the Covid-19 pandemic. The online giant Alibaba already sells shelf stable products such as cans, pouches and jars are already sold on the website.

Other tuna products.
Diversification of the products could prove beneficial to the Maldives' tuna processing industry. FAO (2021a) provide the following reason: "European processors rush to fill their stores and take advantage of lower prices. Demand does not typically start to return until the middle of the year when stores begin to dwindle. As such, it is hard to guarantee benefits due to the first-come, first- served nature of this tariff quota. Given that catches peak in November and December, it seems possible that the Maldives could take advantage of this. However, it would require building up processing capacity, combined with operational and coordination with local operators in the European Union".

Increase of other fishing methods to satisfy markets. Discrete use of longliners or increased handlining effort to target the sashimi fresh market for higher cost per kilo. From a sustainability marketing perspective, there are multiple MSC-certified longline fisheries for albacore, bigeye, and yellowfin tuna already in the Pacific and Atlantic Oceans. At the time of writing the report in 2022, there were no longline fisheries in the Indian Ocean. The first was certified back in 2012. With demand for sashimi-quality tuna high in the markets discussed in this report, even if MSC-certification was not sought, there would be a market for the tuna caught. As previously discussed in the report, the market will pay for high quality tuna and select that attribute over sustainable product.

Longlining and handlining is permitted under the Fisheries Act (2019) but is not a significant source of catch currently for the country. As mentioned in Section 4.5, the pole and line method of catching tuna can result in a reduction of quality depending on what happens to fish as they leave the hooks. Regardless of this however, the fish are struggling on the line when they are caught, which leads to faster flesh deterioration. Secondly, smaller fish are not handled by hand, but instead swung into the storage wells filled with chilled RSW or onto the boat deck. Longlining allows a higher quality of tuna to be obtained as fish have time to rest before being hauled. Careful handling reduces the damage to the fish also, again promoting flesh quality. For larger fish caught by handline, they are gilled, gutted, and bled before storing on flake ice immediately after harvest (Maldives tuna FIP), thus preserving quality.

Bait is also a consideration, as pole and line gear uses different bait to longline. Sourcing bait would need to be changed from live bait caught in the Maldives to whole fish suitable for placement on longline hook, this might reduce fishing pressure on the local bait stocks. According to Anderson (2009) "Maldivian tuna fishers are the least efficient in the world when it comes to baitfish utilisation. They take on average something of the order of 9kg of tuna per 1kg of bait, compared to 12 - 30 kg of tuna taken elsewhere". The status of baitfish stocks is not well known. There has been no formal, quantitative stock assessment of any stock. Different bait is used for longlining of course, depending on the species and the size of the fish to be caught (ICCAT, 2008). With respect to trade deals with Japan, a suggestion could be to provide a commitment to source Japanese bait for longliners in exchange for supply of the longline tuna to Japan.

Yellowfin in the Indian Ocean is overfished and subject to overfishing (Section 4.5.1). As can be seen from Table 8, the majority of fish caught by the pole and line fishery are immature. This reduces the reproductive capacity of the stock as juveniles are being removed prior to being able to contribute to the population. A switch to other gear types may not only improve the quality of the yellowfin but also help to reduce the pressure on juveniles in the Indian Ocean.

Table 8. Average length of the catch and percentage of immature and mature yellowfin tuna caught in the Indian Ocean per gear between 2000 and 2019 (source: Global Tuna Alliance website from IOTC data).

Gear		Pole and line	Longline	Hand line	Troll
Average length		51.0 cm	125.7 cm	119.1 cm	96.9 cm
Catch per gear (in weight)	Immature	98.8%	2.1%	6.6%	3.3%
	Mature	1.2%	97.9%	93.4%	96.7%

Whichever international market is targeted the export products must be the correct size and colour in order to be accepted by the buyer. For yellowfin tuna this means that individual fish should be at least ten kilogrammes or larger with prepared loins ranging from three to six kilogrammes each. Fresh yellowfin must be of a red colour and without brown or white shades. Discolouration can be caused by many factors but handling during and immediately after capture ensuring bleeding and chilling is carried out properly is the most important.

Social recommendations

If the Maldives is to effectively market the social sustainability of its fisheries the following recommendations should apply:

- The Maldives should identify the most salient human rights risks within its fisheries and put improvement action plans in place to address them. There should be base line data to be able to inform a risk assessment, this can be collected by conducting social audits in the fisheries together with looking at the data from the certified fishery.
- Take the necessary steps to fully ratify the Cape Town Agreement putting safety at sea at the forefront. The 2019 FishWise Vessel Transparency Report has a recommendation for companies to either engage directly with countries to ratify the agreement or can encourage supply chain improvements to support international agreements. These conventions are used to monitor the situation within the fisheries and minimise the risk of any illegal, unreported, and unregulated fishing, whilst also improving working conditions for fishers.
- Creation of an action plan for the promotion of the social conditions in the fishing industry in the Maldives to show that the human rights issues in-country as not necessarily representative of what is happening within the fisheries.
- Support the expansion of the dual-certified fishery.

4.8 Development of other products for international market

Apart from the tuna species discussed in the report above, there are several other species which may have a place on the international market. Production of other species has generally grown between

2010 and 2018. The exception being elasmobranchs, when all shark fishing was banned in 2011, along with the ban on large-scale fishing methods. 2018 production is shown in Table 9. Production of other species is limited when compared to skipjack and yellowfin tuna but may be an option for expansion.

Table 9. Production of 'other' species in the Maldives (2015 – 2018) (in tonnes) (source: FAO, 2021a).

Species	Binomial name	2015	2016	2017	2018
Frigate and bullet tunas	*Auxis thazard, Auxis rochei*	117	143	344	339
Swordfish	*Xiphias gladius*	84	223	310	310
Kawakawa	*Euthynnus affinis*	222	30	160	91
Blue marlin	*Makaira mazara*	17	101	50	91
Marlins, sailfish, etc.	*Istiophoridae*	30	237	16	43
Wahoo	*Acanthocybium solandri*	10	1	39	41
Dolphinfish	*Coryphaena hippurus*	37	2	17	20
Albacore tuna	*Thunnus alalunga*	1	15	3	11
Dogtooth tuna	*Gymnosarda unicolor*	46	11	22	10
Striped marlin	*Kajikia audax*	3	57	5	3

Billfish species are currently exported to Sri Lanka in salted form. Some Maldivian exporters are also selling fresh and gutted emperor (*Lethrinus conchyliatus*) and grouper (*Epinephelus flavocaeruleus*) (Big Fish Maldives pers. comm.) destined for Germany and the Netherlands. China is a top importer globally for species such as wahoo and marlin species. There may also be room for billfish in Japan along with tuna. A JFA report in 2016 showed that 12% of seafood consisted of tuna and billfish (Seafish, 2020a). Increased volume and export of these species may be aided by a change in fishing practice, for example pelagic longline, troll, or handling as opposed to pole and line gear.

5 Objective 2 – Recommendations for ensuring the quality and safety of national fisheries products

2.1 Formulate a national framework for traceability and quality assurance, across value chains of the commercially most important fisheries.

A key aspect of improving profitability of a fishery is the provision of excellent fish hygiene and processing. This will increase the standard of produce in the market and improve access to export markets. The most effective way to do this would be to improve handling of fish on the boats including chilling catch immediately on ice. Microbial activity is responsible for spoilage of most fresh fish products. Huss (1988) noted that a "large drop in temperature when icing tropical fish has a pronounced effect both on the microbial flora and autolytic enzymes. By keeping them at low temperatures, their expected shelf live can then be prolonged (Huss, 1995). 'Fatty' fish such as tunas benefit particularly from rapid chilling. Sharp declines in shelf-life has been seen when these fish were exposed to sun and wind for four to six hours before chilling, due to the oxidation of the lipids in the muscle (Huss, 1995). Huss (1995) also noted that it was not just temperature that accelerated spoilage but the combination of sun and wind, which initiated autocatalytic oxidation (self-digestion) of flesh.

The project team therefore interviewed several producers and exporters in the Maldives to understand their processes and investigate whether any changes need to be made in order to reach new global markets.

5.1 Current frameworks for traceability and quality assurance

There is not a national framework for either traceability or quality assurance. Instead, those aspects of product requirements are governed by the customers' specifications. Nevertheless, there is a general process that is followed depending on out the final product for both traceability and quality assurance (QA). Horizon Fisheries report that the only difference between the varying customers in terms of product requirements for traceability and QA is on the labelling, packing, and cleaning grades of the product.

For traceability this begins with the allocation of some kind of lot number, whether that is for a load of fish or individual. Product identification includes description of the product, weight, grade, packed on, best before date, batch number, exporter, importer, date, month, and year of production. The traceability codes will be clearly marked on each product. All purchased materials and components are identified with unique numbers, codes, or names. The identification is the same as is used in drawings, specifications, bills of materials and purchase orders etc. Materials and components are identified by marking, labelling, or tagging the packaging or containers holding them, and when appropriate and practiced by labelling the products themselves. Fishing logbooks, catch certificate, captain's statements and invoice are often included in the consignment where the ownership of the fishery product changes. This maintains clear traceability processes from the inception of the supply chain.

On the QA side of things, there are several attributes which are always checked regardless of the intended final product. The temperature of the fish's backbone is always checked. A health certificate is kept for every 'batch' of fish purchased or handled. Histamine levels in the fish are also tested and monitored. These checks are done on a sample basis for hauls of smaller fish, for example skipjack headed for canning or each individual fish in the cases large bigeye and yellowfin. Production specific processes are now discussed below.

5.1.1 General product flow for canned product

In all styles of skipjack and yellowfin tuna products, traceability starts from fishing vessel (Dhoani). If landed directly at the processors, the lot number is denoted by the day the fish arrive in port. These run sequentially throughout the year. If the fish arrive by collector vessel (about 30 tonnes capacity with refrigerated sea water (RSW) or chilled sea water (CSW)), then each collection is considered as one lot, regardless of the number of days it takes to fill the vessel (normally one to six days). If the fish is purchased by a "mother vessel", which has freezing facilities onboard, each vessel load is considered as one lot, unless there are very large quantities of fish. In this situation rather than the lot number, source and received date is more commonly used to identify it.

Regardless of the source, once designated the lot number will stay with the product throughout storage, thawing, butchering, pre-cooking, cleaning steps until fed into cans, pouches, or packets. The product code is formulated with pack style, medium (oil, spring water, brine etc.) packed, machine (line) produced, with the date, month and year of the production printed on the final product. A bill of lading and invoice accompanies all shipments leaving exporter facilities.

The following QA checks are followed for canning operations:

- Fish is chilled immediately after purchase – there is regular monitoring of the chiller (RSW).
- The surplus fish are frozen for later used – there is regular monitoring of the cold storage.
- Thawing frozen fish – there is regular monitoring of fish backbone temperature to prevent over thawing.
- Butchering – removal of viscera.
- Pre-cooking inspection – cooking fish by steam to achieve certain backbone temperature.
- Cooling – Cool the fish to certain temperature using water cooling system.
- Cleaning – Removal of bones, skin, blood meat.
- Filling the fish into can – cleaned fillet of fish fed into filling machine.
- Weight check – there is regular monitoring of weight, flake percentage, cleaning defects (bones, blood meat, skin etc.).
- Media (brine, water/oil) added to the cans and the quantity is checked.
- Double seam inspection on empty can before and in every two hours intervals.
- Visual seam inspection for seaming defects in every 15 minutes during canning operation.
- Metal detection of the cans.
- Retort process inspections (temperature and time).
- Chlorine checks on retort cooling water.

- Finished product evaluation (weights check, histamine, appearance, flake percentage, number of loins, cleaning defects, taste, texture, color etc.).
- Labelling and packaging inspections.
- Incubation check.
- Mercury test.

5.1.2 General product flow for fresh product

As with canned products, traceability also begins from the vessel. Unlike products designed for canning however, high quality large yellowfin and bigeye tuna can be tracked from individual fish. Tuna destined for premium products such as chilled loins, chunks, and cubes will be received by sites which have processing capabilities. Each fish is numbered individually, which acts as individual 'lot numbers', and the finished product will be identified by the fish's number throughout its various transformation processes, which is used for traceability. There are a few factories where barcodes are generated for each fish. The barcode consists of information of the fish (grade, weight), vessel (name, fishing licence number, registry number), date & time etc.

The following QA checks are followed for fresh, large yellowfin and bigeye for sale as whole, loins, chunks, and cubes:

- Core sample test on large individuals.
- Colour, weight, temperature.
- Vacuum packing.
- Labelling inspections.
- Packaging (in regiform boxes) inspections.
- Metal detection.
- Histamine, providing an analysis report.
- Microbiological tests.
- Mercury test.

Large individual high-quality tunas in whole form are packed in cardboard boxes with ice packs inside belly and gill cavities.

For frozen tunas destined to be sold as whole or loins, similar inspections and checks occur:

- Temperature monitoring of the freezers (both air blast and brine).
- Backbone temperature checks after freezing.
- Regular cold store temperature monitoring.
- Packing in plastic bag inspection (for tuna loins).
- Packaging inspection (for tuna loins).
- Metal detection.
- Reefer hold / container temperature checking.
- Loading inspection (tally sheet).

For katsuobushi and maguro, the following QA checks are run:

- Torry meter[9] reading.
- Boiling time/duration check.
- Boiling water temperature checks.
- Backbone temperature of fish.
- Smoking time / duration.
- Metal detection.
- Packing inspection.
- Temperature of finished product store.

The processes for traceability and QA are common to all Maldivian producers interviewed for this work, which in some respects could therefore be considered as an informal framework for both processes.

With respect to mandatory regulations or certification in the Maldives, exporters explained that the only required documents for quality is the compliancy audit certificate (EU Regulations and HACCP) from MFDA (Maldives Food and Drug Authority). Companies are already following hygiene and quality requirements for all destinations to which they export, for example the EU and the US.

Certified status of fishery products such as MSC fishery and Chain of Custody (CoC) or Friend of the Sea (FOS) Wild are sometimes requested by customers, but often the products are not sold as or at a 'certified' premium though (Big Fish Maldives, pers. comm.). Where products are to be sold as MSC-certified etc., MSC fishery and CoC certificates are included in shipments; and when shipping to the US, this also include a dolphin-safe certificate (Section 4.6.11.2). Producers/exporters in the Maldives also commonly have British Retail Consortium (BRC) certification, ISO 22000, and their own Standard Operating Procedures (SOPs), Sanitation Standard Operating Procedures (SSOPs), and Good Manufacturing Practices (GMP) for quality, all of which are verified by external bodies.

5.2 Recommendations for development across value chains

As there is no framework for either traceability or quality assurance, an analysis of gaps is not relevant as Maldivian tuna products are clearly successfully exported annually through the processes already in place. The fact that the exporters interviewed are meeting customers' product specification demands, a formulised national framework may not be necessary. This section therefore investigates potential additions to the processes already in place for traceability and quality assurance for Maldivian tuna products.

5.3 Conclusion

Using information collected for objective 1, it is evident that the requirements for origin, labelling, quality, and traceability do not vary much, if at all, per country investigated. Verification of the source

[9] A torry meter is used to determine fish freshness. Certain dielectric properties of the fish skin and muscle alter in a systematic way during spoilage, as tissue components degrade. These alterations, occurring at microscopic level, are strongly associated with the gross changes in appearance, odour, texture, and flavour which take place during spoilage, and which are normally used to judge freshness. Hence, determination of the appropriate dielectric properties gives a measurement of the freshness of the fish.

fishery is required, either through catch certificates required by the EU or through similar documentation. EU is still the most dominant destination for seafood by volume and value (Rabobank, 2019), so other countries like the US and Japan, may align their import/export processes to facilitate ease of trade. Essentially, if an organisation can successfully export to the EU, it can export anywhere.

Given tuna's potentially high market value, quality is also of the upmost importance and the QA checks listed above is also routine. For canned tuna it is volume that determines the price, i.e., large quantities of fish are needed to make its sale lucrative, as the quality of the fish is less when compared to larger individuals and species sold on the chilled and frozen markets. For the chilled and frozen markets, quality determines the price, as fish are sold in lower volumes but for significantly higher prices per kilo. Exporters interviewed for this project already take great care in preserving the marketable traits of tuna and tuna products to meet customer demands and expectations.

With respect to labelling, in Japan and the 'westernised' countries researched at least, label requirements are very similar. This is on the basis of consumer awareness and protection. Names of foods, country of origin for fresh fish and preservation methods for processed marine products must be contained on the food label, to aid consumers identify potential allergens. The EU also has legislation to ensure common marketing standards to keep unsatisfactory quality off the market and facilitate commerce based on "fair competition".

6 Objective 3 – Facilitation of value chain development for mariculture products

3.1 Design quality assurance training for mariculture entrepreneurs.
3.2. Propose selected certification mechanisms for aquaculture commodities, in order to improve their marketing and increase profit margin.
3.3. Analyse and recommend opportunities for soft loans for mariculture entrepreneurs.

Aquaculture is still a growing sector globally, although most production consists of carp, shrimp, pangasius, molluscs and seaweed in China and other southeast Asian countries. Currently over 400 different species are raised worldwide, although some of these are only in an experimental capacity (Bray, 2018). In terms of marketability, aquaculture products have several selling points. Production of fish compares well against terrestrial protein sources with regard to carbon dioxide (CO_2) emissions (Brown, 2011). Over the years, as production has increased, the use of fishmeal and fish oil per tonne has become more efficient. Marine sea cages reduce the risk of water quality deterioration and changes to sedimentation rates if their locations are chosen wisely and are also temporary and can be modified or removed if necessary. With careful monitoring of the necessary attributes, and continuation of technology advancements, aquaculture practices are capable of adapting to address issues much faster than wild capture fisheries. Mariculture is part of the Maldives' Blue Economy work and may be an important marine revenue for the country's future.

Consumer awareness for sustainability, animal welfare, and social impacts across the marine sector has increased, meaning companies are looking to third party certification schemes to demonstrate their good practices in order to gain a market advantage over similar products.

6.1 Current mariculture in the Maldives (species, operations, processes, issues/barriers, markets)

Two species known to be of market value and already exported from the Maldives have been discussed here.

6.1.1 Species

Grouper

Groupers are high-value fish which are enjoyed in the Middle East and Asia. They are familiar to consumers and have a stable market demand, which makes the species a candidate for expanded culture. From the family Epinephelidae, there are 163 known species of grouper from 16 different genera.

Groupers have been intensively fished since the 1960s (FAO, 2020). Several grouper species are on the IUCN Red List as endangered or even critically endangered in the case of the Nassau grouper. This is due to illegal practices globally used to capture the fish, including explosives and cyanide. As demersal, long-lived species they are vulnerable to fishing pressure. In the Maldives, export of group has grown since the 1980s. According to the Blue Marine Foundation (BMF) in 2016, writes "Larger

fish have selectively been removed and fishers are targeting spawning aggregation sites. Recent catch data show that for the ten most commonly exploited species of groupers, 70% of individuals are taken prior to reaching sexual maturity, meaning that they had not had a chance to reproduce before being caught". Farming grouper therefore relieves pressure on wild stocks and helps to maintain their natural coral reef habitats. According to Global Seafood Alliance, the top producing countries at the moment are China (61%), Taiwan (14%) and Indonesia (13%), followed by Malaysia (9%).

Grouper ranching has already been tried in the Maldives (Figure 26). There was a project in 2016 project between the Ministry of Fisheries and Agriculture (MOFA) and BMF. Here grouper were ranched and grown to marketable size prior to being sold and shipped to Hong Kong. The fish grown were captured on the local reefs. This still poses sustainability issues as there is a wide-capture element of the fishery.

Figure 26. Grouper ranching in the Maldives (source: BMF).

Wild capture with ranching is not the only culturing option. Several species of grouper have been successfully reared using the indoor hatchery (Figure 27), including *Epinephelus maculates*, *E. fuscoguttatus*, *E. coioides*, *E. lanceolatus*, *Plectropomus leopardus*, and the hybrid Sabah giant grouper. Giant grouper is a very high-quality white-meat fish that grows quickly – reaching 15 to 25 kg in three years versus the growth four to eight kilo salmon in the same period. As a demersal fish species, they also have better feed conversion than salmon.

Figure 27. Grouper hatchery (source: Global Seafood Alliance).

With respect to potential markets, there are a couple of general options. Firstly, as whole, or other processed forms such as fillets. These can be sent frozen or chilled with tuna products. Secondly, there is a market for live fish in China, Taiwan, and Korea. This is a more logistically and technically difficult with the need to keep the fish alive and healthy in transit. The grouper export market was worth $5.2 billion dollar company in 2020. The top export flow in 2020 was from India to China, with an export value of $208 million (Tridge website). India and Indonesia (Figure 28) is also a competitor to the Maldives when it comes to exporting grouper. China is also the biggest importer of grouper, so could also be a potential destination for Maldivian grouper. Unless freight costs decrease, it might not be worth the Maldives targeting the US, who already imports grouper from the Caribbean.

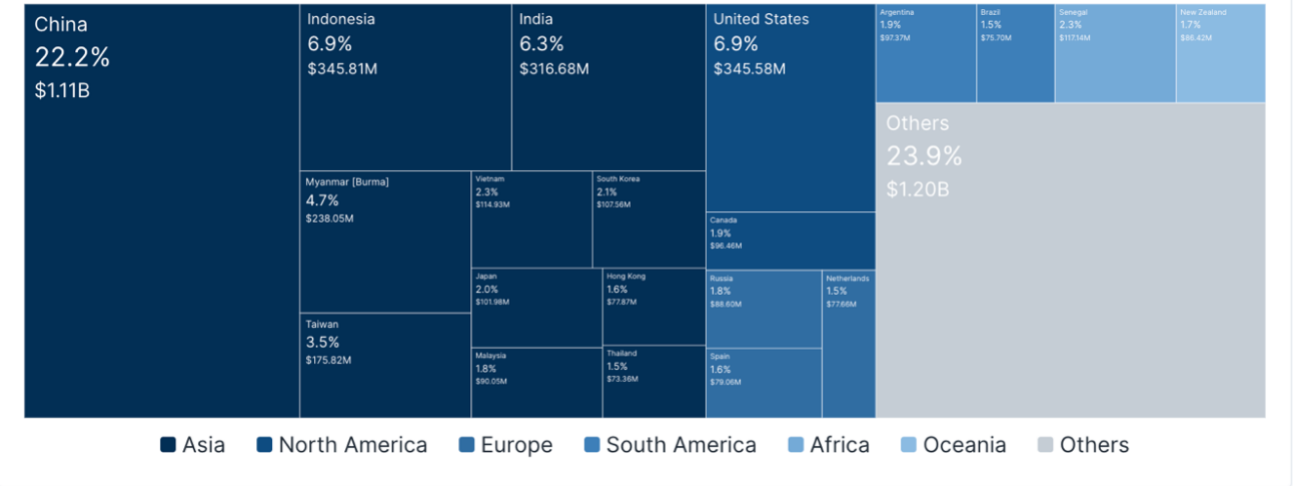

Figure 28. Top exporting countries of grouper in 2020 (source: Tridge website).

Sea cucumber

Sea cucumbers are used for food and traditional medicine in southeast Asia, and there has been a trade for this relative of the starfish since the 18th century (EC, 2021). Of value in Japan is "konowata", "konoko" and dried muscle of sea cucumber, which are high-priced delicacies (FAO, 1988). There are various tropical species. *Holothuria scabra* for example, a native species of the Maldives, can go for US$ 120 - 200 per kilo (SCC, 2015).

Reef Resilence produced a manual on farming and suggest that "farming is carried out in pens constructed from extruded plastic mesh in near shore coastal areas. It is prudent to start operations with medium sized pens (ca. 1000m^2) in order to simultaneously minimise risk and generate significant revenues, until farmers have mastered the key parameters for successful farming. The future intensification and expansion of farms will depend on the performance of the farmers". The growing of sea cucumbers is easier and cheaper to operate than finfish. As sediment feeders, they can be grown naturally in lagoons with limited structures. There is no need for artificial feed in the hatchery or grow out phases, and there is no need for antibiotics. If grown in completely indoor systems (perhaps more challenging in the Maldives with limited land space), continuous spawning is possible for production.

Other island nations have had success with sea cucumber culture. For example, in 2009 farming began in Madagascar in collaboration with the NGO Blue Ventures. Apart from creating new income for local communities, the farms, typically located in shallow lagoons, the holothuroids help oxygenate sediments and cycle nutrients between sediment layers on the seafloor. They ingest and excrete large amounts of sediment, enriching the surrounding areas with dissolved nutrients, which in turn helps to keep the local ecosystems healthy.

In terms of international markets, Hong Kong is the top importer of sea cucumbers. It receives sea cucumbers in frozen, dried, salted, in brine and smoked product forms. It has an export value

estimated at US$ 276.71 million. Presently the top exporters include Canada, Japan, Taiwan, Malaysia, and Hong Kong.

6.1.2 Challenges and considerations

As with any kind of farming, there are challenges associated with operations. From a tariff perspective, Maldives mariculture products are likely to experience similar issues to tuna products.

The key operational issues are considered below.

Diseases

Unlike wild systems, aquaculture and mariculture production can be affected by disease. Infections by bacteria and viruses at larval stages have been attributed to inconsistent seed supply which limits the growth of fish culture (Hazreen-Nita et al., 2019). For groupers, fingerling production has suffered due to major mortalities from severe nervous necrosis virus (NNV) infection that resulted from careless farming behaviour. At the grow-out stage, grouper have been found to be infected by NNV, Iridovirus and bacterial pathogens such as *Vibrio* species, *Aeromonas*, *Streptococcus* and parasites. By keeping larvae and fingerlings in closed systems, there has been success in keeping the fish virus-free.

Diseases are typically controlled by the eradication of pathogens, treatment with antibiotic or chemotherapeutics, and/or by preventative measures such as the use of probiotics or vaccines. This poses a further problem, antibiotic resistance. This is accelerated by the excessive use of antibiotics, posing a growing threat to human and animal health (He et al., 2021). Environmentally friendly probiotics have been introduced to aquaculture practice in the last decade to replace pathogenic bacteria with beneficial bacteria transient in the gut. Frequent or overuse of chemicals causes persistent presence in the water, sediment, and the fish end products (Cheng Yun Chieng et al., 2018).

To limit the use of chemical, whether as treatments or prophylactics, good husbandry and operating procedures is essential. The following actions are considered best management practices (CT Department of Agriculture, 2021):

- Fish must be obtained from reputable, experienced, disease-free hatcheries/wild-caught.
- For closed systems, fish should be quarantined and acclimated with water from the production system to reduce stress prior to introduction into production units.
- For open systems such as sea cages, appropriate site evaluation is essential and should include an evaluation of the adequacy of water resources and water quality, waste management, and infrastructure such as roads and airports.
- Fish health should be routinely monitored visually for signs of disease, abnormal behaviour, and changes to feeding behaviour. All observations should be recorded for each production tank or pond. If a disease is suspected or observed, fish health experts should be contacted. Establishing a relationship with fish health experts prior to a disease outbreak will help to expedite diagnosis and treatment.
- In closed systems, water quality should be maintained by both physical and biological filtration and the parameters should be monitored regularly, results recorded, and variations from optimal ranges should be corrected.

- In open systems, water quality should also be regularly monitored, although less of an issue than for closed systems as tidal cycles provide water turnover, although flushing times should be evaluated as part of site selection.

For sea cucumbers, SKin Ulceration Diseases (SKUDs) are often seen in both closed and open seapens operations. SKUDs have been observed in six holothuroid species from nine countries. SKUDs can be induced by bacteria, viruses, or abiotic factors (Delroisse et al., 2020). Bacterial SKUD is highly virulent causing death three days after detection of the first symptoms (Eeckhaut et al., 2003). SKUDs can also be induced without pathogens. Temperature and salinity were suggested to have a potential impact on the induction of SKUD. When arising in hatcheries, diseases can devastate production and undermine re-stocking programmes. Rapid protocols have therefore been developed to screen for disease and poor health. Identifying diseases in the hatchery is a pre-condition for their treatment and a pre-requisite for releasing juveniles into the wild for re-stocking or grow out farming (Purcell and Eeckhaut, 2005).

Wild sourcing and brood stock management

For groupers, the environmental impacts of sourcing seed and broodstock from the wild has caused issues for coral reef habitats, especially because of the targeting of spawning aggregations and the use of cyanide (Johannes and Ogburn, 1999). Significant improvements have since been made in terms of broodstock management and breeding programmes, larval rearing, production of hatchery-reared fingerlings, and successful culture to marketable size (Cheng Yun Chieng et al., 2018). This reduces pressure on wild populations. According to Mutafa et al. (2015), founder broodstock originating from the wild population can be conditioned to live in hatchery tanks under suitable environmental and feeding conditions and is induced to breed. This will be a major consideration for any new installations of grouper mariculture in the Maldives.

Sea cucumbers have also had issues with depletions of wild populations (Baker-Médard and Ohl, 2019). In support of a sustainable utilisation of the sea cucumber resource in the Maldives, an efficient management plan of action should be a priority that should consider all the different levels of the "Holothurian system". This should extend to seed collection for the mariculture sites. Another challenge and consideration is whether it is possible to have rearing facilities (Figure 29) to grow larvae to a size whether they can be put out in sea pens in lagoons for the grow out phase. If rearing is possible, it is beneficial for the sustainability of the wild populations, but more expensive to set up and operate, and more technical to run than wild collection straight for grow out. They have to be biosecure and temperature controlled, sterilising sea water through a filtering ultraviolet UV system to reduce the likelihood of disease. Australia, China, Ecuador, Kiribati, Madagascar, Malaysia, New Caledonia, and Vietnam are already known for hatchery-reared production of sea cucumbers.

Figure 29. Sea cucumber rearing facilities. A: Hatchery unit with larval culture tanks; B: Indoor nursery tank with settlement plates; C: Phytoplankton room with *Chaetoceros* sp. cultures; D and E: Outdoor nursery tanks holding juveniles > 10 mm in size; F: Seawater storage and filtration system (source: Vaitilingon et al., 2016).

Compound feeds

With environmental sustainability being of key focus for the Maldives, a major concern with grouper aquaculture is its continuing reliance on the use of 'trash' fish as a feed source (Rimmer et al., 2016). This is less of an issue in the Maldives, with the use of nets banned by national law, but it raises the issue of how to feed grouper balanced diets to promote optimum health and growth in the grow out phase.

Compound feeds (usually extruded pellets) are available in most countries in the region, although many of these are generic 'marine finfish' feeds rather than dedicated species-specific feeds, especially when being grown out in floating cages. Research has been conducted and based on the findings should contain:

- Protein: 47 – 48 %.
- Lipid: 9 – 12 %.
- Protein/energy ratio: 26 g/MJ.
- n-3 HUFA: > 1.5%.
- Vitamin A: > 4000 IU/kg (retinol = 1200 mg/kg).
- Vitamin C: > 50 mg/kg (stable form, e.g., APM).
- Vitamin E: > 100 mg/kg (as DL-α tocopherol acetate).
- Vitamin B1: > 1.2 mg/kg.

Compound feeds are more expensive than trash fish not only on a per-weight basis, but also after taking into account feed conversion ratio (FCR) values (Rimmer et al., 2016). In remote islands in the Maldives, pellet feeds may not be available or difficult to source. Fishmeal processors in the Maldives may be able to help with sourcing however, making use of domestic tuna products for domestic aquaculture production.

For sea cucumbers feed is not an issue as, as deposit feeders, they have no need to be fed if grown out in local lagoons.

6.2 Traceability and quality assurance

From the interviews and research conducted with respect to the wild capture element of the Maldives' fisheries, it is clear that the exporters already have systems in place to allow for the traceability and quality assurance of mariculture products with only minor modifications to their SOPs to accommodate differences in the supply chain. Depending on the product, 'batch' would have a different definition. For example, a batch could be a harvest from the operations rather than a vessel's landing. The same quality would not necessarily be needed, for example histamines, but health, sanitation and harvest certificates would still be issued to provide customers with assurance of product origin and quality.

6.3 Applicable certification mechanisms

Certification of aquaculture products serves to provide customer confidence that the farmed product they are buying has been grown responsibly. It is a voluntary process for producers to demonstrate that their operations are complying with their national legislation, minimising, or not impacting the surrounding wildlife, habitats, or community, and using the best feed and non-harmful therapeutic products for disease prevention and treatment. The process harnesses market forces to improve sustainability, capturing consumers' willingness to pay a premium for sustainable products and then passing this premium on as a reward to producers who invest in improved practices and certification. Third-party accredited organisations assess the businesses against the respective aquaculture standard. Farms pay the auditing body to make the assessment and a separate fee is due to the standard-setter itself if use of its ecolabel is to be used on any products sold as certified in consumer-facing markets.

There are several well-known certification schemes for farmed fish and shellfish products. The value of these ecolabelling schemes may help to improve access to markets, particularly in North America, Europe, and the UK and in turn unit value prices. The applicability of these schemes for mariculture products from the Maldives is discussed below. It should also be noted that a 'Chain of Custody' scheme is also associated with these standards. This provides further assurance for buyers that the sustainable seafood chain has been maintained throughout the change of ownership process all the way to the consumer. It is therefore worth considering this element when applying for certification schemes.

The FAO guidelines identify a small group of internationally accepted sustainability and responsibility standards: Aquaculture Stewardship Council (ASC), Best Aquaculture Practices (BAP/GAA), Friend of the Sea and GlobalG.A.P. These are discussed below.

6.3.1 Aquaculture Stewardship Council (ASC)

The ASC currently has 11 standards for a range of cultured species. The "tropical marine finfish" standard includes grouper in the genera of *Epinephelus*, *Cromileptus*, *Plectropomus* and *Cephalophis*. This is most likely to be the only standard currently applicable for the species currently cultured in the Maldives. There are species which could be covered by this standard, including pompano (*Trachinotus* spp.) and snappers (in the genera of *Lutjanus* and *Ocyurus*).

Another benefit of the ASC is that standards include a social responsibility element with one of more principles covering worker health and safety, and fair treatment.

6.3.2 GlobalG.A.P.

The certification process requires a number of risk assessments in order to ensure food and workers' health and safety, and environmental protection. It also provides an evaluation as to where the farm is in relation to both the GLOBALG.A.P. requirements and the law. Control points cover general areas common to all farms, terrestrial or aquaculture and points specific to aquaculture businesses.

It has been successfully assessed against the Global Food Safety Initiative (GFSI) Benchmarking Requirements. The standard itself takes a modular approach to "integrated farm assurance" and for aquaculture can be applied to finfish, crustaceans, and molluscs. This may offer a wider range of species to be included in a certification scheme than ASC, which is limited.

According to the "Control Points and Compliance Criteria (CPCC)" benefits to producers by:

- "Reducing food safety risks in primary production by encouraging the development and adoption of national and regional farm assurance schemes and with a clear risk assessed HACCP based reference standard serving the consumer and food chain…"
- "Reducing the cost of compliance by avoiding multiple product audits on mixed farming enterprises by a single "one-stop-shop", avoiding excess regulators burden by proactive adoption of industry and by achieving global harmonisation, leading to a more level playing field."
- "Increase the integrity of farm assurance schemes worldwide, by defining and enforcing a common level of auditor competence, verification status, reporting and harmonising interpretation of compliance criteria."

Specifically, the aquaculture business must be able to demonstrate that it has considered the potential physical, chemical (including allergens), and biological hazards, site history, impact of the site on adjacent stocks and environment, as well as the health and safety of the species covered in the certification scope. Consideration of following elements, amongst others, must also be demonstrated to be awarded certification:

- Hygiene.

- Worker health, safety, welfare, and training.
- Waste and pollution management.
- Conservation aiming to enhance habitats and maintain biodiversity on the site.
- Product recall/withdrawal procedure.
- Traceability (if not all the products produced are within scope), including all fish movements at any life stage to and from the farm.
- Fish welfare, management, and husbandry.

For finfish, broodstock must either be obtained through a breeding programme or under the following conditions if wild caught:

- Broodstock have been legally caught.
- There is scientific evidence to demonstrate that supplementation is beneficial for farmed stock improvement.
- That planned reduction in wild broodstock use is part of the broodstock programme.
- There is credible evidence that the incidental allocation of animals to farming activities does not increase the impact to wild population and the ecosystem.

Compound feeds (animal- and/or plant-based feed materials to which micronutrients (vitamins, minerals) are added) used must be GLOBALG.A.P. certified.

Interviews with exporters identified this standard as one of which they were aware.

6.3.3 Best Aquaculture Practices (BAP)

Devised by the Global Seafood Alliance, BAP is another third-party certification programme. Designed for producers, the programme addresses four areas of sustainability, environment, social, food safety, and animal health and welfare. Overarching those elements are a set of traceability requirements. The BAP certification covers farming of finfish, crustaceans, and other aquatic invertebrates. They cover all production methods, including flow-through, partial exchange, and closed or re-circulating aquaculture systems operated in ponds, cages, net pens, tanks, raceways, or closed-containment vessels. Certification typically takes between 120 and 150 days. New applicant farms are expected to carry out a self-assessment against the Standard to ascertain their readiness for the third-party audit. As with GLOBALG.A.P., farms with growing and harvesting multiple species, the certification could cover multiple species within the one scope.

Emphasis is placed on documented procedures and records (e.g., permits, licences, environmental impact assessments (EIAs), suppliers) as well as evidence of relevant testing (e.g., heavy metals, contaminants, and antimicrobial agents) and use of only legally permitted chemical agents and hormones. Like the GLOBALG.A.P. programme, there is a social component which requires fair treatment and payment of workers, and consideration of the health and safety during operations. Farms are expected to ensure habitat protection for sites chosen for ponds and other landed-based systems. Loss of critical habitat for endangered or critically endangered species.

The first sea cucumber producer earned BAP certification in 2019. Its full production chain, including its hatchery, farm and processing plant was certified. As sea cucumbers rely on the natural

productivity of their surrounding environment for feeding, it is possible to certify the complete production chain.

6.4 Friend of the Sea - sustainable marine aquaculture standard

Established in 2008, Friend of the Sea is a non-governmental organisation (NGO) whose aim is to "safeguard the marine environment and its resources incentivising a sustainable market and implementing specific protection and preservation projects". Its Technical Committee consists of representatives from seafood industry, government, retail, other NGOs, certification bodies, education, and media. It uses qualified certification bodies (CBs) to provide certification on a number of areas including Omega 3 fish oil, sustainable shipping, and sustainable restaurants and retailers. Below the most relevant standards to the Maldives have been discussed.

The aquaculture standard covers 12 different areas. These topics are akin to BAP and GLOBALG.A.P., and include management of the aquaculture system, feeding, hazardous substances, disease and use of drugs, social accountability, and traceability. The scope of the assessment can cover all aspects of an operation, from breeding, product transformation, import, export, and distribution. It also covers a range of final products, i.e., fresh, frozen, canned, etc. It is essential that operations have clear and implemented management procedures and document control.

It is probably the least taxing of certification processes for operations of the aquaculture standards described here. Evidence is still required to be presented by the farm to provide the assessment team with confidence that the farm is in compliance with the standard, but the standard is perhaps less prescriptive than the ASC or others. As with other standard genetically modified organism (GMO), growth hormones and prophylactics are prohibited, and water quality and other parameters must also be measured regularly.

6.4.1 Other certification schemes.

In addition to seafood products, the market for live aquarium fish for export has also been included here as an alternative suggestion to value added products. There is a market for sustainable live fish, both for the aquarium and live food fish trades. As with sustainable food sources, there is a growing consciousness for the equivalent in the ornamental and aquarium trade. The global trade has increased in value over the decades, and aquatic organisms for home and public aquariums, along with associated equipment and accessories, is today said to be a multi-billion-dollar industry. In the Maldives, the marine aquarium trade started around 1979 (Saleem and Adan, 2004).

At the time of writing, Thornhill (2012) states that more than 40 million organisms harvested annually for the marine industry, some 2,000 species of fish, corals, and other invertebrates. At the time, very few of these species can be reared in captivity, the vast majority (approximately 95%) were taken directly from coral reefs in the most biodiverse regions of the world. Biondo and Burki (2020) estimated that the US and Europe are the main importers of fish for the aquarium trade but with no recent trade figures available for Japan and certain countries (e.g., China) or regions (e.g., the Middle East, Africa, or South America), and with their increasing commercial gravitas and number of public aquariums, they are likely to have increasing import volumes of marine ornamental fishes (Figure 30).

With the exception of New Zealand, Russia and some middle eastern countries, all the countries discussed under objective 2 import live fish for sale in hobby or aquarium trades (Biondo and Burki (2020)). In the US and other countries, sustainable procurement and promotion of marine conservation integration is growing. Association of Zoos and Aquariums (AZA) was established in 1924 and offers certifications to venues globally, with the majority in the US.

Figure 30. Blue tang swim in tanks at Bali Double C, in Denpasar, a large-scale exporter of reef fish founded by Conrad Chen, one of a handful of global traders. The fish will be bagged and boxed in preparation for a flight from Bali to the United States (Hall, 2018).

In order to be certified zoos and aquariums have certain requirements such as sustainable conservation initiatives are a priority, and conservation a key component of the institution's mission and messaging. Acquisition of animals for the zoos and aquariums from healthy, sustainable populations support the objectives of managed species programmes and the core mission of AZA members. There are 241 accredited sites, which includes SeaWorld and Busch Gardens Parks, Mote Marine Laboratory and Aquarium, and Monterey Bay Aquarium in the US, Atlantis in Dubai, and the Bahamas. The greatest hurdle to sustaining the aquarium industry is systemic change within the long supply chain towards traceability and better monitoring of wild harvest import and exports (Rhyne et al., 2014). Certification of sustainable live fish for aquariums could therefore be an additional source of revenue for the fisheries in the Maldives if this can be achieved.

The Friend of the Sea (FOS) programme is only remaining sustainable standard for the aquarium industry, with the Marine Aquarium Council (MAC) ceasing to exist from 2008.

6.5 Recommendations for Maldives' mariculture

For groupers, fingerlings raised in an indoor hatchery with established operating procedures and biosecurity exhibited much better grow-out survival than fingerlings from conventional hatcheries. Financial feasibility should therefore be investigated. For small-scale operations it is likely that the grow out phases are easier for small-scale producers to afford, but broodstock and hatcheries may be out of reach (Pomeroy et al., 2004). For those stages sizeable investment is likely to be needed, either from large private companies, sustainability loans (Section 6.6), or perhaps a government-run facility, from which farms may purchase larvae and fingerlings for their grow-out facilities. To date there have not been any certified grouper operations under the schemes discussed above, but apart from ASC, the schemes do not preclude grouper farms are in scope.

Sea cucumbers are growing in popularity in the aquaculture business. They are high-valued and there is always a demand for the Asian markets, in particular China. At present substantial supply is lacking from aquaculture. Given its landmass to EEZ ratio (298km^2 of land to 929,322km^2 of sea) and over one thousand islands, the Maldives is well-placed to begin to fill this gap, and in a sustainable way. "A successful hatchery programme can produce many millions of juveniles in a year, allowing a huge aquaculture operation to be entirely self-sufficient in supply. As aquaculture becomes more commonplace, the number of trained hatchery technicians will increase globally, enabling additional hatcheries to be built, further reducing reliance on wild stocks (Aquafeed, 2022)." A discussed above, the full production chain can be certified through the BAP certification programme. Equally in 2019, the first MSC-certified sea cucumber fishery was also certified.

What is important for both types of mariculture is the formation of national management plans, strategies and policies are a prominent part of the national coastal fisheries priorities. The management plan should be developed with the following concepts in mind, ecosystem approach, precautionary approach, community-based fisheries management, and adaptive management, with sustainable harvest for either broodstock or grow out phases at the heart of the plan's objectives. Implementation of catch and export documentation schemes should also be inclusive within management considerations. For example, movement of transportation, including export, should include certificates issued by authorised representatives (for example from MOFA). Harvesting of individuals from the wild should not take place without the presence of an authorised officer. Work with other government agencies (e.g., customs/border control, and biosecurity).

Linking grouper grow out cages and sea cucumber plots when also be a potential option for farmers in the Maldives. Sea cucumbers are more regularly being used for bioremediation[10]. By introducing sea cucumbers to penned sites under grouper cages, the natural recyclers could help to minimise the impact of waste on the seabed by feeding on fish faeces and excess food.

6.6 Funding opportunities for mariculture operations in the Maldives

This section investigates funding opportunities which may be available to mariculture operations in the country. There are examples of banks (such as Rabobank) and funds providing investment for aquaculture technology, initiatives and farming operations. However, it can be high risk though with

[10] Bioremediation – the process of using living organisms to remove pollutants and toxins.

many not finding economic viability and so specific investment funds such as the examples below have arisen to fund aquaculture development.

A good example of an aquaculture investment fund is Aqua Spark, a Dutch-based investor in aquaculture. In 2014 it became the first investment fund focused on sustainable fish farming. Aqua-Spark is a global investment fund based in Utrecht, the Netherlands, that is developing this optimal aquaculture food system by investing in companies all along the aquaculture value chain working to solve industry challenges, with a shared vision of a sustainable future.

Another such investment fund is HATCH which invests in companies to achieve the least-possible footprint of farmed and alternative seafood for the benefit of the oceans, terrestrial ecosystems, and future generations.

These funds recognise seafood as supplying a critical and growing part of the protein consumed in the world. By 2030, the world is expected to eat 20 per cent more fish than in 2016 – this increase can only come from aquaculture because we are already exploiting wild fish stocks. However, the funds insist on stringent environmental controls so that aquaculture development is carried out in a sustainable way.

An example of aqua-spark funding relevant to the Maldives is Indian Ocean Trepang, a sea cucumber farming operation in Madagascar. Next to its own farming sites, it has a substantial programme for local smallholders to function as outgrowers, in collaboration with local NGOs.

Indian Ocean Trepang grows, processes, and sells sea cucumbers to consumers worldwide, using a unique, low-tech, environmentally-sound model that gives low-income fishermen access to a growing and lucrative global market. They also partner with local fishing villages, to return sea cucumber farming back to its natural habitat, in the sea, and away from expensive facilities.

Another major supporter of aquaculture globally is IDH - the sustainable trade initiative, which co-finances aquaculture initiatives. They focus on small-scale producers in developing countries and their funding originates from European development organisations. For instance, the IDH Farmfit Fund signed a €1.4 million Euros investment deal into Chicoa Fish Farm, a tilapia farm in Mozambique. The investment is in the form of a convertible loan and aims to enable Chicoa to train smallholder farmers in raising Tilapia fish in cages and ponds. This will allow Chicoa to expand its capacity to supply these new farmers with fingerlings and feed. At the same time, the investment will support Chicoa in strengthening its supply-chain, creating a blueprint for the African aquaculture industry, and provide direct job opportunities for at least 350 smallholder farmers.

Another such fund is Mirova/Althelia which links investors to sustainable projects globally and operates a specific ‘Sustainable Ocean Fund’. They have an explicit focus on aquaculture and understand the sector including technology and risks. An example of their funding is an investment of US$ six million dollars in a company based in Indonesia that develops sustainability technology for the shrimp aquaculture industry.

Investors such as these (as explained on their website) are interested in contributing to a more sustainable industry which plays such a significant role in the local economy. The selling point for them is to modernise practices and making a quantifiable difference to the farmers, the value chain players, and the end consumer.

Governmental funds can be set up specifically for seafood (including aquaculture) due to it being a food security issue and opportunity for growth. Examples from Europe include the UK's Fisheries and Seafood Scheme, the Seafood Disruption Support Scheme, and the Seafood Response Fund. An example of funding is the English Aquaculture Innovation Hub that aims to help England increase its aquaculture output ten-fold over the next 20 years.

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8 Appendices – Country profiles

8.1 Australia

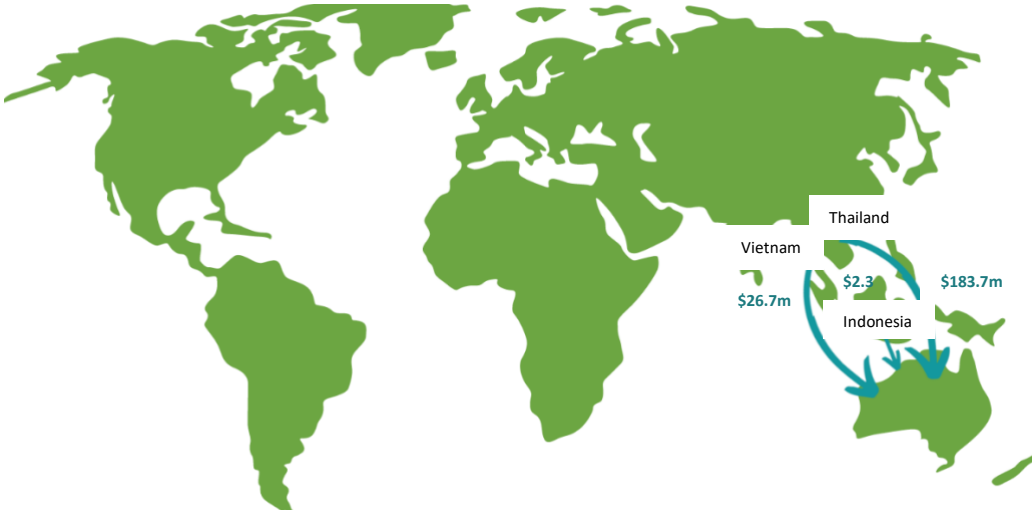
Total tuna imports	
Product forms by weight	Prepared/preserved inc. loins, canned skipjack, unprocessed yellowfin
Key importing countries (by volume)	Thailand, Indonesia, Vietnam
Imports from Maldives (2019)	555kg
Per capita seafood	25 kg

MARKET TRENDS

- Tunas, skipjack, and bonito were reported as the biggest import for the country, worth US$ 238,509,000.
- Significant sources of imports of canned tuna come from Thailand (US$ 166 million in 2020), of which some originates from the Maldives.
- Increase in popularity of sushi and sashimi products.

8.1.1 Import

Top importing countries (value imports US$): 2019



Source: UN ComTrade

8.1.2 Import Requirements

Tariffs	Potential tariff preference schemes	Requirements
• 0% for tuna & tuna-like species (live, fresh, chilled, frozen, fillets, dried, salted or in brine, smoked, meals and pellets).	• Maldives is a GSP	• Certificates of origin. • Australia New Zealand Food Standards Code to be followed. • Full traceability.

Key Opportunities:

- 0% tariffs on imports.
- Sustainability-minded country.
- High volume of seafood consumed annually per capita.
- Large demand for canned tuna, as well as tuna for sashimi and sushi.
- Bilateral trade agreement.

Key Barriers:

- No trade between Australia and Maldives currently, with majority of tuna coming from Thailand.

Channels into Australian market (source Seafish, 2019a).

8.1.3 References

Globefish Trade Statistics. Tuna. 2021. Q3.

8.2 Brazil

Total tuna imports	3.6 million kg (US$14.5 million)
Product forms by weight	Prepared or preserved skipjack, frozen tuna, fresh/chilled yellowfin
Key importing countries (by volume)	Ecuador, Japan, Thailand
Imports from Maldives (2019)	No trade
Per capita seafood	7.12 kg

Source: FAO, 2021b

MARKET TRENDS

- Imports dominated by canned tuna.
- 70% of tuna imported from Ecuador.
- Imports of canned tuna has decreased throughout recent years, unlike other South American countries.

8.2.1 Imports

Top importing countries (value imports US$): 2019

Source: UN ComTrade

8.2.2 Import Requirements

Tariffs	Potential tariff preference schemes	Requirements
• 10 - 35 %	• None	• Original bill of lading. • Original commercial invoice signed by the exporter. • Health certificate in Portuguese.

8.2.3 Sustainability

Brazilian consumers are not as aware of sustainability as elsewhere, for example the US or Europe, although this may be changing in the private sector.

Key Opportunities:

- In 2020, Brazil government tried to make trade simpler.

Key Barriers:

- High tariffs on imports.
- Complicated process to be cleared to export to Brazil.
- No trade between Brazil and Maldives currently, with majority of tuna coming from Ecuador.
- Tuna imports for all products decreasing.

8.2.4 References

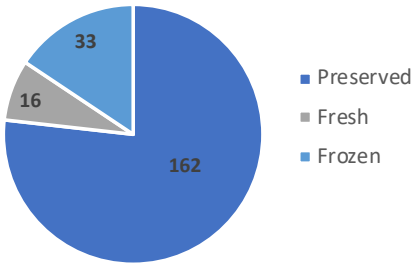
FAO. 2021b. Information and Analysis on World Fish Trade. Available at: https://www.fao.org/in-action/globefish/market-reports/resource-detail/en/c/1207658/

8.3 Canada

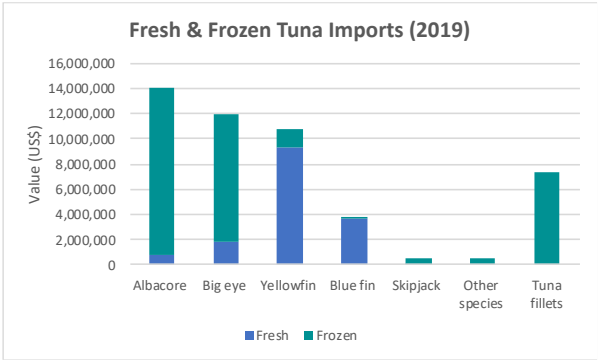
Value of tuna imports	$211 million (2019)
Product forms	Preserved, frozen albacore, frozen bigeye, frozen tuna fillets, fresh yellowfin
Key importing countries	Thailand, Vietnam, USA, Italy, Philippines, Indonesia, France, Korea, Japan
Imports from Maldives	80,257kg (2019): 99% fresh yellowfin
Per capita seafood	8.71 kg/capita (2017)

8.3.1 Imports

Imports: Product types for tuna, US$m (2019)



Source: UN ComTrade



Top importing countries (value imports US$): 2019

Source: UN ComTrade

MARKET TRENDS

- 75% sold by retailers; majority imports preserved.
- Fresh seafood counters in retailers important.
- 25% sold via food service.
- Multi-cultural society – increasing Asian population.
- Interest in sustainability: MSC, Ocean Wise, Friends of the Sea.
- 33% Canadian's willing to pay premium for healthy products.

Source: Seafish (2013)

8.3.2 Import Requirements

Tariffs	Potential tariff preference schemes	Requirements
• 0% for tuna & tuna-like species (live, fresh, chilled, frozen & in fillets) • 7% Prepared or preserved tuna and tuna-like species • Lower tariffs for preserved Atlantic bonito (4.5%)	• Maldives is no longer a GSP beneficiary since 2015.	• Importers must be licensed to the Canadian Food Inspection Agency (CFIA). • Importing Information • Food Labelling requirements (list all ingredients). • Safety: colouring additives (e.g., CO) in tuna not permitted. • Preventative control plan. • Full traceability.

Source: Globefish (2021)

8.4 Importer/Retailer Profiles

Most food retailers have partnered with a non-governmental organisation to advise on sustainable seafood sourcing.

Importers/retailers	NGO partner	Sourcing policies
Loblaws (29% market share)	WWF Jeffrey Hutchings	MSC or ISSF, supports FIPs
Sobeys (21%)	SFP	MSC, Buy yellow, green, or red with a FIP
Metro (11%)	-	MSC or equivalent, aiming for FAD-free
Walmart (10%)	SFP	MSC or ISSF, supports FIPs
Costco (11%)	WWF	MSC or ISSF, supports FIPs
Coop	SeaChoice	Buy from MSC or SeaChoice green or yellow. In 2014 had delisted Yellowfin. Aiming for FAD-free fishing.
Buy-Low Foods	SeaChoice	Buy from MSC or SeaChoice green or yellow.
Safeway	SeaChoice	Buy from MSC or SeaChoice green or yellow.
Thrifty Foods	Ocean Wise	Ocean Wise-labelled seafood products
Longos	-	No formal commitment for tuna
Wholefoods	Seafood Watch The Safina Center	Buy from MSC or SeaChoice green or yellow.
Market Place	Ocean Wise	Ocean Wise-labelled seafood products
Choices	Ocean Wise	Ocean Wise-labelled seafood products

Source: Govender et al, 2016

Key Opportunities:

- 0% tariff on fresh or frozen tuna and tuna like species.
- Interest in sustainability and non-FAD tuna (skipjack: MSC-certified; yellowfin: comprehensive FIP).
- Distribution to retailers generally relatively simple.
- Bilateral trade agreement.
-

Key Barriers:

- No longer GSP beneficiary (lower tariffs – 3.5% on preserved tuna).
- Distance and logistics.

8.4.1 References

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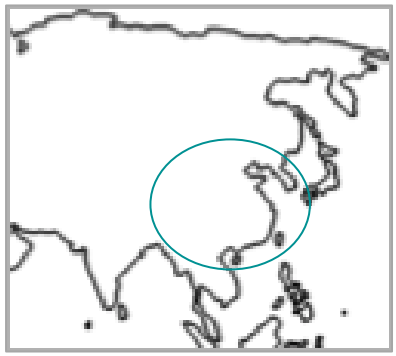
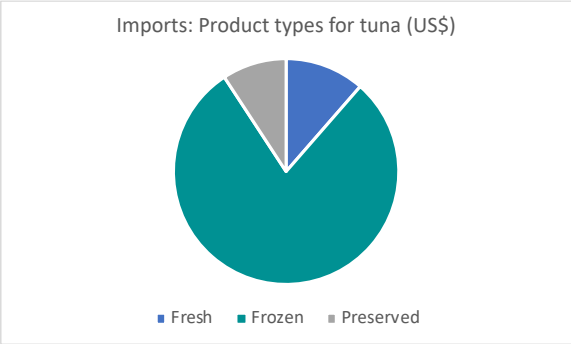
Seafish (2013) Export Guide Canada: Market Research Report
UN International Trade Statistics: https://comtrade.un.org/data/

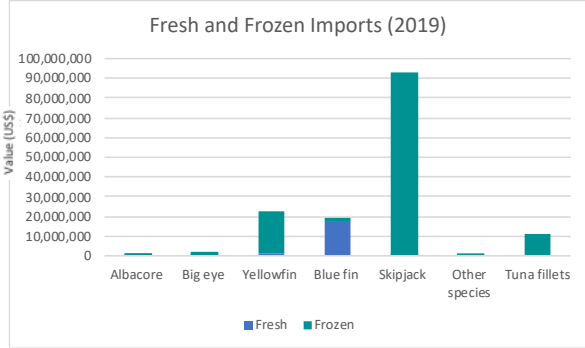
8.5 China

Total tuna imports (2019)	96 million kg ($164m)
Total sea cucumber imports (2019)	17.5 million kg ($424m)
Product forms by weight	Frozen skipjack, frozen yellowfin, preserved tuna, frozen fillets, frozen bigeye tuna
Key importing countries (by volume)	Marshall Islands, Korea, Micronesia, Papua New Guinea, Vanuatu (& other Asian states)
Imports from Maldives (2019)	Tuna: 0 Sea cucumber ($2.1m) Hong Kong
Per capita seafood	7.8kg (rural) 14.3kg (urban)



8.5.1 Imports





Source: UN ComTrade

Source: UN ComTrade

MARKET TRENDS

- In general, fresh seafood is preferred to frozen.
- However, tuna preserved in vegetable oil is popular.
- Frozen and processed seafood is also promising market, as frozen seafood and fish balls are often eaten with Chinese hotpot.
- Expanding market demand for sea-cucumber and reef fish (grouper) especially into Hong Kong.

Source: Globefish (2021); Seafish (2019b).

8.5.2 Import Requirements

Tariffs	Potential tariff preference schemes	Requirements
• 10.2% on tuna species. • VAT charged on imports (13% unprocessed; 17% processed).	• Bilateral trade agreement.	• Register with Certification and Accreditation Administration: CNCA. • Register Intellectual property for product. • Food safety standards (State Administration for Market Regulation: SAMR). • Export Health Certificate. • Register with General Administration of Customs China: GACC. • Labelling requirements approved by GACC.

Source: Globefish (2021); Seafish (2019b).

8.5.3 Sustainability

- Certified sustainable seafood has a limited market in China. Labelled products can be found in high-end supermarkets, hotels, and restaurants, most of it is imported luxury seafood. For example: Beijing Shouhang Guoli Trading Co. has committed to sourcing seafood from Best Aquaculture Practices (BAP)-certified facilities for its Beijing-based supermarket chain.
- The Marine Stewardship Council (MSC), Aquaculture Stewardship Council (ASC) and Best Aquaculture Practices (BAP) are present in China, but their efforts are focused on the certification of seafood produced in China for export.
- Consumers are more concerned with food safety.
- However, some civil society organizations are promoting sustainable seafood production and consumption.
- **China Blue Sustainability Institute,** founded in 2015, was China's first NGO committed to promoting sustainable fisheries and aquaculture. It's involved in improvement projects, and has launched China's first seafood sustainability database, iFISH, which assesses the sustainability of about 50 seafood species.
- **The Qingdao Marine Conservation Society**, also involved in improvement projects, conducts seafood sustainability ratings in collaboration with Monterey Bay Aquarium's Seafood Watch and is developing a China Seafood Sustainability Assessment and Education Program.

Source: https://seafood-tip.com/the-intricacies-of-chinese-sustainable-seafood-consumption/

8.5.4 Social sustainability

There are currently no known ethical market requirements for seafood imports into China.

Key Opportunities:

- Sea cucumber and reef fish (grouper) imports (e.g., into Hong Kong).
- Imports into China are predicted to increase by 5.6% over next decade.
- Sustained demand for fishmeal.

Key Barriers:

- China has Free Trade Agreement with countries directly competing with Maldives seafood export (e.g., Papua New Guinea).

8.5.5 References

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Globefish. 2021. Market Opportunities for Maldives Tuna https://issuu.com/globefish/docs/globefish_insight_issue1_market_opportunities_for_

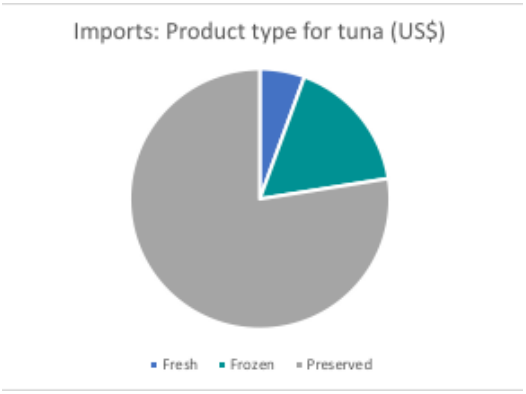
Seafish. 2019. The Seafood Market in China Bss18/3985

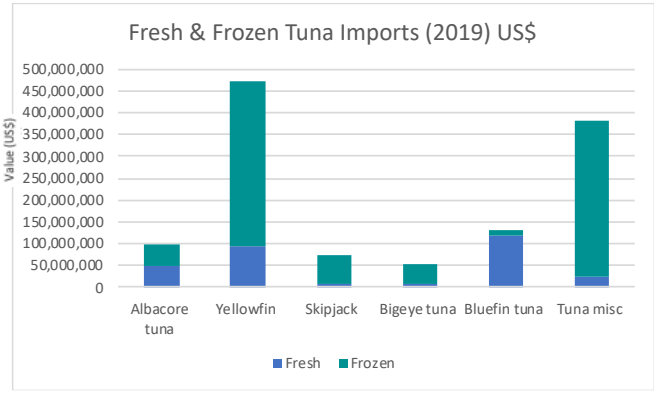
UN International Trade Statistics: https://comtrade.un.org/data/

8.6 Europe

Total tuna imports	(1.1 billion kg) (€4.8 billion)
Product forms by weight	Preserved skipjack, preserved yellowfin, frozen yellowfin, preserved tuna (other), frozen skipjack
Key importing countries (by volume)	Ecuador, Mauritius, Philippines, Seychelles, Papua New Guinea
Imports from Maldives (2019)	8.3m kg (€38.9m)
Per capita seafood	24.4kg

8.6.1 Imports: change data from Euros





Source: EUMOFA

Source: EUMOFA

MARKET TRENDS

- Imports dominated by preserved/prepared then frozen.
- Skipjack accounts for 50% total imports, then yellowfin.
- Tuna mainly caught by EU boats and processed in EU or third countries such as Ecuador, Seychelles, & Mauritius.
- Fresh and frozen yellowfin mainly from Philippines.
- Canned tuna popular: demand rose in 2020 during pandemic but fell slightly in 2021 due to excess stock.
- Popularity of tuna fillets/steaks increased in 2021 (Spain, France, Italy, Germany, Netherlands, Portugal, UK, and Switzerland).

Source: Globefish (2021)

8.6.2 Import Requirements

Tariffs	Potential tariff preference schemes	Requirements
• Fresh, chilled, or frozen tuna: 22% • Fillets: 18% • Preserved: 24 - 25%	• Maldives is no longer a GSP beneficiary	• IUU catch certificate • Common Customs Tariff (CCT) • Quality: HACCP procedures • Labelling: mandatory to state the origin, production method, date of first freezing, proportions of any other ingredients • Food additives: illegal to modify the colouring of tuna through use of carbon monoxide (CO), strict chlorine thresholds

Source: Globefish (2021)

8.6.3 Sustainability

- In 2020, sustainably certified seafood products in Europe grew. 887,000 t of Marine Stewardship Council (MSC)-certified seafood was sold on the European market: 13% more than the year before.
- Eight of 10 of the major retailers in Europe (86% of sales) have sustainable seafood commitments and six have sustainable seafood partnerships (69% of sales).

Ranking (sales)	Company	Seafood sustainability
1	Schwarz Group	Partnership with Conservation Alliance Member
2	Aldi Einkauf GmbH & Co. oHG	Partnership with Conservation Alliance Member
3	Tesco PLC	Partnership with Conservation Alliance Member
4	Ahold Delhaize	Partnership with Conservation Alliance Member
5	Auchan Holding SA	Partnership with Conservation Alliance Member
6	Edeka Group	Partnership with Conservation Alliance Member
7	REWE Combine	No known commitments
8	Casino Guichard- Perrachon S.A.	Independent sustainable seafood commitment
9	Centres Distributeurs E. Leclerc	No known commitments

10	Metro AG	Independent sustainable seafood commitment

Source: Packard Foundation, 2020

Key Opportunities:

- Significant market: Imports by EU are projected to increase over the next decade by 4.9%.
- EU Market values environmental and socially sustainable products.

Key Barriers:

- High tariffs, fresh, chilled or frozen products: 22%, fillets of tuna: 18% and preserved: 24 - 25%.
- Competing with imports from countries with low production costs close to where EU vessels land.

8.6.4 Social sustainability

Many European retailers also have social sustainability as part of procurement policies. Some certification schemes cover social sustainability: e.g., Fair Fish; Fair Trade; Naturland; Friends of the Sea. EU Trade Unions pushing for ratification of the ILO Work in Fishing Convention (ILO 188) which covers working conditions on fishing vessels.

8.6.5 References

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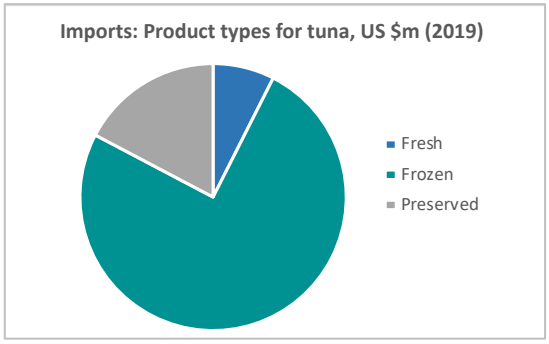
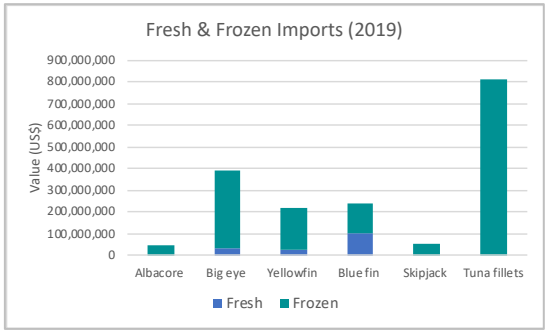
European Trade Statistics: https://www.eumofa.eu/en/

8.7 Japan

Value of tuna imports	284.4 million kg ($2.1billion)
Product forms by weight	Preserved, frozen bigeye, frozen skipjack, frozen albacore, frozen bluefin
Key importing countries (by volume)	Indonesia, Thailand, China, Korea, Philippines, Seychelles, Australia, Malta, Turkey, Spain
Imports from Maldives (2019)	284,886kg ($2.8m)
Per capita seafood	24kg/Capita (2019)

8.7.1 Imports





Source: UN ComTrade

Source: UN ComTrade

MARKET TRENDS

- Traditionally strong market for tuna and highly prized bluefin tuna.
- Demand slumped with the pandemic as business and social events put on hold but revived with the summer Olympics and restaurants have been selling 'sushi boxes' online.
- Domestic consumption decreasing due to higher costs, change to more meat-eating (cheaper) diet.
- Supermarkets account for nearly 70% seafood sales.
- Consumers increasingly looking for high convenience products (fillets, de-boned) and price sensitive
- Demand for processed tuna (canned) is increasing due to perceived health benefits: yellowfin is still a preferred product generally processed by local canneries.
- Increased demand for fish paste/dried skipjack (e.g., katsuobushi).

Source: Seafish (2017); FAO (2021); Globefish (2017)

8.7.2 Import Requirements

Tariffs	Potential tariff preference schemes	Requirements
• 3.5%: Fresh, chilled, frozen, fillets. • 6.4%: Skipjack airtight containers. • 7.2%: Prepared or preserved other tuna (except skipjack).	• Maldives is a GSP beneficiary. • To benefit from the GSP scheme, the export product must be wholly obtained in the Maldives & transported directly to Japan (traceable transshipment permitted).	• A Combined Declaration and Certificate of Origin Form must be issued at the time of exportation by customs authorities of the Maldives. • Sanitation requirements. • Adhere to regulations on food additives. • Low levels of radioactive caesium. • Correct labelling: country of origin, preservation method, farmed or wild. • CO injection & IUU products banned. • Customers are also concerned with clear traceability and GM.

Source: Globefish (2021); Seafish (2017)

8.7.3 Retailer Profiles

Company	Outlets	Comments
Aeon Co Ltd	Max Value, Daiei, Kohyo, Maruetsu Convenience stores, Mini Stop	Stocks MSC products: time-bound procurement policies on sustainable seafood (Goal: 10% MSC)
Seiyu Group	Seiyu	First retailer to stock BAP seafood products
Nibancho/Seven & I Holdings	York Benimaru, Tenmaya Convenience stores, Seven Eleven	Developed time-bound procurement policies on sustainable seafood
JCCU	Japanese Consumers' Cooperative Union: Home delivery	Developed time-bound procurement policies on sustainable seafood
IZUMI Co Ltd	Izumi	
Lawson Inc	Lawson Seijo Ishii	

8.7.4 Sustainability

- The largest Japanese retailers: Aeon and Seven & i Holdings, and JCCU have set targets on procuring sustainable seafood.
- Many other major retailers are increasing procurement of sustainable seafood, including certified and FIP products
- MSC certified products distributed in the Japanese market increased six times (in volume) between 2019 and 2021.
- Four of the largest Japanese seafood companies joined with the other members of SeaBOS in setting sustainability goals by the end of 2021 (e.g., IUU, ghost fishing, endangered species).
- Japan has an initiative called 'Pride Fish' to increase seafood consumption and promote domestic fisheries and fishers.

Key Opportunities:

- Dried skipjack (e.g., katsuobushi) increased demand
- Demand for canned Yellowfin tuna but higher tariffs (7.2%)
- Bigeye tuna considered high quality for sushi and sashimi (after bluefin)

Key Barriers:

- Distance and logistics
- Sashimi and sushi grade tuna has to be exceptional quality

8.7.5 References

FAO. 2021. GLOBEFISH Highlights 3rd issue 2021, with Jan.–Mar. 2021 Statistics – International Markets on Fisheries and Aquaculture Products. Quarterly update. Globefish Highlights No. 3–2021. Rome. https://doi.org/10.4060/cb7153en

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Seafish/Department for International Trade (2017) Overseas Market Introduction Service on the seafood market in Japan for
Sea Fish Industry Authority

UN International Trade Statistics: https://comtrade.un.org/data/

8.8 New Zealand

Total tuna imports	5.6 million kg (US$ 27million)
Product forms by weight	Prepared/preserved inc. loins, fresh/chilled yellowfin
Key importing countries (by volume)	Thailand, Australia, Fiji, Vietnam
Imports from Maldives (2019)	None
Per capita seafood	24.2 kg

8.8.1 Imports

Top importing countries (value imports US$): 2019

Source: UN ComTrade

MARKET TRENDS

- Imports dominated by preserved/prepared then frozen.
- Biggest supplier is Australia.
- Imports of tuna have increased, aided by the consumer preference for canned black meat of tuna.

8.8.2 Import requirements

Tariffs	Potential tariff preference schemes	Requirements
• 0% for tuna & tuna-like species (live, fresh, chilled, frozen, fillets, dried, salted or in brine, smoked, meals and pellets).	• Maldives is a GSP and MFN beneficiary. • To benefit from the GSP scheme, the export product must be wholly obtained in the Maldives.	• Fish product labels must also comply with the general labelling rules and the Australia New Zealand Food Standards Code. • Proof of origin. • Retail industry has sustainable seafood as part of its product sourcing requirements. • Specific requirements for foods identified as presenting a higher risk to consumers, also known as foods of high or increased regulatory interest

8.8.3 Sustainability

- Retail industry has sustainable seafood as part of its product sourcing requirements, including certified and FIP products.
- Over 50% of fish landed in New Zealand from the domestic fishery is MSC-certified.

Key Opportunities:

- 0% import duties for tuna products.

Key Barriers:

- No existing trade agreement or exports to New Zealand.

8.9 Russia

Total tuna imports	12.3 million kg (US$44 million)
Product forms by weight	Prepared/preserved inc. loins, frozen skipjack, frozen yellowfin
Key importing countries (by volume)	Thailand, China, Ecuador
Imports from Maldives (2019)	None
Per capita seafood	20kg

8.9.1 Imports

Top importing countries (value imports US$): 2019

Source: UN ComTrade

MARKET TRENDS

- Prepared/preserved.
- Whitefish is more popular due to domestic fisheries.
- Increasing in popularity for sushi and sashimi.
- China is a major supplier of seafood.

8.9.2 Import requirements

Tariffs	Potential tariff preference schemes	Requirements
• Unknown	• Maldives is not a GSP or MFN beneficiary.	• Fish product labels must have specific information about product and ingredients. • Country of origin certificate. • Transport documents, for example bill of lading and air waybill.

8.9.3 Sustainability

No information could be found relating to sustainability status of fisheries products and customer demand.

Key Opportunities:

- Demand for sashimi and sushi has grown in recent years.
- Products from United States, Australia, Norway, Canada, and the European Union banned in response to Western economic sanctions, so may leave opening for Maldives tuna, especially yellowfin.

Key Barriers:

- Export market to Russia fell 98.6% between 2014 and 2019.
- Russia was ranked 129 out of 136 countries in the World Economic Forum's "Enabling Trade Index" for foreign market access.

8.9.4 References

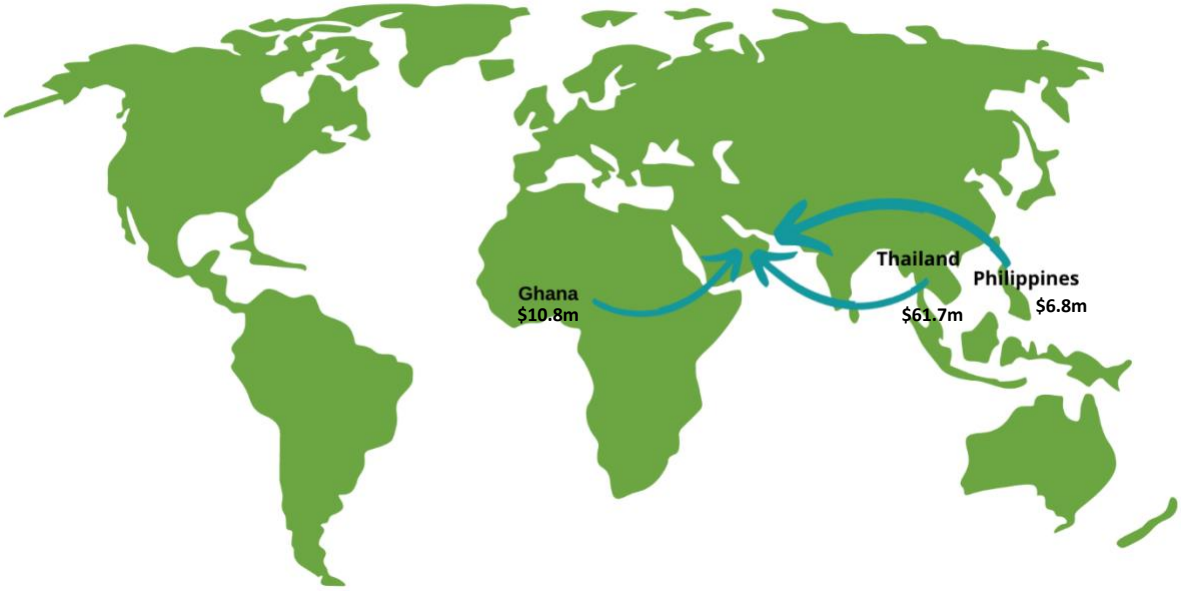
OEC, 2019

8.10 United Arab Emirates

Total tuna imports	27 million kg (US$ 90.2 million)
Product forms by weight	Prepared/preserved inc. loins, frozen yellowfin, frozen skipjack
Key importing countries (by volume)	Thailand, Ghana, Philippines
Imports from Maldives (2019)	112,865 kg (US$ 276,932)
Per capita seafood	28.6 kg

8.10.1 Imports

Top importing countries (value imports US$): 2019



Source: UN ComTrade

MARKET TRENDS

- Frozen fish imports reportedly grew substantially in 2019.
- Tuna in top five seafood imports.
- Increasing demand for convenient food (i.e., canned products).

8.10.2 Import requirements

Tariffs	Potential tariff preference schemes	Requirements
• 5%	• None to date or trade agreements.	• Product labels to contain Arabic. • Health certificate. • Strict labelling/product information requirements. • UAE agent or distributor is mandatory.

Key Opportunities:

- Already good trade between the two countries.
- Market for full range of tuna products given the international nature of the UAE.
- Increase in demand for frozen tuna imports.
- The top performer on the EEFI.

Key Barriers:

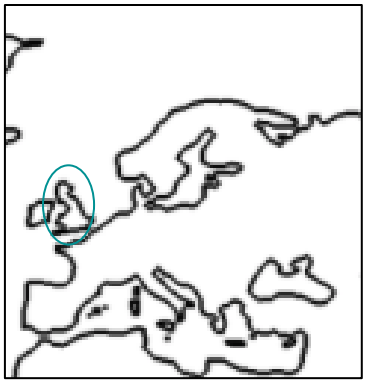
- 5% tax on food imports.
- Agents required to distribute, offer, negotiate the sale or purchase of goods on the foreign company's behalf in the UAE market.
- Difficult to terminate agents.

8.10.3 References

OEC.2019.
Seafish. 2020b.

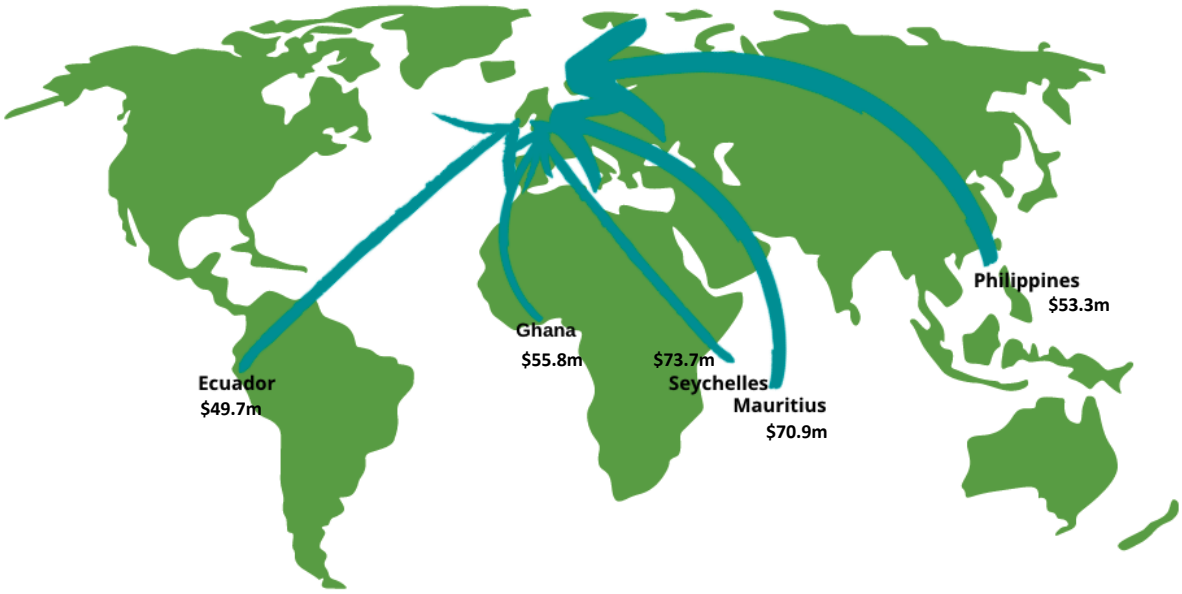
8.11 United Kingdom

Total tuna imports	83.5million kg (US$429.1 million)
Product forms by weight	Preserved skipjack, frozen tuna, fresh/chilled yellowfin
Key importing countries (by volume)	Seychelles, Mauritius, Ghana, Philippines, Ecuador
Imports from Maldives (2019)	1.9 million kg (US$9.7 million)
Per capita seafood	8.0kg



8.11.1 Imports

Top importing countries (value imports US$): 2019



Source: UN ComTrade

MARKET TRENDS

- Canned tuna is the most popular tuna product form.
- Export market continued to grow in the UK (2019).
- Many retailers have responsible sourcing policies, including social responsibility.

8.11.2 Import requirements

Tariffs	Potential tariff preference schemes	Requirements
• 20%	• None to date or trade agreements.	• Catch certificate. • Processing statement (if processed). • Health/quality documentation

Key Opportunities:

- High demand for canned tuna.
- Given Brexit, the UK is looking for trade agreements. Bilateral agreement may be an option following talks.
- Market values sustainable seafood. Maldives tuna is a stable supply for the UK.

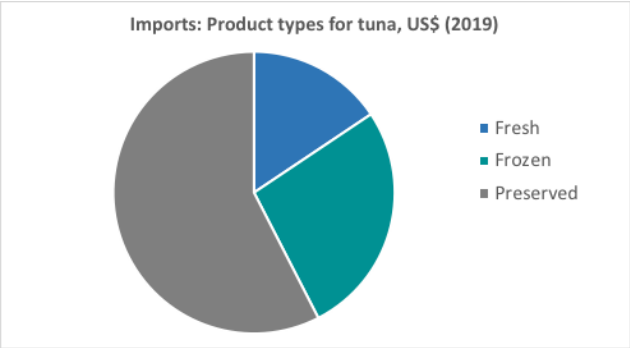
Key Barriers:

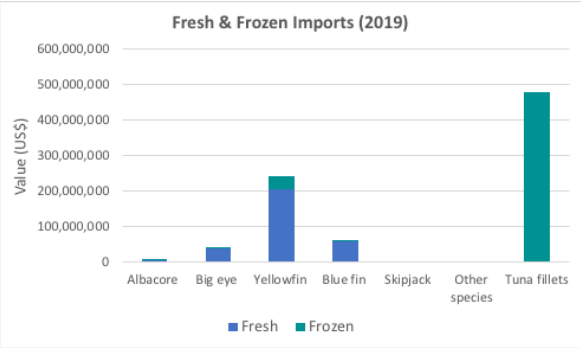
- Imports dominated by other Indian Ocean countries, namely Seychelles and Mauritius.
- From 31 December 2020, Maldivian pay 20% to export to the U.K. market.

8.12 United States

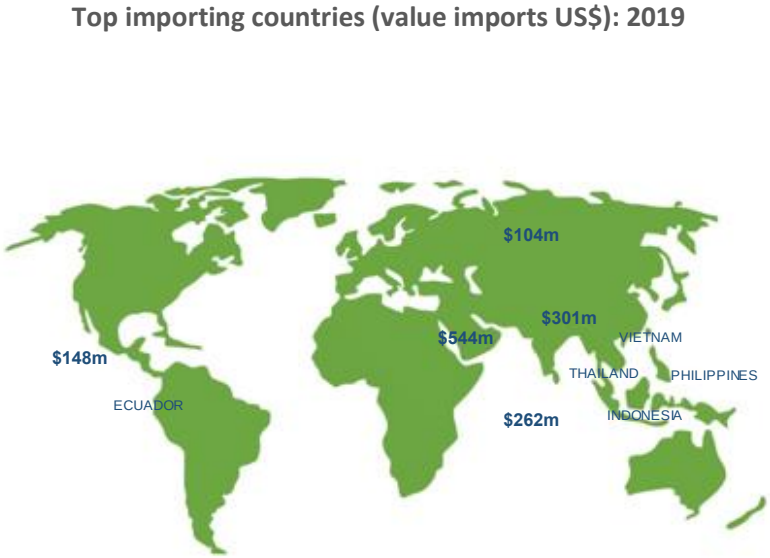
Value of tuna imports	1.97$billion (283 million kg)
Product forms (top 5) by weight	Preserved, frozen fillets, fresh yellowfin, frozen yellowfin, fresh bigeye
Key importing countries (by volume)	Thailand, Vietnam, Indonesia, Ecuador, Philippines
Imports from Maldives (2019)	2.5 million kg ($29m)
Per capita seafood	8.7 kg/capita (2019)

8.12.1 Imports





Source: UN ComTrade



Source: UN ComTrade

MARKET TRENDS

- US is third largest seafood importer after EU and Japan.
- Imports projected to increase by 3.9% in next decade, but per capita consumption decreasing.
- Food service and restaurants important for seafood: 66% seafood expenditure in food outlets.
- Demand for fresh/froze fell in 2020 due to Covid-19 while strong demand for processed tuna, but this also weakened in 2021.
- Tinned tuna one of four favourites (as well as shrimp, tilapia & Alaskan pollock). Sushi and sashimi increasingly popular.
- Supply structure dynamic and fragmented: Most companies work through importers, but some sell direct to retailers or larger companies via their own sales representatives.

Source: FAO 2021; Seafish, 2018

8.12.2 Import Requirements

Tariffs	Potential tariff preference schemes	Requirements
• Fresh, chilled or frozen: 0% • Preserved tuna (not in oil): 0% • Preserved tuna in oil: 35%	• Maldives is a GSP beneficiary	• Authorisation by Customs and Border Protection (CBA) and the Food and Drugs Administration (FDA) • NOAA Form 370: Certification of Origin (including Dolphin-safe status) • Comply with HACCP, bioterrorism and food safety system • Packaging: country of origin, Low acid

Source: Globefish (2021); Seafish, 2018

8.12.3 Retailer Profiles

Company	No.	Sustainability commitments
The Kroger Co	2,769	Source 100% of wild-caught seafood from fisheries that are certified by GSSI-recognised programmes or in a Fisheries Improvement Project (FIP). 100% canned tuna aligned with the International Seafood Sustainability Foundation (ISSF).
Albertsons	2,328	Labels Responsible Sourced Seafood as that with well-established ratings and certifications or Fishery Improvement Projects (FIPs).
Royal Ahold/Delhaize	2,100	100% of own-brand seafood product sales certified against an acceptable standard, from sustainable sources assessed by a credible third party, or from credible FIPs/AIPs (currently 98%).
Publix Supermarkets	1,231	Publix supports fisheries improvement projects and participates in various industry initiatives on labour and human rights.
Walmart	704	Require own-label fresh and frozen, farmed and wild seafood certified by GSSI-recognised programmes or in a Fisheries Improvement Project (FIP). Canned tuna sourced from fisheries that comply with ISSF.
Southeaster Grocers	582	Work with reputable suppliers that source seafood from sustainable environments to ensure our wild seafood is caught responsibly.

Aldi/Trade Joe's	474	Third-Party certified, performing to globally accepted measures of sustainability or FIP.
Wholefoods/Amazon	467	Purchase according to Seafood Watch recommendations Canned tuna policy provides customers with sustainable tuna.
HEB Grocery Co.	340	Preferentially source from fisheries rated Green or Yellow on EDF's Seafood Selector, or are certified by MSY or part of a FIP.
Wakefern/Shoprite	337	Stocks certified product
Hy-Vee	240	Green or yellow rated seafood by Seafood Watch, an equivalent certification, or FIP.

Source: Greenpeace rating (https://www.greenpeace.org/usa/2018-supermarket-seafood-ranking/) and Retailer Websites

Key Opportunities:

- 0% tariff on imports of fresh/chilled/frozen tuna (or preserved not in oil) from Maldives into US
- Fastest growing export market for Maldives (2014-2019)
- Pole & Line fishing considered dolphin-safe (a requirement of US market)

Key Barriers:

- Per capital consumption declining
- High tax for tuna preserved in oil

8.12.4 Social sustainability

The US prohibits any shipments to enter the country if there is evidence of forced labour on board the vessels.

8.12.5 References

FAO. 2021. GLOBEFISH Highlights 3rd issue 2021, with Jan.–Mar. 2021 Statistics – International Markets on Fisheries and Aquaculture Products. Quarterly update. Globefish Highlights No. 3–2021. Rome. https://doi.org/10.4060/cb7153en

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