



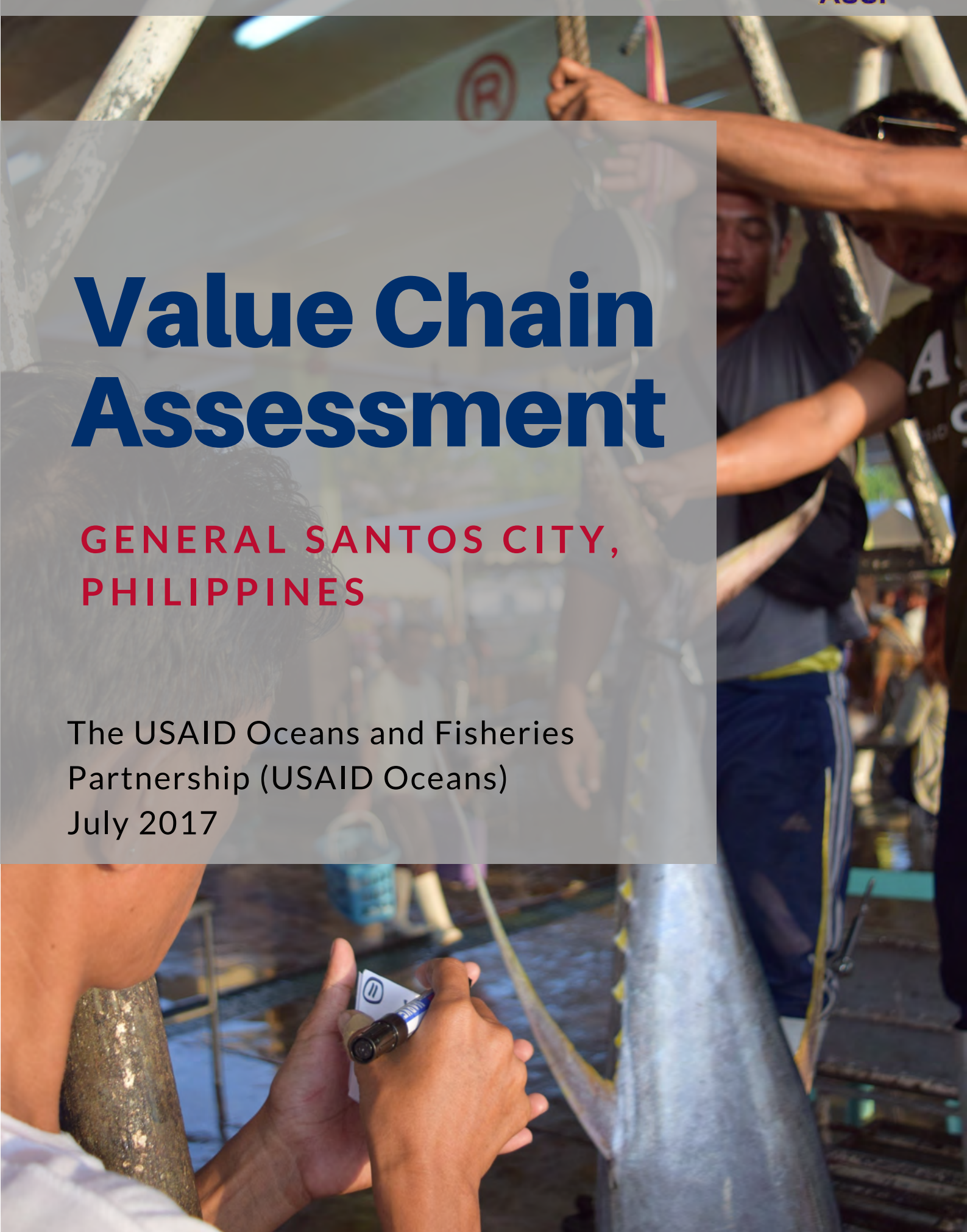
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Value Chain Assessment

GENERAL SANTOS CITY,
PHILIPPINES

The USAID Oceans and Fisheries
Partnership (USAID Oceans)
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CONTENTS

EXECUTIVE SUMMARY.....	6
1. PROFILE OF THE OVERALL TUNA SECTOR IN THE PHILIPPINES	13
2. VALUE CHAIN ANALYSIS OF KEY TUNA FISHERIES IN GSFPC	16
2.1 Inter-firm relationships for different types of value chains	16
2.2 Key actors, their roles and needs within different nodes of the value chain related to traceability	29
2.3 Bottlenecks and Areas of Concern for Adopting Traceability in the industry at GSFPC.....	40
3. END MARKET ANALYSIS FOR PHILIPPINES TUNA.....	42
3.1 Key markets for exports, weighting the percentage of fish per origin and value per origin.....	42
3.2 Current import requirements related to food safety, anti-IUU and other issue that require CDT in key end markets.....	54
3.3 Performance issues the Philippines faces in meeting import market regulations and requirements	64
3.4 Future import traceability requirements that may impact or disrupt current trade flows	69
3.5 Development of Regional CDT Mechanisms.....	71
4. CURRENT BUYER AND CUSTOMER PREFERENCES	76
4.1 Tuna Market Preferences for Traceability	76
4.2 Potential Traceability Platforms.....	84
4.3 Potential Contribution to CDT in the Philippines	95
5. FINDINGS, CONCLUSIONS AND ROADMAP FOR 2018-2022	102
5.1 Main Findings and Conclusions	102
5.2 Implications for CDT for tuna flowing through GSFPC	104
5.3 Short Value Chain Improvement Roadmap (2018 – 2022).....	105

APPENDICES

Appendix A: References.....	106
Appendix B: CDT Documents	108
Appendix C: RASSF Listings for PHILIPPINES.....	119
Appendix D: The Ethical Trading Initiative (ETI) Base Code.....	121

LIST OF TABLES

Table 1: Catch by EEZ, gear type and tuna species of the Philippines-flagged fishing fleet (2015)	13
Table 2: Species-wise landings (mt and %) into Harbor 1 from the handline fishery (2014 & 2015).....	18
Table 3: Species-wise landings (mt and %) into Harbors 2 & 3 from the purse seine and ring net fisheries (2014 & 2015).....	20
Table 4: Landings of frozen skipjack tuna into GSFPC over 2014 and 2015	23
Table 5: Countries of origin for frozen fish imported into the Philippines in 2015.....	24
Table 6: Local processing capacity, production and markets for fresh tuna raw material.....	26
Table 7: Canneries in General Santos.....	29
Table 8: Main exported tuna products and markets (2015).....	42
Table 9: Country of origin for US imports of canned tuna, 2014	49
Table 10: Country of origin for main EU imports of tuna products, 2015	51
Table 11: Imports of tuna into Japan from the Philippines by product form (2015)	54
Table 12: Risk analysis of non-compliance with export requirements.....	68
Table 13: Information sought by seafood buyers and consumers.....	85
Table 14: Consumer research findings for fresh / frozen tuna in the US and Germany	86
Table 15: MSC certified YFT fisheries in the Pacific Ocean.....	86
Table 16: Private ecolabelling schemes for capture fisheries.....	90
Table 17: Consumer research findings for canned tuna in the US and Canada.....	92
Table 18: Strengths and considerations of MSC & Fair Trade USA standards and traceability mechanisms.....	95
Table 19: Outline of major fisheries ER solution providers and their uptake to date.....	98
Table 20: Comparative analysis of different e-reporting systems.....	101
Table 21: Prioritized actions for a short value chain improvement roadmap for tuna fisheries in GSFPC.....	104
Table 22: Data Requirements - Regular Catch Certification.....	108
Table 23: Data Requirements - Simplified Catch Certification	112
Table 24: RASFF Portal listings for 'fish and fish products' from Philippines	119

LIST OF FIGURES

Figure 1: Philippines-flagged catches (mt) in High Seas Pocket I	14
Figure 2: Tuna & billfish landings by the Philippines-flagged fleet vs. all WCPFC catch (2004 - 2015).....	14
Figure 3: Location of Philippine tuna catches by EEZ (2014).....	15
Figure 4: Schematic diagram of the GSFPC harbor showing berthing basins and market locations	17
Figure 5: Throughput by market location (2004 - 2015).....	18
Figure 6: Harbor / Market 1 - Monthly vessel visits and landings (mt) over 2015.....	19
Figure 7: Markets 2 & 3 - Monthly vessel visits and landings (mt) over 2015.....	20
Figure 8: Catch per unit effort for purse seiners at General Santos Fish Port (2006 - 2011).....	22
Figure 9: Reefer vessel visits and volume of fish landed (mt) into Wharfs 1 & 2 over 2015	24
Figure 10: Annual volume of handline landings (in Harbor 1) from 2011-2015	27
Figure 11: Destination of fresh materials landed into GSFPC (2014)	28
Figure 12: Handline fishery value chain	31
Figure 13: Purse seine / ring net fisheries value chain (domestic chilled and imported frozen).....	36
Figure 14: Tuna exports by the Philippines by main category 2011-15 (tonnes)	43
Figure 15: Tuna exports by main category 2011-15 by value (\$million).....	43
Figure 16: Purse seine frozen tuna import prices for canning, Thailand (cif) (US\$/tonne).....	43
Figure 17: Volume (kg) of processed tuna exports (2011-2015).....	44
Figure 18: Volume (kg) processed tuna export market trends (left) and destinations 2015 (right)	45
Figure 19: Volume (kg) of FROZEN tuna exports	46
Figure 20: Volume (kg) FROZEN yellowfin tuna export market trends and destinations 2015.....	46
Figure 21: Volume (kg) FROZEN tuna fillets export market trends and destinations 2015.....	47
Figure 22: Volume (kg) FRESH yellowfin tuna export market trend and destinations 2015.....	47
Figure 23: Volume (kg) FRESH tuna fillets export market trend and destinations 2015.....	48
Figure 24: Total Philippine tuna exports to key markets (kg), 2011 to 2015.....	48
Figure 25: US Imports from Philippines specified as Tuna (kg), 2010-2015.....	50
Figure 26: EU imports of tuna and tuna like species from The Philippines (t).....	52
Figure 27: Tuna from the Philippines as a % of total EU imports.....	52
Figure 28: Extra-EU imports of tuna and tuna-like species by country (tonnes).....	53
Figure 29: Japan's simplified import procedure under the AEO program.....	63
Figure 30: ASEAN Catch Documentation Scheme*	73

ACRONYMS AND ABBREVIATIONS

ACDS	ASEAN Catch Documentation Scheme
ALB	Albacore tuna
ASEAN	Association of Southeast Asian Nations
BAS	Bureau of Agricultural Statistics
BET	Bigeye Tuna
BFAR	Bureau of Fisheries and Aquatic Resources
BLM	Black marlin
BUM	Blue marlin
CCM	Members, Cooperating Non-members of Participating Territories (of WCPFC)
CDT	Catch Documentation and Traceability
CMM	Commission Management of Measure (of WCPFC)
CSR	Corporate Social Responsibility
CTI-CFF	Coral Triangle Initiative on Coral Reefs Fisheries and Food Security
EAFM	Ecosystem Approach to Fisheries Management
EEZ	Exclusive Economic Zone
EU	European Union
FAD	Fisheries Aggregating Device
FARMC	Fisheries and Aquatic Resource Management Councils
FDA	US Food and Drug Administration
FFA	Forum Fisheries Agreement
GRT	Gross Registered Ton
GSPFC	General Santos Fish Port Complex
GSM	Global System of Mobile communication
GSP	General System of Preferences
HSPI	High Seas Pocket 1
HTS	Harmonized Tariff Schedule
IOTC	India Ocean Tuna Commission
IUU	Illegal, Unreported and Unregulated
ISSP	Imported Seafood Safety Program
M1	Market 1 (of GSFPC)
M2	Market 2 (of GSFPC)
M3	Market 3 (of GSFPC)
MCS	Monitoring, Control and Surveillance
MLS	Minimum Landing Size
MSC	Marine Stewardship Council
MSY	Maximum Sustainable Yield
Mt	Metric tonne
NMFS	National Marine Fisheries Service (USA)
NOAA	National Oceanic and Atmospheric Administration (NOAA)
NTIC	National Tuna Industry Council
NTMP	National Tuna Management Plan
PCAMRD	Philippine Council for Aquatic and Marine Research and Development
PECAN	PhilippineEs CANnery (database)
PFDA	Philippine Fisheries Development Authority
PFOP	Philippines Fisheries Observer Program
PhP	Philippine peso (approx. PhP 45 to one USD)
PNA	Palou Nauru Agreement
PNG	Papua New Guinea
PPA	Philippine Ports Authority

PSA	Philippine Statistics Authority
RDMA	Regional Development Mission for Asia
RFMO	Regional Fisheries Management Organizations
SC	Scientific Committee (of WCPFC)
SEAFDEC	South East Asia Fisheries Development Center
SFFAI	SOCKSARGEN Federation of Fishing and Allied Industries
SFMP	Sustainable Fisheries Management Plans
SKJ	Skipjack tuna
SOCKSARGEN	South Cotabato, Sultan Kudarat, Sarangani and General Santos
SPC	Secretariat of the Pacific Community
SPS	Sanitary and Phytosanitary Measures
TCAP	Tuna Canners Association of the Philippines
TUFMAN	TUna Fisheries MANagement (database)
US	United States
USAID	U.S. Agency for International Development
VCA	Value Chain Analysis
VMS	Vessel Monitoring System
WI	Wharf I (of GSFPC Complex)
WCPFC	Western and Central Pacific Fisheries Commission
WCPO	Western and Central Pacific Ocean
WOEA-OFMP	West Pacific East Asia - Oceanic Fisheries Management Project
WWF	World Wildlife Fund
YFT	Yellowfin Tuna

EXECUTIVE SUMMARY

The USAID/Regional Development Mission for Asia's (RDMA) Oceans and Fisheries Partnership (USAID Oceans) works to strengthen regional cooperation to combat illegal, unreported and unregulated (IUU) fishing and promote sustainable fisheries, in order to conserve marine biodiversity in the Asia-Pacific region. The objectives of USAID Oceans program are to: (i) develop a financially sustainable regional catch documentation and traceability (CDT) system to combat IUU fishing and seafood fraud in areas where sustainable fisheries management plans (SFMP) are being applied; (ii) expand use of the CDT system to priority biodiversity areas in the Asia Pacific region; (iii) strengthen human and institutional capacity of regional organizations to conserve marine biodiversity through SFMPs, including actions to combat IUU fishing and seafood fraud; and (iv) enhance public-private partnerships (PPPs) to conserve biodiversity, promote sustainable fisheries management, and combat IUU fishing and seafood fraud.

On August 16, 2016 Tetra Tech signed a contract with Bold Native Advisors, Inc. of the Philippines to conduct a rapid value chain assessment (VCA) as a key first step to understand the CDT processes and requirements along the value chain, identify the main exporting markets and explore market/buyer requirements and customer preferences. This will support the CDT design approach, partnership development and industry engagement in General Santos and along the value chain. The objectives of this work are as follows:

- Map the critical actors in the value chain and identifying the key end markets for tuna from the Philippines, both regional and international, with an emphasis on GSFFPC.
- Identify the CDT requirements of different stakeholders within the tuna industry in Philippines, focusing on value chains linked to the USAID Oceans preferred site at GSFFPC
- Identify the various leverage points for CDT and fisheries management data collection, and start to explore the business case for different actors through traceability and differentiation for further research.
- Identify the priority end-markets for Philippines tuna, weighting the percentage of fish per origin, value per origin and identify current and future import market state traceability requirements that may impact/disrupt current trade flow.
- Explore end-market requirements in the priority export markets and identify the perceived value (i.e. premium, preferred market access) of improved traceability of seafood products.

This document is a summary of three previous technical reports produced by Bold Native to date. The purpose of this report is to present a rapid value chain assessment (VCA) of the tuna industry at General Santos Fish Port Complex (GSFFPC) in the Philippines. Key components of this report include understanding catch documentation and traceability (CDT) processes and requirements along the value chain, identification of the main exporting markets, market/buyer requirements and customer preferences.

The Value Chains

GSFFPC is the key tuna port in the Philippines, where large quantities of yellowfin tuna are landed that are sourced from local handline fishers, larger domestic purse seine and ring net fishing operations, and large volumes of frozen fish that are transshipped from fisheries in the Philippines. In addition, the port receives small volumes of containerized frozen fish from Makar Wharf container port, as well as over-landed fish from elsewhere in the Philippines. The majority of tunas being landed at

GSFPC are skipjack (73%), yellowfin (19%) and bigeye (% unknown¹) tunas, which are highly migratory species and are therefore managed at a regional level. Current stock assessments indicate that whilst skipjack and yellowfin stocks are in good condition, bigeye tuna is currently over-fished.

The main fisheries inputs into General Santos Fishing Port include (i) *handline fisheries* landing large, chilled pelagic tuna landing into Harbor 1/Market 1 (M1) for high quality local and international consumption; (ii) *domestic purse seine and ring net fisheries* landing small, chilled juvenile pelagic tunas, neritic tuna and small pelagic fish into Harbors / Markets 2 & 3; and (iii) *frozen bulk consignments of frozen skipjack and yellowfin tuna* caught in high seas or other coastal state waters (mainly Papua New Guinea (PNG)) that are destined for the canneries in General Santos.

Research shows that handline fish are decreasing in volume, size and quality, suggesting over-fishing in local waters. The decline in quality is due to longer fishing trips that are made to access larger yellowfin. The better quality fish are usually bought directly or on contract, and are packed and exported directly without going through the auction. Some is further prepared (e.g. loined and filleted) in local processing factories.

The domestic purse seine and ring net fisheries are Fisheries Aggregating Device (FAD)-based fisheries, and mainly catch juvenile tunas. It is also dependent upon the use of carrier vessels to ferry fish back to market, allowing the catching boats to continue fishing. These vessels have been known to mostly operate in the Philippines Exclusive Economic Zone (EEZ), but the slow adoption of vessel monitoring systems (VMS) by smaller vessels (all vessels >3 GRT require VMS) suggests this is an area of uncertainty. All the fish landed goes through the auction system in GSFPC. The majority is sold in the region, with a small volume being canned locally for export.

The frozen fish is from Philippines and other flag landings into PNG as elsewhere, where it is transhipped to GSFPC. This fish is the main raw material for General Santos' canneries, and is preferred to the smaller fish being landed by the smaller domestic purse seiners landing into Harbors 2 and 3.

Export Markets

The main export markets for tuna flowing through GSFPC include the European Union (EU) which is growing to 55% of exports by volume in 2015, followed by the US (21%) and Japan (12%). In 2015, **105,466 mt** of tuna is exported with a value of \$357 million. It comes in three main product categories namely canned (72%), frozen (23%) and fresh (4%) tuna.

Demand for Better Catch Documentation and Traceability

The demand for CDT is primarily market-driven and responds to (i) illegal, unreported, and unregulated (IUU) fishing concerns and (ii) ensuring the quality of imports from external sources. Major export markets, such as the United States (US), European Union (EU), and ASEAN member countries have established regulations and monitoring programs to combat IUU fishing and prevent illegal products from entering their markets. In the U.S., the National Oceanic and Atmospheric Administration's (NOAA) Fisheries Certificate of Origin (NOAA Form 370) is required to accompany all imports of frozen and/or processed tuna products (it does not apply to fresh tuna products). The US has also recently developed a Seafood Import Monitoring Program to combat

¹ Bigeye and yellowfin are similar in appearance – as a result most bigeye is counted as yellowfin. This is a catch accounting issues that needs to be better addressed.

IUU fishing which will add to the US' CDT requirements. The EU passed its IUU Regulation (EC 1005/2008) in 2008, and an implementing regulation (EC 1010/2009) was adopted in 2009. Both texts define a new legal EU regime to bar products derived from IUU fishing from entering the EU market. The regulation consists of a catch documentation requirement for all imports of marine fish into the EU and a separate but related rule involving the possible restriction of fisheries imports from countries identified as having unsatisfactory control of IUU fishing by their flag vessels. The ASEAN Catch Documentation Scheme (ACDS) is currently a voluntary system that consists of (i) catch flow/movement of the ACDS, (ii) ACDS catch documents focusing on (a) catch documents for 'Large Fishing Vessels', and (b) simplified catch documents for 'Small Fishing Vessels'.

In addition to addressing IUU issues, most import markets have checks and controls for food safety. For instance, the US Food and Drug Administration (FDA) is responsible for the safety of all fish and fishery products entering the United States and operates a risk-based Imported Seafood Safety Program (ISSP). To import into the EU, various health requirements need to be met, including (i) country-level health approval, (ii) imports must be from EC approved establishments, (iii) imports of tuna into the EU must be accompanied by a health certificate signed by the competent authority of the exporting third country, and (iv) upon arrival in the EU, tuna and the accompanying certificates must be inspected by veterinarian officials.

CDT in Tuna Fisheries in the Philippines

The Philippines Government, the Philippine Bureau of Fisheries and Aquatic Resources (BFAR), has put in place a fairly complex set of catch, transshipment and processing reporting requirements. All paper-based, they require considerable cross-correlation with other foreign and domestic reports (e.g. to receive a catch certificate a Catch Origin Landing Declaration (COLD) is required). This is readily achievable by larger companies, it is often a considerable challenge for smaller vessels and owner-operators. Furthermore, it is a considerable data entry and verification exercise to achieve the mass balance and traceability outputs managers require. As a result, there are considerable opportunities for improving CDT in the Philippines, particularly in the General Santos Fish Port Complex (GSFPC)—the country's largest landing site. CDT efforts could be improved by focusing on risk-based species, and focusing on fisheries where misreporting or other IUU activities might be prevalent, even in domestic waters. It is also possible to integrate more ecosystem indicators into the CDT system. Much of this can be done by refining the existing system, but it will require better integration of market and landings data with CDT and catch accounting. The move towards electronic catch reporting is inevitable, but its introduction must be phased in to ensure a smooth uptake.

There are barriers to improving CDT – the complex input and outputs supply chains and the wide spectrum of operators (e.g. from individual owner operators to large multi-national fishing companies) are particular issues. Other barriers include the ability of smaller operators to pay for increased CDT, both in terms of time as well as installing any necessary e-reporting and monitoring equipment such as electronic logbooks. There are also considerable skill and human capacity issues that have to be addressed.

Buyer and Customer Preferences

In addition to the statutory requirements described above, seafood buyers and consumers demand information on three key topics:

1. **Product quality and food safety:** the freshness and safety of seafood in terms of its post-harvest deterioration, presentation, pre-and post-harvest contamination risk, etc.;
2. **Environmental sustainability:** the direct and indirect impact of the fishery on target and non-target fish stocks, habitats and the wider ecosystem; and
3. **Social and ethical practices:** the treatment of workers in terms of wages, working hours and conditions, collective bargaining and other forms of exploitation, both at sea and in the subsequent post-harvest value chain.

In reality, most decisions on seafood sourcing are made by the multiple retailers on behalf of their customers, who trust these large companies to have done their due diligence on their behalf. For customers, food safety is of primary concern, followed closely by price. Other issues, such as environmental sustainability, are secondary to these two main factors.

In terms of quality and food safety, potential problems tend to occur during the early harvest and landing stages of the value chain. Once landed, the product usually enters a more robust and better controlled chill/cold chain, with higher levels of monitoring. Quality assurance must be considered carefully in each transfer step, as it has direct implications on product value and safety. This is not necessarily the case for environmental and ethical issues. Therefore, information on the timing of the product passing through the supply chain points, the processes involved and how much they have impacted on the quality of the product, and integration into a full traceability process are essential.

Ensuring that a product is environmentally sustainable is quite different, and is very much driven by the consumer end of the value chain. It may not necessarily be a concern of the catching or processing sector unless demanded by their buyers. It also operates at a much larger scale (e.g. at the whole Western and Central Pacific Ocean (WCPO) stock level), and thus (i) there may be implications of one fisheries activities on another (e.g. excessive juvenile bycatch by the purse seine fleet might affect handline yields) and (ii) different parts of the value chain have less leverage on other parts of the system. Previously conducted research has well established that there are environmental issues in Philippine fisheries, particularly in regard to domestic purse seine and ringnet activities. The current and persistent high dependence upon FAD-facilitated catches is a main contributor to these issues, as well as reluctance to control fishing effort and FAD use as required by the Western and Central Pacific Fisheries Commission (WCPFC).

Third-party eco-labelling of environmentally responsible fisheries has changed the landscape for seafood buyers, especially in Europe and North America, and can even be argued to have had a substantial impact on the development of fisheries management systems. Marine Stewardship Council (MSC) has now gained considerable traction in the tuna market, with large fisheries such as the Palou Nauru Agreement (PNA) skipjack purse seine fleets in the WCPO now certified. To date, this has been largely limited to trawl, pole and line, and free-school purse seine fisheries, but as demonstrated by the recent certification of the Solomon Islands fisheries, there are signs that well-managed FAD-based purse seine fisheries may also become eligible for certification. For instance, the failure of the Echebatar purse seine fleet to get certified in the Western Indian Ocean (WIO) has resulted in a major Fisheries Improvement Project that is aiming at getting all the suppliers to the major Seychelles and Mauritius canners MSC certified in the medium term. This has considerable implications for the Philippines. WIO canned tuna is a direct competitor of that from the Philippines and enjoys a similar General System of Preferences (GSP+) preferential tariff into the EU, the largest market for both Philippines and WIO canned tuna. A further consideration is the advantage that MSC certification can give in terms of the traceability systems in place for most of the US and EU tuna supply chains through the MSC Chain of Custody process.

MSC certification is expensive and not necessarily suitable for every fishery, but it, in our view has the potential to provide a real market-driven approach to improving environmental practices in Philippines fisheries, as well as encouraging greater compliance and traceability through the value chain. It is recognized that this is not an immediate solution, but the path of processing through Fisheries Improvement Projects (FIPs), for both for the handline and the purse seine fisheries, is a real one.

For smaller, community-based fisheries that are exporting products to the US, the FairTrade USA certification standard is a viable option. It guarantees a producer premium, is developmental in nature (e.g. demands improvements after certification and once the premium is flowing), and covers a wide range of ecological, welfare and social elements.

Probably the fastest emerging concern of Corporate Social Responsibility (CSR) managers and seafood buyers in North America and Europe is the issue of slavery and other unethical practices in seafood value chains, especially the front-end catching segment. Whilst these concerns have been mainly associated with other Southeast Asian countries, and not targeted at the Philippines, there may well be similar concerns in Philippine fisheries that have yet to be identified.

Methodology

The identification of main actors and stakeholders was accomplished through setting out the scope of the tuna value chains from point of catch to final consumer. A series of semi-quantitative interview techniques was then developed to further capture data and views at the main value chain transaction points. Hence, extensive 'on the ground' interviews were conducted with the main actors and stakeholders at GSFPC. Lastly, the team established positions on CDT drivers, progress and barriers through looking at two separate activities (i) the nature of external market for tuna products and their CDT requirements and (ii) current and emerging customer and preferences and trends. This was conducted through a mixture of desktop research and interviews.

Main Findings and Conclusions

There is a global move, one that the Western Central Pacific Ocean (WCPO) region is leading, towards developing a comprehensive catch documentation and product traceability system for tropical tuna fisheries. In the future, this is likely to lead to the integration of electronic harvest, process and trade data from different fisheries. However, it is also apparent that this will be a complex, long-term process and is likely to encounter considerable logistical and practical difficulties before it becomes a reality. The Philippines should be prepared to contribute to the development process and engage positively where possible.

It is also apparent that catch data (e.g. species, location, fishing method, and legality of capture) is only one facet of information demanded by seafood buyers and consumers. In particular, they want assurances of the quality of products, its environmental credentials, and assurance of the welfare and fair treatment of individuals and groups involved in the supply chain. The information and indicators behind these very different elements are wide-ranging and diverse, demanding multiple layers of information transfer and content. This poses problems both in integrating CDT in its widest sense and in developing a cost-effective process to support this information provision.

This is also complicated by the nature of 'customers' of tuna from the Philippines. Whilst the end consumer in North America or Europe is no doubt much more sophisticated, informed, and demanding than before, in most cases they simply demand a good quality product at a reasonable price. Given the complexity of supply chains and the diverse range of issues noted in the last

paragraph, most end-consumers depend upon their suppliers (retailers) to do their due diligence on their behalf. As a result, there is considerable pressure on multiple retailers and large wholesale buyers—who are often under a critical NGO spotlight—to ensure that the products they sell meet the wider expectations of the general public.

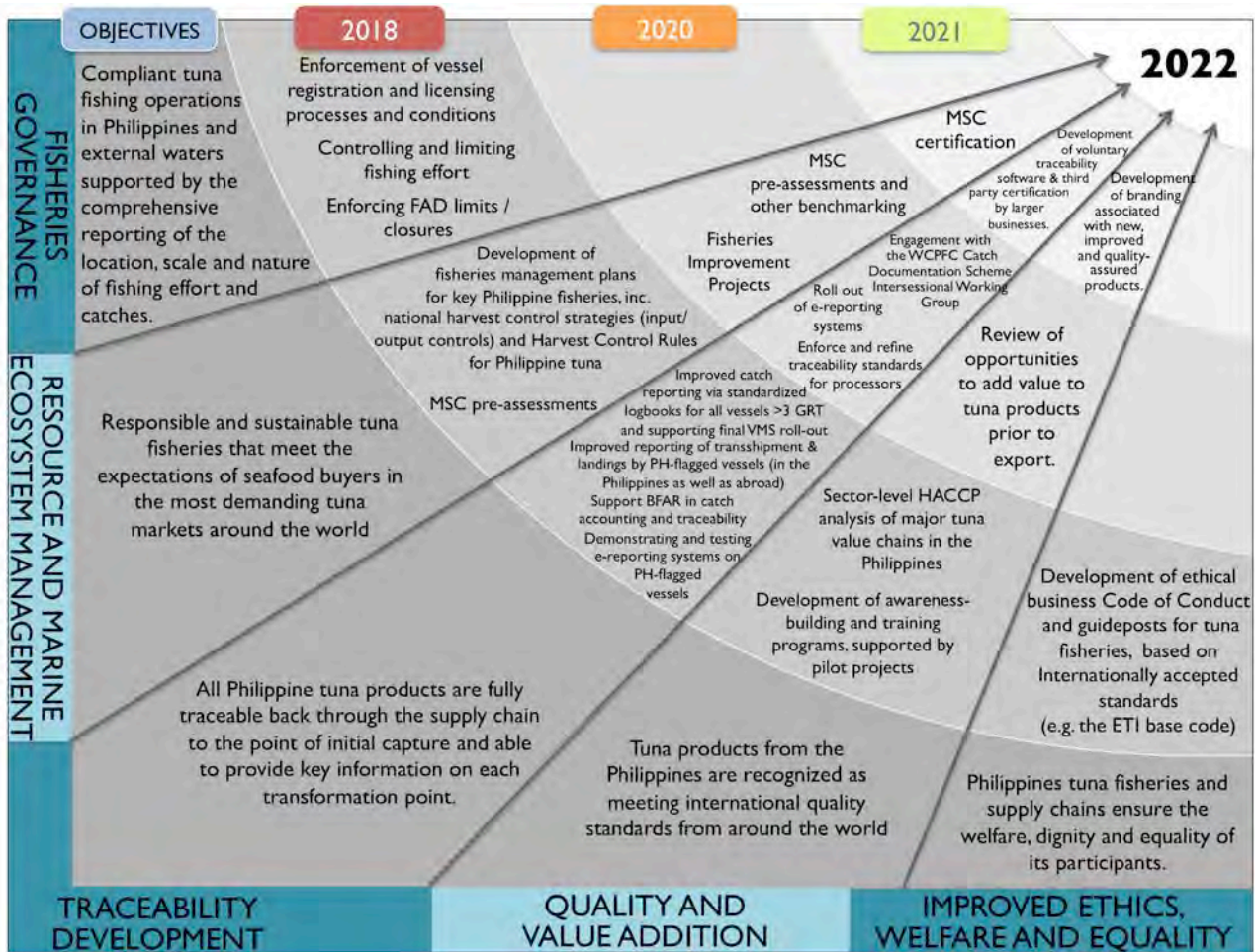
In terms of quality, main opportunities are at harvest and landing stages. Once landed, the catch tends to enter a more robust and better controlled chill/cold chain, with higher levels of monitoring. Quality assurance is conducted during each transfer step for product value and safety reasons (and not necessarily for environmental and ethical reasons). Therefore, information on the timing of the product passing through the supply chain points, the processes involved and how much they have impacted on the quality of the product, and integration into a full traceability process are essential.

Ensuring the environmental sustainability of a product is quite different. Environmental sustainability is very much driven by the consumer end of the value chain and may not necessarily be a concern of the catching or processing sector unless demanded by their buyers. Environmental sustainability also operates at a much larger scale e.g. at the whole WCPO stock level, and thus (i) there may be implications of one fisheries activity on another (e.g. excessive juvenile bycatch by the purse seine fleet might affect handline yields) and (ii) different parts of the value chain have less leverage on other parts of the system. It is no doubt that there are environmental issues in these fisheries – especially in domestic purse seine activities. The current and persistent high dependence on FAD-facilitated catches is a main contributor to environmental issues. This is exacerbated by the unwillingness of the Philippines purse seine owners to recognize the long-term harm of this strategy as well as BFAR’s reluctance to effectively control fishing effort and FAD use as required by the WCPFC.

Probably the fastest emerging concern of CSR managers and seafood buyers in North America and Europe is on the issue of slavery and other unethical practices in seafood value chains, especially the front-end catching segment. Whilst these concerns have been mainly associated with Southeast Asian countries other than the Philippines, as demonstrated by the Verité study in 2012, there may well be similar concerns closer at home that have yet to be identified.

We have summarized the implications of this report’s findings for tuna flowing through GSFPC as a series of prioritized actions that will make up a ‘short value chain improvement roadmap (2018-2022)’ (see following page). These recommendations and the resultant roadmap are made in recognition of existing mechanisms (e.g. FAO 283-1) and plans (e.g. the draft 2017 National Tuna Management Plan and the Comprehensive National Fisheries Industry Development Plan).

Short Value Chain Improvement Roadmap (2018 – 2022)



I. PROFILE OF THE OVERALL TUNA SECTOR IN THE PHILIPPINES

In 2015, Philippine-flagged vessels caught approximately 290,722 metric ton (mt) of tuna and billfish in the WCPFC statistical area, which consisted mainly of skipjack (54%) and yellowfin (43%). Catch patterns, over time, show a broad correlation with the overall WCPFC landings, of which the Philippines contributes around 11% (WCPFC catch/effort database). No fish catches by Philippine-flagged vessels were reported to India Ocean Tuna Commission (IOTC) for 2015.

The main fishing gear used is the *purse seine*, which catches 45% of Philippine tuna. The *ring net* is also popular (16%), as are *hand lines*, both at small-scale artisanal (23% of the catch) and commercial levels (11%). At present, there are 41 Philippines-flagged fishing vessels registered with WCPFC that fish with purse seines of some sort. There is very little use of long liners (which are used extensively by the mainland Asian fleets such as Taiwan and Japan). A search of the WCPFC fishing vessel list suggests that only there are no Philippines flagged long liners registered with the WCPFC, although BFAR has 24 longliners registered (BFAR, 2012).

Table I: Catch by EEZ, gear type and tuna species of the Philippines-flagged fishing fleet (2015)

EEZ	Gear	SKJ (mt)		YFT (mt)		BET (mt)		TOTAL	
		Catch	%	Catch	%	Catch	%	mt	%
Kiribati	PS	2,063	1%	830	1%	38	1%	2,932	1%
High Seas 1	PS	28	0%	6	0%	2	0%	36	0%
High Seas 2	PS	28	0%	26	0%	1	0%	55	0%
Nauru	PS	2,741	2%	836	1%	137	2%	3,715	1%
PNG	PS	34,736	22%	27,174	22%	3,031	44%	64,942	22%
Solomon Islands	PS	2,925	2%	604	0%	52	1%	3,581	1%
Philippines	Handline (L)	9,508	6%	21,789	17%	1,498	22%	32,795	11%
	Handline (S)	14,266	9%	50,857	40%	502	7%	65,625	23%
	Unclassified	11,797	7%	2,266	2%	220	3%	14,283	5%
	Ring net	37,471	24%	7,955	6%	373	5%	45,799	16%
	PS	42,594	27%	13,332	11%	1,034	15%	56,960	20%
Sub-total (PH)	All gears	115,636	73%	96,199	77%	3,627	53%	215,462	74%
Total		158,157	100%	125,676	100%	6,889	100%	290,722	100%

Source: SPC (pers. comm., August 2016)

The vast majority (215,462 mt, 74%) of tuna catch by Philippines-flagged fishing fleets are caught in the Philippines Exclusive Economic Zone (EEZ), with much of the remaining balance (64,942 mt, 22%) in Papua New Guinea (PNG) waters. Small amounts of Philippine fishing activity take place in Kiribati, Indonesia, Nauru and the Solomon

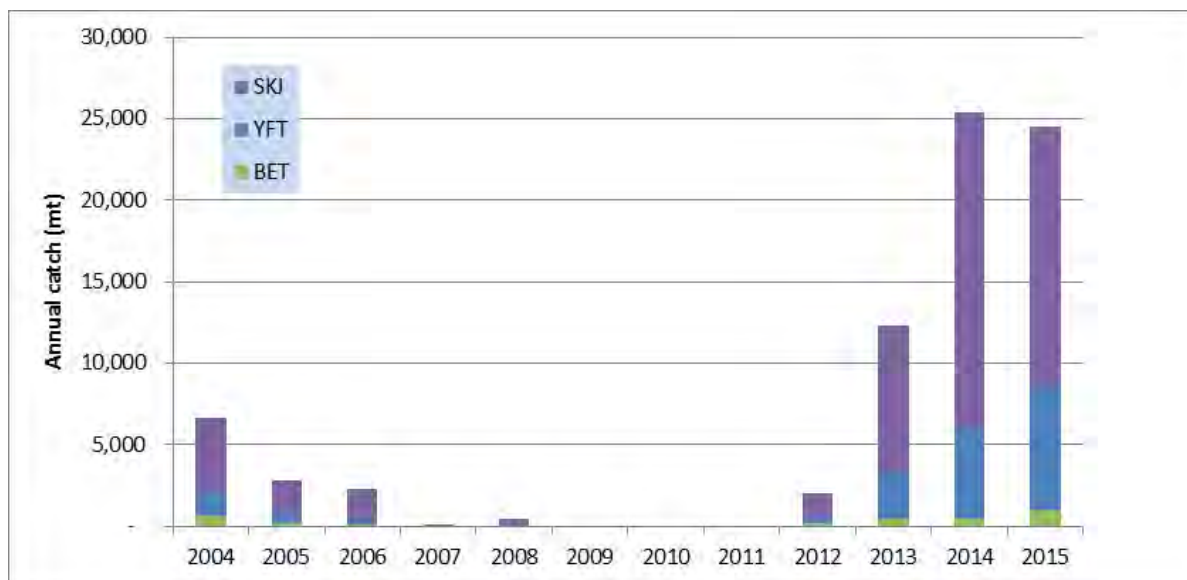
Islands (see Table I). According to Philippine Fisheries Development Authority (PFDA) in General Santos (unpublished data), most of the EEZ catch that is landed in GSFPFC sourced from the Moro Gulf, with smaller volumes from the Manila Bay and Sulu Sea (see Figure 3). Interviewees consulted for this study suggested that Mati, Centro, Celebes and Cagayan de Oro are also important domestic fishing grounds for tuna.

In addition to fishing in the Philippine and other Pacific country EEZs, there is some activity in the high seas pockets, High Seas Pocket I (HSP1) in particular. Since 2013, there have been 36 'traditional' Philippine-registered purse seiners authorized to fish in this area, of which 35 are currently active (up from 10 in 2012). This is a minor but rapidly growing fishing area for Philippine-flagged vessels. Following the 2009 – 2011 fishing moratorium, fishing effort² has increased rapidly

² Philippines effort is restricted to 9,846 fishing days, of which only 1,352 were used in 2014, so has considerable scope for expansion.

with around 26,510 mt caught in 2015 (22,335 mt or 84% by purse seiners and 4,175 mt or 16% by ring netters (Barut and Garvilles, 2016, see Figure 5). Most or all of this catch is landed into GSFFPC.

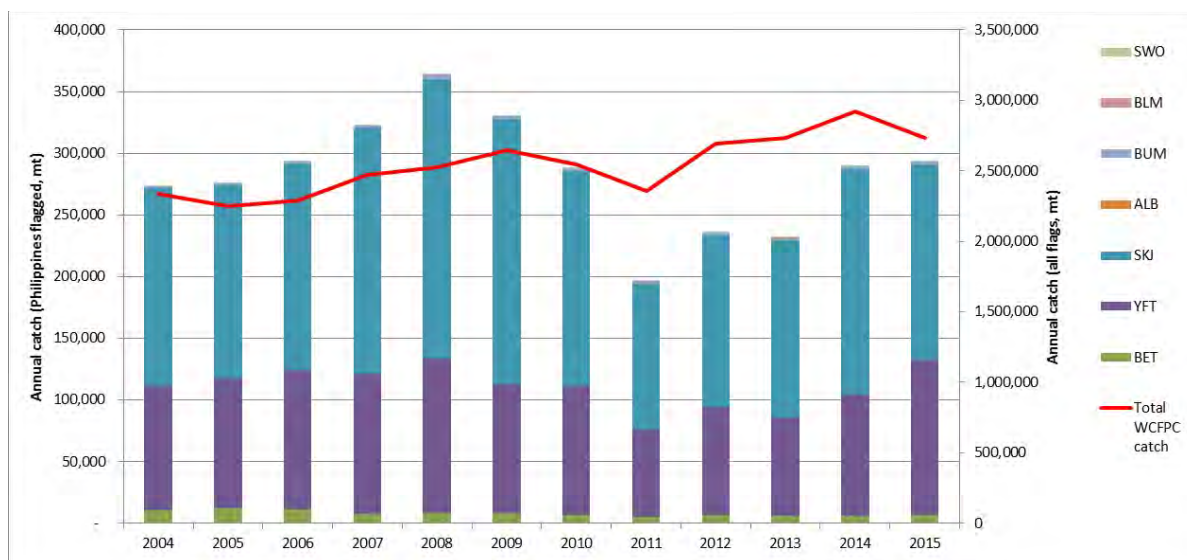
Figure 1: Philippines-flagged catches (mt) in High Seas Pocket I



Source: SPC (pers. comm.) except 2015 data (Barut and Garvilles, 2016)

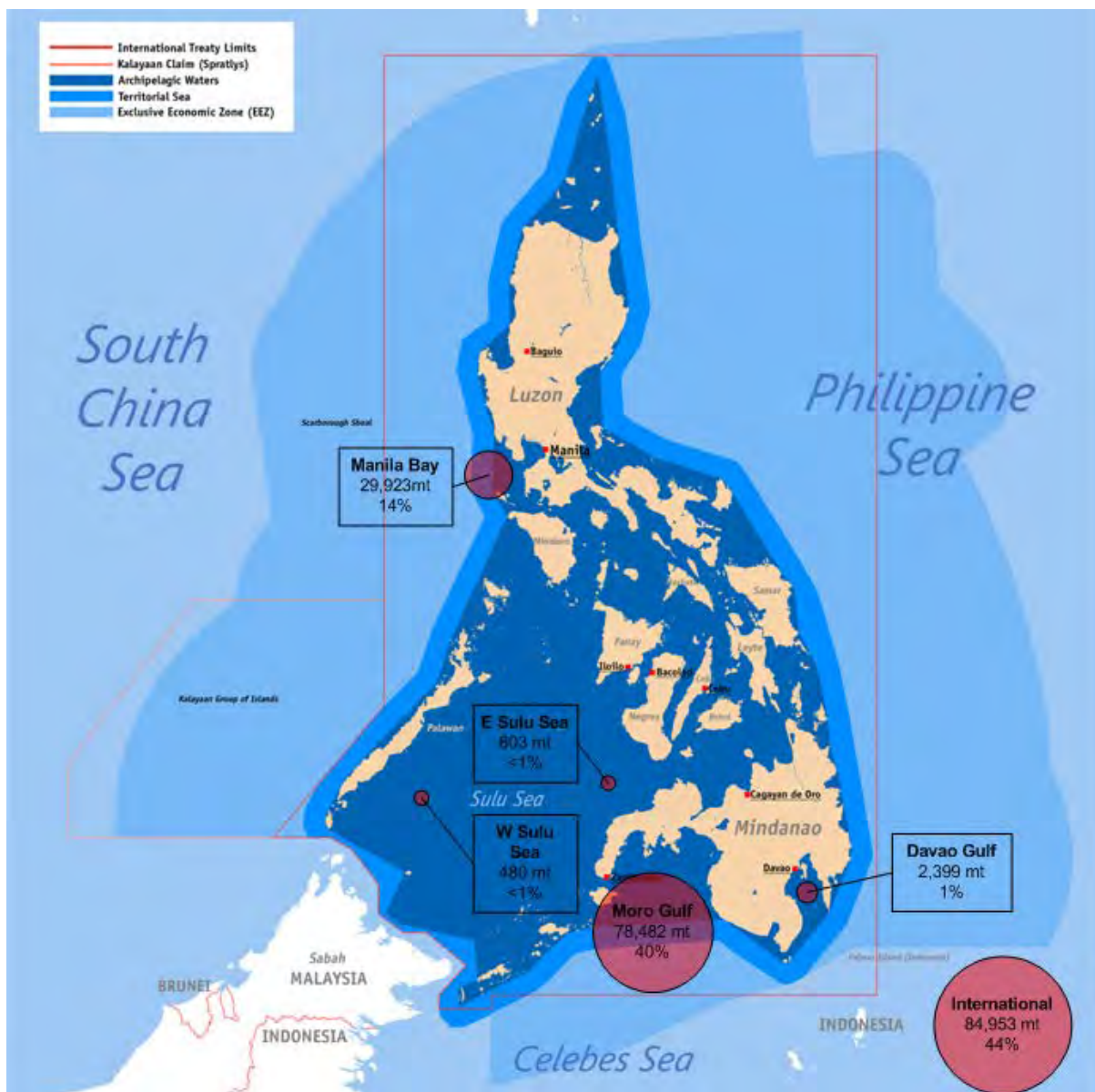
Note: Figures derived from SPC catch and effort database (July 2016). It is important to note that the WCPFC data shows only 36 mt being caught in 2015, which is in sharp contrast to the 26,510 mt catch reported by Barut and Garvilles (2016). This discrepancy is being investigated with SPC.

Figure 2: Tuna & billfish landings by the Philippines-flagged fleet vs. all WCPFC catch (2004 - 2015)



Source: SPC (pers. comm., August 2016)

Figure 3: Location of Philippine tuna catches by EEZ (2014)



Source: PFDA in General Santos (unpublished data)

2. VALUE CHAIN ANALYSIS OF KEY TUNA FISHERIES IN GSFPC

2.1 Inter-firm relationships for different types of value chains

2.1.1 Upstream Value Chains - Landings into General Santos Fish Port Complex and First Sale

Overview

General Santos Fishing Port is the southern-most, largest, and most active point for tuna landings in the Philippines. Navatos Bay follows, but has lower landings of tuna, whilst Davao holds significance as an important tuna transshipment port. Davao is the only authorized transshipment port in the Philippines, but has relatively few fresh fish landings.

There are three main fisheries inputs into General Santos Fishing Port, each of which have been analyzed in this report. They include:

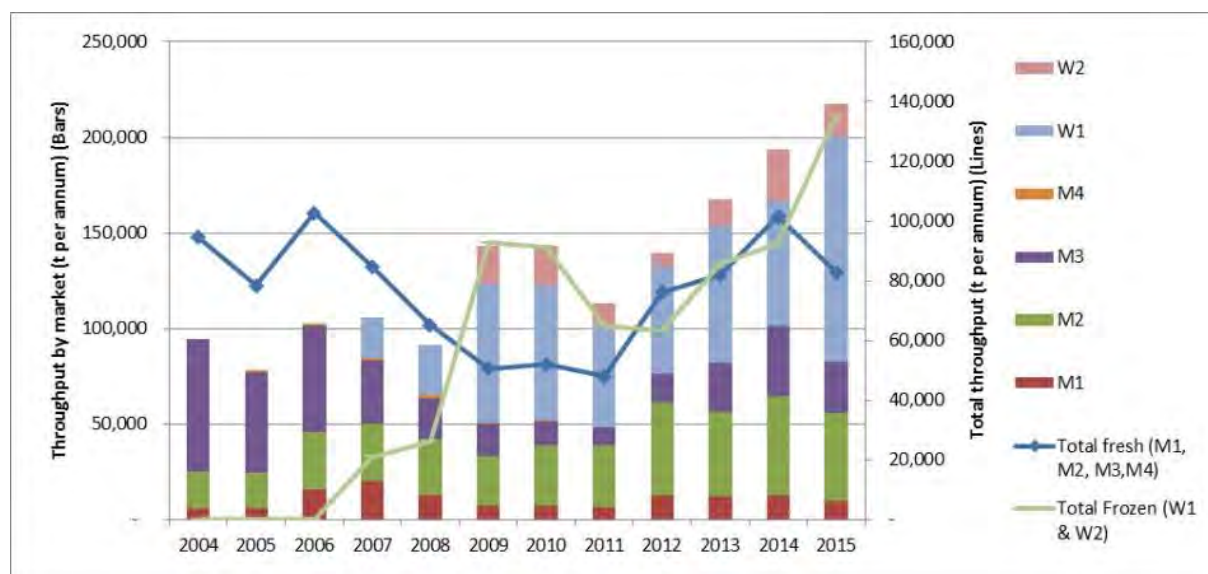
1. **Handline fishery:** mainly company operated handline motherships (15 – 35 GRT) with up to 20 *pakura* (handlining dories) and a declining number of traditional *Bancas* (8 GRT) catching large pelagic tuna landing into Harbor 1 and sold through Market 1 (M1) (see Figure 9 for schematic of port). This is referred to as **VCA 1** forthwith.
2. **Philippines purse seine and ring net (chilled) fisheries:** FAD-based fisheries catching small juvenile pelagic tunas, neritic tuna and small pelagic fish landed into Harbors 2 & 3 via carrier vessels and marketed through Market 2 (M2) and Market 3 (M3). This is referred to as **VCA 2**.
3. **Frozen (reefer) landings:** bulk consignments of frozen skipjack and yellowfin tuna caught in high seas or other coastal state waters (mainly PNG) destined for the canneries in General Santos. These are either landed by *Philippine-flagged* reefer vessels via Wharf 2 (W2) or *foreign-flagged* reefer vessels via Wharf 1 (W1). The supply to the canneries is also supplemented by containerized fish imported directly from Makar Wharf in General Santos to the canneries (i.e. does not enter GSFPC). These three sources are together referred to as **VCA 3**.

Landings into General Santos have more than doubled since 2004 from 94,000 mt to 217,630 mt in 2015 (see Figure 3). The contribution of frozen fish grew rapidly from 2006 to 2009 before dropping and over 2010 – 2012 before recovering strongly in 2015. Fresh fish landings have remained at about 100,000 mt since 2004, but showed a marked drop from 2007 to 2012, partially because of the HSPI fishing moratorium over 2009 – 2011, and again in 2015.

Landings are dominated by skipjack (176,755 mt in 2015 or 81%), yellowfin (16,914 mt, 8%) and scads (8,422 mt, 4%) and bullet tuna (5,996 mt, 3%). Of the remainder, other main species are milkfish (2,541 mt, 1%) and squid (1,672 mt, <1%).

For the layout of the port, its harbors, market areas and processing spaces, see Figure 4.

Figure 5: Throughput by market location (2004 - 2015)



Source: PFDA in General Santos (unpublished data)

Source Fishery I: Fresh landings from the Handline Fishery

Fish from the hand line fisheries consists of large (>20 kg) yellowfin tuna and other large pelagics such as marlins and swordfish (see table below).

Table 2: Species-wise landings (mt and %) into Harbor I from the handline fishery (2014 & 2015)

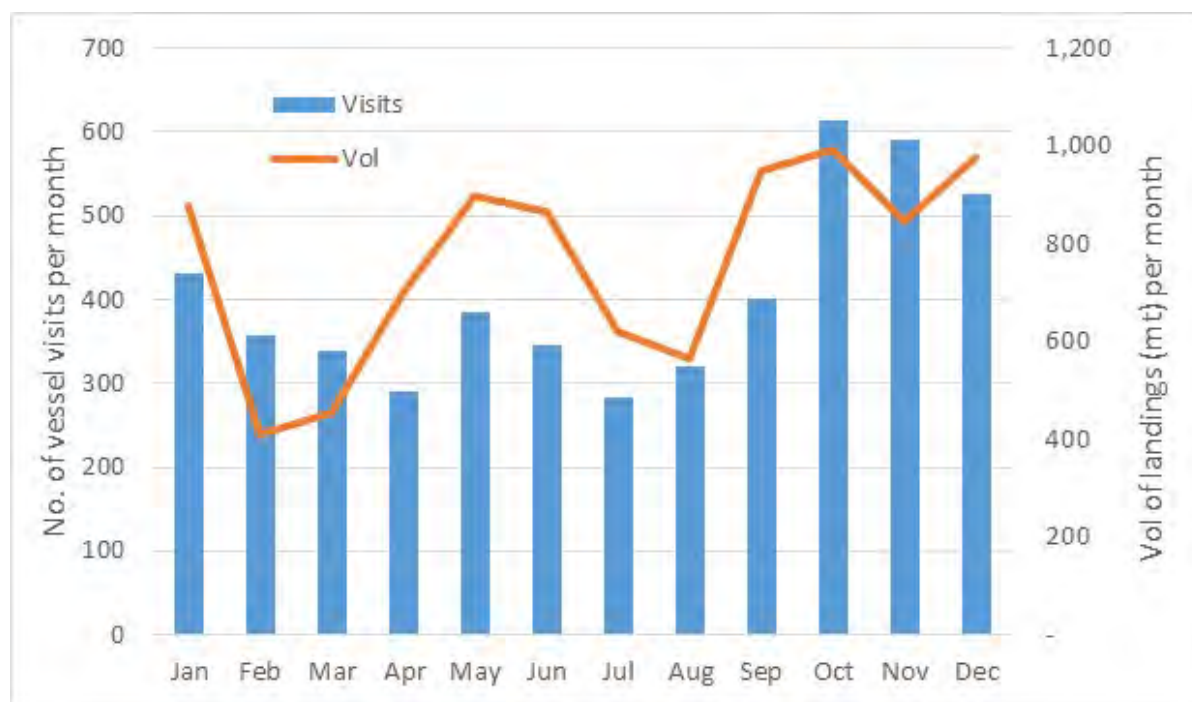
Species	Group	2014		2015	
Yellowfin tuna (Class A)	Pelagic tuna	3,283	26%	2,666	29%
Yellowfin tuna (domestic)		8,295	67%	6,060	66%
Black marlin	Billfish	823	7%	453	5%
Sailfish		23	0%	54	1%
Swordfish (<i>Dugho</i>)		26	0%	12	0%
Swordfish (<i>Liwit</i>)		2	0%	1	0%
TOTAL		12,452	100%	9,246	100%

Source: PFDA in General Santos (unpublished data)

This highly selective fishery is conducted on free schools and FADs and has the potential to produce prime fish. In the past this fishery has used traditional *banca* type outrigger vessels (see Photo 1 in Appendix B), which have implications for the handling and quality of the landed fish. These vessels are 3 gross registered tons (GRT) upwards (average 8 GRT) with around 350 hp. inboard engines have average fishing trips of 7 – 15 days, of which 5-10 days is fishing, with around 2 days transit time steaming at around 8 knots. Fish is chilled using an ice /water mix, utilizing block ice which is crushed when needed (each vessel uses around 100 blocks of ice @ 100 kg). The total hold capacity is around 2.5 mt, but the average landings are about 1.5 mt per vessel.

These vessels have recently been replaced by larger (20 – 35 GRT) mothership vessels (both with and without outriggers) that carry up to 20 *pakura* (handlining dories/auxiliary boats). The peak landing period is over October to November (see Figure 6).

Figure 6: Harbor / Market I - Monthly vessel visits and landings (mt) over 2015



Source: Source: PFDA in General Santos (unpublished data)

Handlined fish are potentially high quality as they are hauled aboard immediately, with no soak time like long liners and gillnets. The declining catch in the Philippine EEZ has forced handline fishing vessels to fish farther away from shore and for longer periods, both of which can result in the deterioration of fish catch quality. As a result, the quality of the landed fish may be poor, reflecting (i) the long duration of fishing trips, (ii) the poor handling in the tiny catching boats, and (iii) the poor chilling and preservation capacity of *bancas*. As a result, only 28% is suitable for export (with prices from Php 250 – 450 / kg) and the remaining balance (77%) is sold in the local market for Php 180 – 290 / kg.

The volume of handline fisheries are declining (down from 12,452 mt in 2014 to 9,246 mt in 2015) due to two factors – firstly larger yellowfin tuna are becoming scarcer in Philippines waters, and secondly access to Indonesian waters is now prohibited. The volume of fish previously caught in Indonesian waters is not known, and may have been misreported to have been caught in the Philippines EEZ.

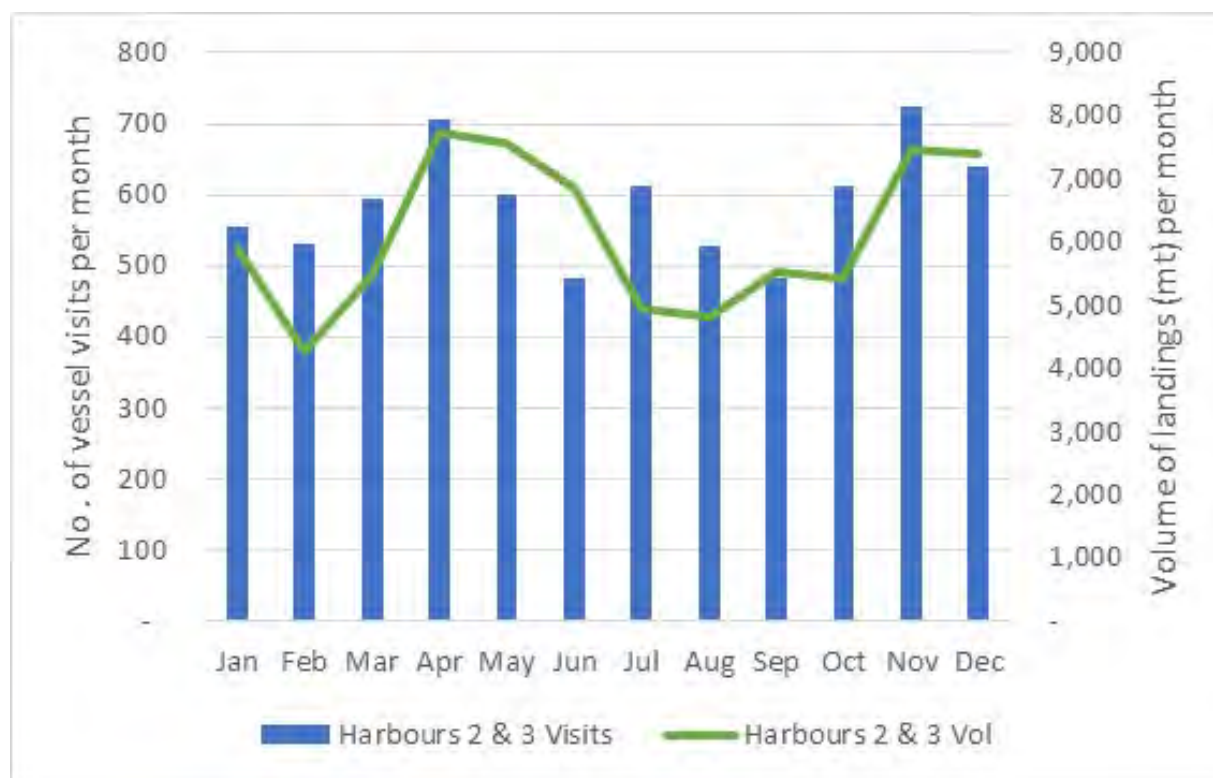
Source Fishery 2: Fresh landings from the Purse Seine / Ring Net Fisheries

In 2015, approximately 67,000 mt of pelagic fish were landed by both fishing and carrier vessels from the offshore purse seine and ring net fisheries (see Table 3). This was mainly composed of skipjack (63%), round scad (12%) and bullet (7%) tunas. In addition, a further 4,397 t of other fish species were landed into Harbors 2 and 3, mainly milkfish (2,541 mt), squid (1,672 mt) and flying fish (*bangsi*) (992 mt).

Landings from these fisheries are made into both Harbors 2 and 3. Harbor 2 has the largest landings of the two (around 46,500 mt in 2015) as it is in the most convenient for Market 2 while Harbor 3 received around 27,000 mt in 2015. However, the size of vessels and visit numbers varies significantly between the two – Harbor 2 receives an average of 6,000 vessel visits a year, which are mainly small

(average 22 GRT) fishing vessels whilst Harbor 3 received an average of only 877 vessel visits a year. These are larger, most likely carrier vessels, averaging around 114 GRT (see Figure 7).

Figure 7: Markets 2 & 3 - Monthly vessel visits and landings (mt) over 2015



Source: PFDA in General Santos (unpublished data)

Fishing areas are varied. Most fishing activity in Philippines waters are mainly in the Moro Gulf, Centro and Mati. Some of the larger purse seine vessels also fish in High Seas Pocket I (see **Figure 1** for more details on this fishery).

Table 3: Species-wise landings (mt and %) into Harbors 2 & 3 from the purse seine and ring net fisheries (2014 & 2015)

Species	Group	2014		2015	
		Vol. (mt)	%	Vol. (mt)	%
Bullet Tuna (bodboron)	Neritic tuna	3,943	5%	4,373	7%
Bullet Tuna (balentong)		783	1%	1,623	2%
Tuna scrap		115	0%	627	1%
Yaito Tuna		31	0%	17	0%
Eastern little tuna (perit pino)		204	0%	-	0%
Eastern little tuna(perit)		14,450	17%	-	0%
Dolphin Fish	Other pelagic	178	0%	434	1%
Rainbow Runner		133	0%	350	1%
Spotted Oceanic Trigger Fish		19	0%	235	0%
Wahoo		12	0%	92	0%
Cobia (Tasik)		0	0%	3	0%
Skipjack tuna (perit) 300 - 1 kg	Pelagic tuna	35,158	42%	28,664	43%
Skipjack tuna (Peritol) 1 - 3 kg		9,236	11%	8,933	13%
Skipjack tuna (Sambagon) >3 kg		2,225	3%	4,102	6%
Yellowfin tuna (Carao) 1.5 - 4 kg		2,233	3%	3,861	6%
Yellowfin tuna (PLs) 100-300 g		2,713	3%	2,218	3%
Yellowfin tuna (PL) 300 - 700 g		2,224	3%	1,439	2%

Species	Group	2014		2015	
		Vol. (mt)	%	Vol. (mt)	%
Yellowfin tuna (Barileson) 300 - 1.5 kg		263	0%	307	0%
Yellowfin tuna (Residue)		200	0%	201	0%
Yellowfin tuna (PLb) 700 - 1.5k g		1,199	1%	162	0%
Skipjack tuna (perit, pino) >200-300g		746	1%	48	0%
Skipjack tuna (galon-galon) 3 - 5 kg		0	0%	0	0%
Moonfish	Reef	146	0%	133	0%
Shark	Shark	3	0%	0	0%
Round Scad (Borot)	Small pelagic	4,759	6%	5,774	9%
Roughear Scad (mal-mal)		154	0%	643	1%
Round Scad (Borot pino)		1,112	1%	643	1%
Big-eyed Scad (tulay)		1,110	1%	593	1%
Lupoy (Sardinella)		99	0%	565	1%
Roughear Scad (marot)		36	0%	308	0%
Indian Sardines		199	0%	298	0%
Big-eyed Scad (Tulay, Pino)		263	0%	57	0%
Roughear Scad (mal-mal, pino)		54	0%	54	0%
Mackerel		40	0%	20	0%
TOTAL		84,042	100%	66,777	100%

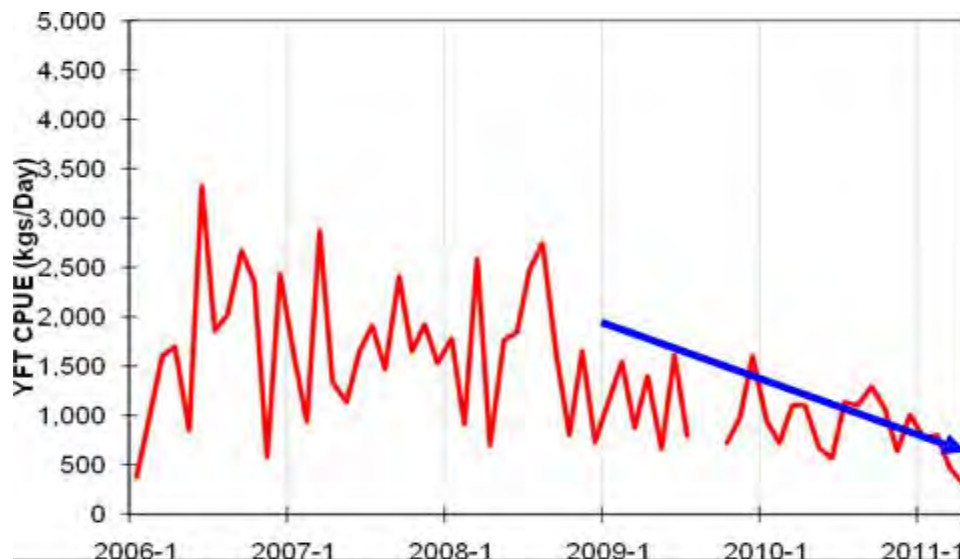
Source: PFDA in General Santos (unpublished data)

A typical purse-seine fishing expedition needs between PhP 750,000 to 1,500,000 as start-up capital. It is a fleet-based operation composed of a catcher purse seine or ring net supported by carrier vessels and light boats. The catcher purse seiner or ring net (up to 80 GRT) and the light boats stay in the open sea for six months to one year. The catcher vessel is usually stationary, while the light boats roam the fishing grounds to check the *payaos* (FADs) and direct the catcher vessel to the areas where there are better chances of abundant fish catch.

A carrier vessel (50 – 120 GRT) comes regularly to transport the tuna catch from the fishing ground to the fish landing area. Some of the purse seine crew members can likewise go home every time a carrier vessel visits the fishing operation. A minimum expense of PhP 100,000 is incurred every time a service boat goes to the open sea to transport tuna and crew as well as to bring in supplies of food and ice to the fleet. Purse seine operators used to send carrier vessels on a weekly basis to pressure the fishing crew to be more productive. However, with the successive fuel hikes and value-added taxes, fleet owners save on fuel costs by sending the carrier vessels to the fishing ground only if there is an advisory from the purse seine fleet of a sizeable catch that needs to be transported or in cases when it has to deliver critical supplies for the fishing expedition.

The monthly catch per unit effort (CPUE) of yellowfin tuna for the GSFFC purse seine fleet has fluctuated over time, ranging from 500 to nearly 3,500 kg/trip day (the average is around 1,250 kg/day). Catch rates have been in the decline since 2009, with 2011 holding the lowest catch observed in recent years—300-700 kg/trip day (Figure 8).

Figure 8: Catch per unit effort for purse seiners at General Santos Fish Port (2006 - 2011)



Source: Bigelow, K., E. Garvilles & N. Barut (2014)

Purse seine operations are also challenged by a dependence upon ice-chilling and preservation of the catch. Given the long distances and transit times involved, especially when fishing in the High Seas Pocket I (HSPI), there is strong potential for a loss in fish quality before landing that will affect fish prices and may even write-off part of the catch. A recent analysis of spoilage from the HSPI fisheries suggests that in 2014, 20% of the catch was spoiled and only utilizable for smoking and drying of fishmeal. The opportunity cost of this over the 2012 - 2014 period has been estimated to be around PhP 380 million (USD 8.5 million).

FAD-based purse seine fishing often targets small juvenile yellowfin tuna (YFT) and bigeye tuna (BET). The observed length frequency distribution of YFT is 11 to 159 cm with an average of 29 cm, while BET ranges from 15 to 78 cm, with an average of 28 cm. The average length at maturity for YFT is 103.3 cm (range 78 - 158 cm) (FishBase), thus the majority of catch are juvenile, immature fish. Due to the wide regional concern over juvenile YFT catches on FADs, the WCPFC Commission Management Measure (CMM) 2013-01 required a three-month ban on FAD sets in both EEZ and high seas, July to August 2014. In 2015, they increased this ban to five months. The Philippines, however, has unilaterally invoked FAO 236 to allow the fishing on FADs year around, so long as nets are less than 115 fathoms deep. Whilst this measure may reduce bigeye catch, it is unlikely to have a significant impact on size selectivity for YFT.

In addition to direct landings, interviews conducted suggest that tuna is also delivered by trucks from different municipalities and provinces in Mindanao as an additional source of raw material for the canneries, processors and even for local consumption in General Santos. Since the market for tuna is concentrated in the GSFPC, fishers from other provinces also see this port as more competitive and profit-generating than where the fish is actually caught and landed. This was further ratified during an interview with a major fishing company and with NFRDI, who both stated that this represented relatively insignificant quantities compared to material arriving through GSFPC. September to November are peak months for these deliveries, highlighting the seasonality of this input. Trucks from Zamboanga bring catch from Tawi-Tawi and Sulu, with trucks from Davao typically bringing catch from the Mati Area.

Source Fishery 3: Frozen Landings

The canneries in General Santos supplement fish from the domestic purse seine fisheries with large amounts of frozen fish that is brought in by reefer vessels landing in Wharf 1 (foreign-flagged) and Wharf 2 (domestic-flagged reefers). In addition, some frozen fish is landed in reefer containers in General Santos' Makar port and is sent directly to the canneries—it does not go through GSFPC. Using a mass balance approach, this is estimated to be around 20,850 mt. Processing companies such as Santa Cruz (YFT only) and TenPoint (both YFT and BET) both supplement the local supply with frozen fish.

According to the PFDA, all the frozen fish landed by reefer vessel (both domestic and foreign flagged) is skipjack tuna. Approximately 135,000 mt was landed in 2015, up considerably from the 92,000 mt in 2014. The increase in landed fish is presumably to make up the shortfall in domestically landed fresh fish raw material.

Table 4: Landings of frozen skipjack tuna into GSFPC over 2014 and 2015

Harbor (flag)	2014		2015	
	Vol. (mt)	%	Vol. (mt)	%
Wharf 1 (Foreign-flagged)	65,493	71%	117,907	87%
Wharf 2 (Philippine-flagged)	26,984	29%	17,101	13%
TOTAL	92,477	100%	135,008	100%

Frozen fish are sourced mainly from Papua New Guinea (PNG), Taiwan, China and South Korea (see Table 5). The table on the succeeding page needs to be considered with some caution as (i) it covers all imports into the country, not just into General Santos, and (ii) the country of origin does not necessarily mean that the countries' flagged fleet caught the fish. For instance, a considerable amount of the fish from PNG has been landed by Philippines flagged vessels operating in the WCPO.

Frozen fish landings are made by three sources:

1. **Philippine-flagged reefer vessels landing into Wharf 2.** Approximately 28 Philippine-flagged reefer vessels landed 16,501 mt fish in 2015. Three of these visits were by large reefer vessels (c. 2,300 GRT) and the other 25 by smaller (e.g. 440 GRT) reefer vessels (see figure overleaf for details). The size of these vessels range from 2,300 to 6,000 GRT.
2. **Foreign-flagged reefer vessels landing into Wharf 1.** Approximately 46 foreign-flagged reefer vessels landed 117,907 mt fish over 2015. All these visits were by large reefer vessels (ranging from 2,500 to 4,600 GRT).
3. **Containerized fish landed into Makar Wharf in General Santos** and being driven directly to the canneries (i.e. does not enter GSFPC).

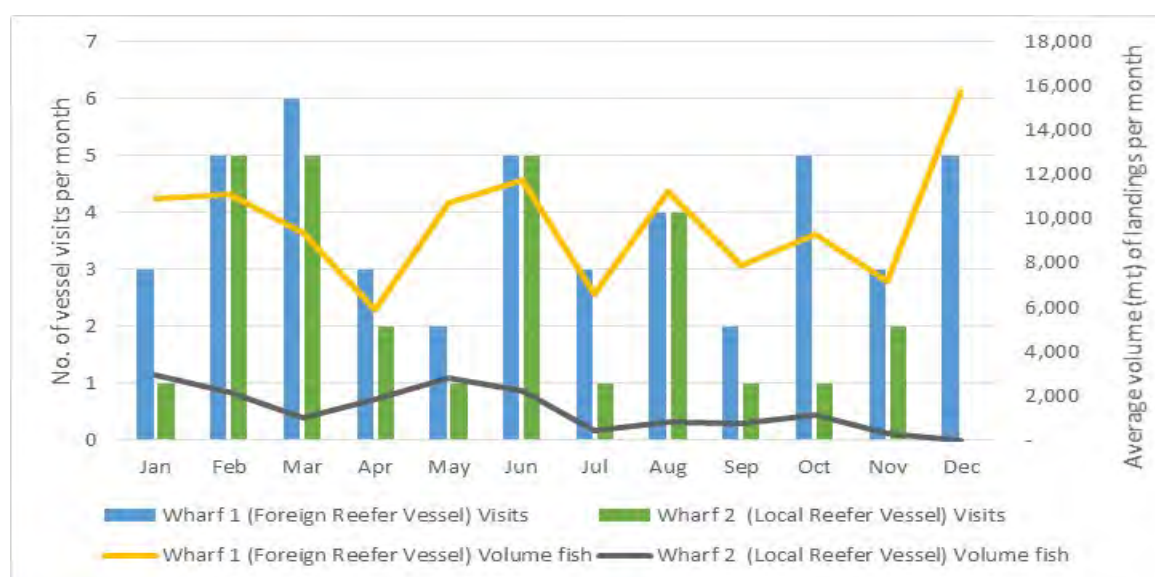
All the frozen fish landed into GSFPC is destined for the six canneries in General Santos City. This is their main source of raw material, which is supplemented by fresh material, mainly from Markets 2 and 3, and occasionally from the Philippine Ports Authority container port located at Makar Wharf. The contribution of frozen fish to the canneries has increased in recent years as the fresh fish supplies have declined, possibly due to over-fishing in the Philippines EEZ. Frozen fish is preferred, as they tend to be larger than the small fish being produced from the coastal FAD-based local fisheries.

Table 5: Countries of origin for frozen fish imported into the Philippines in 2015

Country of origin	SKJ	YFT	BET	Other tuna	Non-tuna	Total	
Papua New Guinea	35,035	7,329	0	0	0	42,364	27%
Taiwan	32,850	5,117	2,193	623	538	41,321	27%
China, P.R	25,309	396		200	375	26,280	17%
Korea, South	10,299	7,248	6	516	2,417	20,486	13%
Viet Nam	7,291	277		497	175	8,241	5%
Singapore	5,849	0		0	0	5,850	4%
Kiribati	1,313	999		0		2,312	1%
New Zealand	907	0		0		907	1%
Marshall Islands	761	545		24	68	1,398	1%
Indonesia	205	96	0	140	77	518	0%
Japan	163	3,531	180	0	147	4,021	3%
Netherlands	123			0	50	173	0%
USA	27	107		131	0	265	0%
Malaysia	24	9		0	0	34	0%
Ecuador	0			37		37	0%
India	0	0		0	9	9	0%
Thailand	0	18		102	31	151	0%
Afghanistan				25		25	0%
American Samoa		25		0		25	0%
Germany				0	24	24	0%
Maldives		19		9	0	27	0%
Mauritius		80		63		143	0%
Norway				0	20	20	0%
Solomon Island		110		19		128	0%
UK				0	47	47	0%
TOTAL	120,156	25,906	2,378	2,387	3,977	154,804	100%
	78%	17%	2%	2%	3%	100%	

Source: DTI

Figure 9: Reefer vessel visits and volume of fish landed (mt) into Wharfs 1 & 2 over 2015



Source: Source: PFDA in General Santos (unpublished data)

2.1.2 Downstream Value Chains – Processing, Distribution and Markets

Fresh Tuna: First point of sale

Harbor 1 handles the mothership and *banca* handline vessels that land fresh large tuna and billfish, all of which enters Market 1. Tuna catches coming from municipal hook-and-line fishing operations are sold to the fish dealers based in the landing areas or are sold directly to the wet market. Marketing of large tuna (weighing 35 kilograms or more) starts with weighing and classifying of the catch, where fish tuna meat is examined for its texture, color, smell and taste. The tuna can then be classified as Grade A, B or C. The export-quality fish is classified as Grades A or B. Grade A tuna is exclusively sold to the international market and is usually exported whole or with heads and entrails taken out. Grade B tuna is also of export quality, but only its prime meat is exported. Grade B tuna is also commonly sold to high-end buyers in the domestic market like restaurants and hotels. Tuna classified as Grade C goes to the local market, canneries, and processing plants.

Brokers act as a mediator or middleperson between the trader and the producers, and are the primary actors in the sale of the harvest. In some instances, when boat owners have no choice of traders or buyers since their catches are automatically sold to the financiers, who also act as traders. By financing the cost of the fishing operations, the traders are assured of a steady supply of tuna at a price that they can dictate.

The price of tuna is determined by factors like classification, size, season, fluctuations in supply and demand, and the operating costs. Prior to landing the fish catch, boat owners and traders are already monitoring the market price of tuna both in the local and the international markets. Such information is used as leverage in negotiating for price between buyer and seller. Generally, traders dictate the prices of tuna. Fishers feel that they are at a disadvantage, and the pricing scheme may be cartelized since traders often follow the same pricing cap for tuna products, thereby abolishing competition that could have resulted in higher prices for tuna.

Fresh tuna from purse seine/ring net fishing vessels are landed into Harbors 2 or 3. Harbor 2 is the most popular as it has direct access to Market 2, but PFDA statistics indicate that carrier vessels are directed to Harbor 3. The fish landing process is un-mechanized and labor-intensive, as fish are transferred to small plastic containers called *banyeras* that are dragged into the auction hall for sale by the vessel owner. Buyers are a mixture of processing and canning companies and domestic buyers. Fish from this market is not directly exported, although a considerable quantity (c. 14,000 mt, or 30% of Harbor 2 & 3's throughput) is purchased by General Santos' canners and will therefore end up on the export market. Given the mixed nature of the purse seine/ring net fleet (e.g. using vessels from 6 to 80 GRT) achieving full traceability is challenging in this raw material stream.

The bulk of the fresh fish trading activities of GSFPC occur in Market 2 and are handled by brokers called "Scalers" or "Consignacion" and walk-in fish traders. Scalers are fish brokers who have long term market space lease agreements with GSFPC. They have had long years of experience in fish trading and have established the confidence and trust of several fish producers, whether boat owners or aquaculturists, to consign their catch to them. Some Scalers are boat owners themselves.³

³ Phone interview with Jovy M. Garrido, Chief, Market Operations Division, GSFPC, 10 April 2015.

Scalers have established trustworthy business relationships with numerous large volume fish buyers or “viajeros,” and must have the capability of extending credit to their buyers and even to the boat owners for their fishing inputs.⁴

Scalers commonly charge a 5% commission of the gross sales from the boat owners for their trading services which include:

1. Unloading, sorting and displaying and weighing the catch.
2. Selling the boat owner’s entire landed catch at the highest possible price in the shortest time. Unsold catch during a day’s trading period are bought by the Scalers and stored and preserved in ice inside large Fiber Reinforced Plastic boxes for trading the next day.
3. Guarantee cash payment to the boat owner

There are at present, 61 fish brokers renting space in Market 2, varying from areas as large as 200 square meters to as small as 12.5 square meters.

The “walk-in” fish traders are either small scale producers or traders who trade lower volumes of catch from municipal fishing boats and other marine products e.g. seaweed, clam gatherers. They do not have a long-term lease in the market hall, but pay a daily Market Fee for the respective small spaces allotted to them in the market hall.⁵

Fresh Tuna: Processing in General Santos

A number of companies utilize the fresh fish landings to add value for domestic or export consumption (see next). Most of the exported material comes from the handline fishery, focusing mostly on large yellowfin tuna. There are a number of processors both within GSFPC and General Santos City with a total production of around 5,000 mt annually (Table 6).

Table 6: Local processing capacity, production and markets for fresh tuna raw material

Company	Daily Output (mt/day)	Capacity (mt / day)	Production (mt / year)	Markets (%)				
				PH	USA	EU	Japan	Other
Santa Cruz Seafoods	4 - 5	4 - 5	1,200	0%	100%	0%	0%	0%
TenPoint	6 - 7	25	1,800	0%	18%	5%	67%	0%
Citra Mina	Data not provided							
Pescador Trading	Data not provided							
TOTAL			5,000	0%	39%	37%	16%	5%

Source: Stakeholder interviews, September 2016

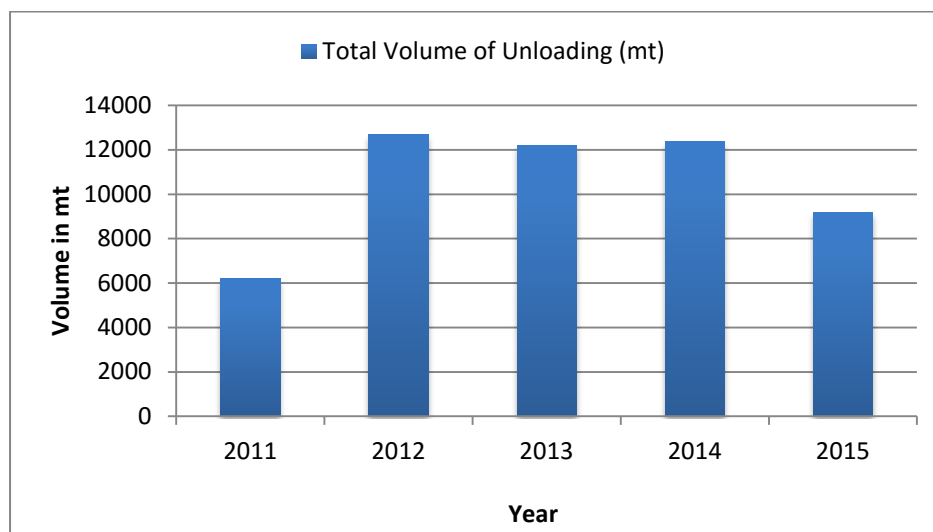
Most companies in General Santos City export tuna products (either fresh, chilled, whole, frozen, or processed) by consignment to designated or exclusive overseas importers. Several tuna processing companies have expressed concerns on the continuous decline of tuna catch by handline vessels, which results in their failure to meet production and processing demand from export partners (BFAR, 2012).

⁴ Phone interview with Jovy M. Garrido, Chief, Market Operations Division, GSFPC, 10 April 2015.

⁵ Phone interview with Jovy M. Garrido, Chief, Market Operations Division, GSFPC, 10 April 2015.

As illustrated in Figure 10, there was a minimal decrease in handline landings (from Harbor I) in 2013 and a notable 26% decline from 2014 to 2015. In 2012, landings were 12,701 mt while in 2015, only 9,161 mt.

Figure 10: Annual volume of handline landings (in Harbor I) from 2011-2015



Fresh Tuna: Export sales

Exporters of sashimi grade tuna, composed of processing and private fishing companies, normally cater to the US, Japan and the EU markets (see the **Output 2** report). The remainder of the handline catch is processed and exported as fresh/frozen tuna in various forms (e.g. butterfly, fillet, marinated, scraped, shredded). Value adding for other lower grade tuna from the handline fishery is conducted by canneries; and some catches are sold directly to the local market. The market price for tuna sold by handline fishers is dependent on the grade classification of unloaded fish. In 2014, prices of fish for local market ranged from PhP 180 to PhP 290 per kilo. Those destined for export average prices of PhP 250 to PhP 400 per kilogram.

There is some vertical integration in fresh fish capture, processing and export. As an example, TenPoint Manufacturing owns 28 handline mother boats docked at GSFPC which typically supplies 50% of their raw material, and the other 50% by municipal boats. Vessels are landed in Harbor I, with catch transferred through Market I for grading. It is then sent by truck to TenPoint's plant in General Santos City. The company produces sashimi-grade tuna which is blast frozen (-40° to -50°C) for about forty minutes. Product kinds vary from fresh/frozen tuna which can be in fillet, slices and scraped. Although the company already has its own regular buyers, a purchase order must first be submitted before the company starts processing. After processing, product is loaded to a refrigerated cargo van container, and is carried by TenPoint-owned truck going to Makar Wharf where it is inspected by Customs. It is estimated that Japan receives 77% of TenPoint's production, the US 18% and the EU the remaining 5%. Unused raw materials are sold in General Santos.

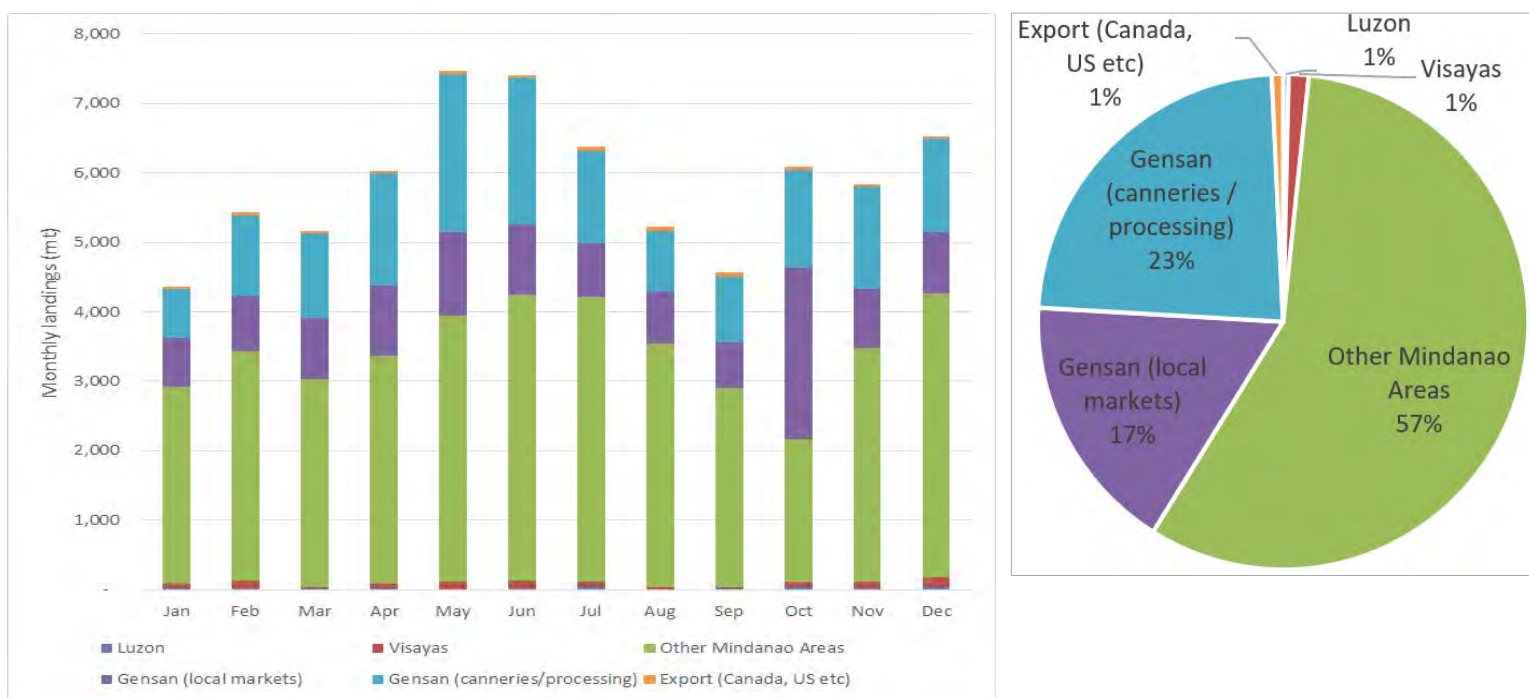
Fresh Tuna: Domestic sales

Based on 2014 data received from PFDA, around 17% of the fresh fish landed into GSFPC is sold to General Santos' local markets in and its surrounding areas. Higher end material for the local market mostly consists of skipjack and other small neritic tunas, as well as small and large pelagic bycatch

species from the purse seine and ring net fisheries, but also includes yellowfin tuna from the handline fishery that is not suitable for the overseas market.

The majority of fresh fish landed in GSFPC is sold into the national market in Mindanao (57%) and further north in Visayas (c. 1%) and Luzon (c. 1%). Like the local markets, this includes some of the yellowfin tuna from the handline fishery, but is dominated by skipjack and other small neritic tunas, as well as small and large pelagic bycatch species from the purse seine and ring-net fisheries (see Figure 11).

Figure 11: Destination of fresh materials landed into GSFPC (2014)



Source: PFDA in General Santos (unpublished data)

Preserved (Canned and Pouched) Tuna

The Philippines is the second largest canned tuna producer in the WCPO following Thailand (Hamilton *et al*, 2012). Processing facilities were initially developed in Manila, Zamboanga and General Santos during the late 1970s and 1980s as tuna (and sardine) fisheries expanded with the successful adoption of purse seine fishing techniques. Canned tuna exports totaled 2 million cases by 1982 (~40,000 mt whole fish equivalent) and production continued to increase through the 1980s and 1990s, supplied entirely by domestic tuna fisheries. To meet increasing demand, and partly in response to catches levelling out or declining in Philippines home waters, larger vessels gradually moved offshore to fish in PNG, eastern Indonesia and high seas waters. Manila's tuna canneries gradually closed down in favor of plants in General Santos and Zamboanga, which were closer to the source of domestic supply. By the early 2000s, there were seven tuna canneries in General Santos and two in Zamboanga. From this point, to meet shortfalls in supply from local sources, an increasing amount of raw material was sourced from foreign fleets, usually shipped to Philippine ports via carriers/reefers. The volume of raw material processed peaked at over 250,000 mt in 2006 and 7 but has declined in recent years to around 120,000 mt due to supply problems (declining domestic catches and reduced access to Indonesian waters), despite the recent access to High Seas Pocket I.

Currently, there are six canneries in General Santos with a combined daily production capacity of around 700 mt, which equates to around 300,000 mt of raw material (whole fish). Our analysis suggests that since only 112,000 mt of raw material was passed to these canneries in 2014, the canneries are currently running under-capacity.

Table 7: Canneries in General Santos

Company	Daily Output (mt/day)	Capacity (mt / day)	Production (mt / year)	Markets (%)				
				PH	US	EU	Japan	Other
Alliance Tuna International, Inc.	50	100	14,750	0%	1%	90%	0%	5%
Celebes Canning Corp.	75	100	10,000	0%	48%	48%	2%	2%
PhilBest Canning Corporation	180	140	45,000	0%	30%	40%	10%	20%
General Tuna Corporation	200	200	85,000	40%	Data not provided			
Ocean Canning Corporation	45 – 80	100	15,000	0%	Data not provided			
Seatrade Development Canning Corp	80	80	15,000	0%	Data not provided			
TOTAL	317	720	72,750	0%	39%	37%	16%	5%

Source: Study team interviews, 2016

Several of the canners are part of vertically integrated operations, sourcing at least some of their raw material requirements from their own company fleets in the Philippines or overseas (e.g. Philbest in the RD group), whereas others rely largely on contracted suppliers (e.g. General Tuna, Alliance, Celebes). All canners obtain fish on an ad hoc basis from both local and overseas Philippine fleets. The foreign imports are assumed to be supplied by the major trading companies, although many of the Philippine companies with smaller vessels do operate their own carriers and bilateral access vessels may return directly from PNG waters to unload.

2.2 Key actors, their roles and needs within different nodes of the value chain related to traceability

2.2.1 Input Value Chains - Landings into GSFPC and First Sale

Value Chain I: Fresh tuna from the handline fishery

Point of Harvest (Node I in Figure 12): This fishery is characterized by having a combination of larger vessels (e.g. >20 GRT) that require the *Regular Catch Certificate (RCC)* and smaller vessels (e.g. <20 GRT) that required the *Simplified Catch Certificate (SCC)*. Some of these smaller vessels may be <3 GRT, in which case they only need a simple log sheet. It is assumed that all vessels < 20 GRT fish only in the Philippines EEZ. The relatively few number of larger vessels may also fish outside the EEZ, either in high seas waters or those of neighboring states, but this is currently banned by Indonesia and very little handline fish now comes from outside of the Philippines EEZ. Vessel range is limited by the fresh fish's limited shelf life.

While at sea, fishing vessels usually call via radio to notify their main office of the quantity of their catch and whether this catch is to be unloaded. The time of call and information communicated vary among different fishing fleets (i.e. some include species composition, fishing area, etc. while others keep it short with only the estimated quantity of their catch). The boat captain performs most, if not all, the catch recording and accounting in this fishery.

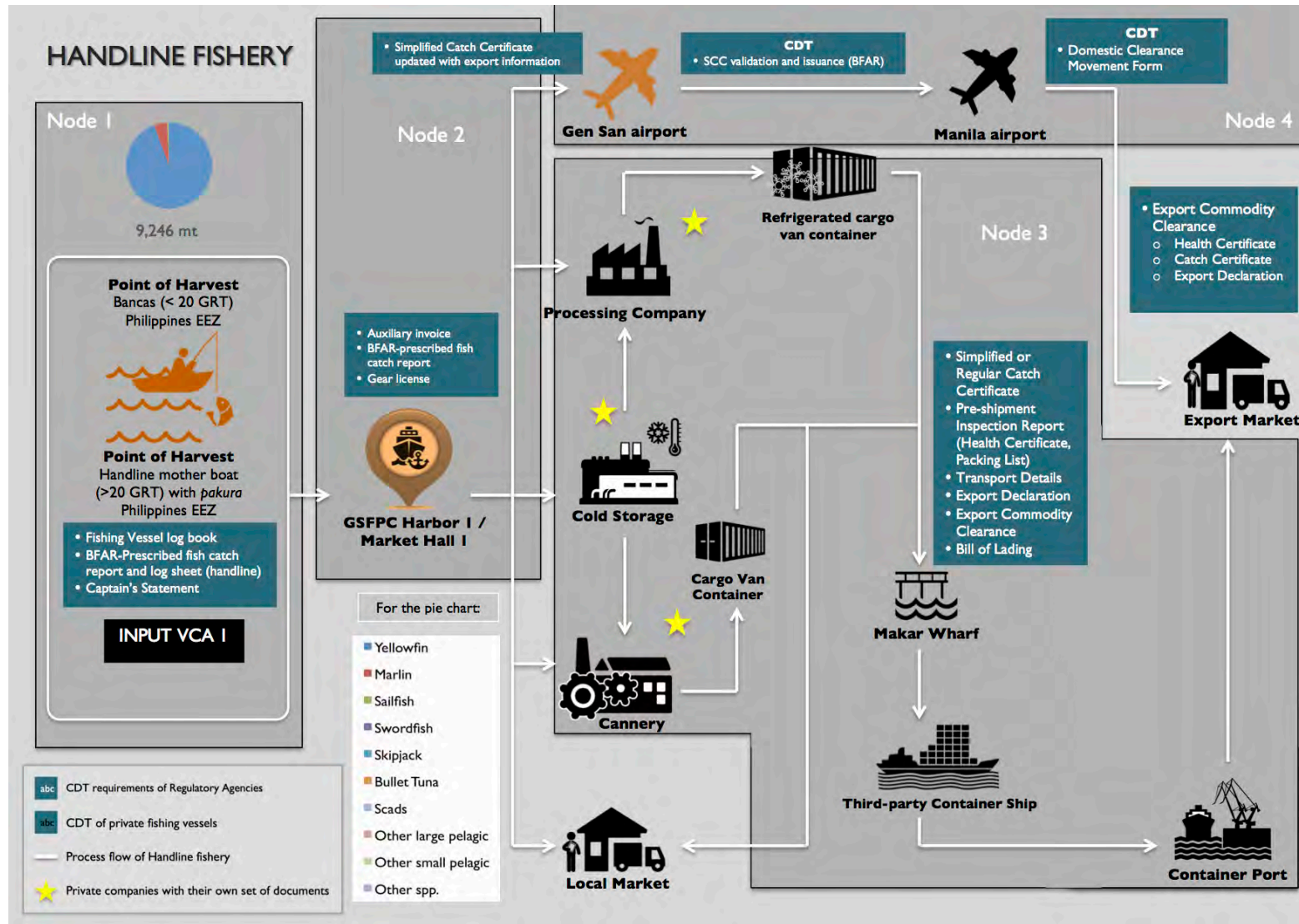
The value chain for this fishery is shown in **Figure 12**.

PH-flagged fishing vessels operating within PH EEZ must fulfill the following requirements to obtain the *Regular Catch Certificate* (See Table 22 in Appendix B).

1. Official Notice of Arrival
2. Duly accomplished fishing vessel log sheets (signed & stamped by the vessel captain)
3. Commercial Fishing Vessel/Gear License (CFVGL), Certificate of Ownership (CO);
4. Certificate of Philippine Registry (CPR)
5. Catch Origin and Landing Declaration
6. Fish Summary/Sizing Report
7. Receiving Report
8. Transport Details

The fishing company must complete the RCC in triplicate and submit copies to BFAR for validation. Two sets of the validated RCC are released to the fishing company within three working days from the date of application, with the other set kept by BFAR. One set of the RCC must then be given to the cannery or processor that purchased the catch.

Figure 12: Handline fishery value chain



To obtain the *Simplified Catch Certificate* for PH-flagged fishing vessels operating within PH EEZ (see Table 23 in Appendix B), the following documents are required:

1. Any of the following documents:
 - a. Original Copy of Auxiliary Invoice issued by the Local Government Unit (LGU) where the catch was obtained;
 - b. Certificate of Domestic Movement issued by the concerned BFAR Regional Office; or
 - c. Official receipt issued by the supplier whose specimen signature had been previously submitted by the exporter to and validated by BFAR.
2. Copy of the municipal registration papers and/or fishing license or CFVGL;
3. Duly accomplished BFAR-prescribed fish catch report

The processor/exporter must submit two sets of the SCC with the required documents to BFAR for validation within a week from unloading of the fish catch at the fish port. This type of catch certificate shall be validated and issued at the same date of export, or at a maximum two days after being submitted. Some processors/exporters, like TenPoint, accomplish this certificate in advance and submits to BFAR a week before the product's shipment. BFAR will then release one set of the validated SCC to the exporter and will retain the other set for record. The original copy of the SCC along with the transport details must accompany the consignment.

Upon landing, the vessels must submit a number of documents in order to obtain a validated catch certificate (if the catch is to be exported to the EU). These include vessel details, product species and volumes, catch areas and dates and the estimated landing weight. A *Transshipment Certificate* is also required if fish is transferred from a catcher to a carrier vessel, which is unlikely in this localized, fresh product fishery.

A *Catch Origin Landing Declaration (COLD)*, one of the prerequisites for the BFAR-issued catch certificate, must also be submitted to BFAR by the Captain or Master of a fishing vessel or his representative. The COLD is issued and validated by BFAR using the accompanying log sheet from the fishing vessel; usually completed at the day of vessel landing and catch unloading but may be delayed if log sheet is not available.

The COLD contains, at a minimum, the following information:

- a) the name of the catcher and/ or carrier vessel/s, flag, registration number and fishing license number;
- b) the FAO alpha-3 code of each species;
- c) catch description, whether fresh/ chilled or frozen;
- d) the port and date landed; and
- e) the quantities of each species in mt / number of individuals.

This COLD is verified by BFAR after which a RCC or SCC is issued.

CDT at first sale: Much of the Grade A tuna is either exported by the company owning the boat (usually one of the larger tuna processing companies⁶) or is purchased through private agreement and therefore does not enter the auction system at the adjacent Market I. It may be weighed, graded and packed in the areas just outside the market in Harbor I. In contrast, a considerable quantity of

⁶ For instance Trinity Home Industrial Development Corporation (GSC Fish Landing Multi-purpose Corp). has eight handline mother boats.

the handline fishery outputs (e.g. >70%) is an insufficient quality grade for overseas markets and is instead sold in the domestic market to processing companies (e.g. Santa Cruz and Citra Mina).

Fishing companies use color-coded ribbons to label each YFT after classification and grading. For Citra Mina, A+ and A- graded tuna, both directly exported, receives a ½ inch orange ribbon and ¼ inch yellow ribbon respectively. Conversely, a ¼ inch white ribbon indicates that the tuna is low in grade and is intended for the local market. Aside from colored ribbons that indicate the grade of the tuna, a small piece of paper is also attached that states the supplier/fishing company, weight, assigned number of the fish, and in some instances the grade/class of the fish.

Market sales are monitored through the PFDA and the auctioneers, but this information does not formally enter the catch assessment process. BFAR is as well not involved in catch accounting at this transaction point. Catch accounting is carefully scrutinized by buyers and seller alike, especially as crew wages are often based on a catch-related bonus scheme. It is also understood that direct buyers for the local market, whether or not participating in auctions in Market 1, do not require any form or document from the catcher, and they are only interested on the species and weight/volume of the fish they are buying (Ruben and Rowena, Trinity, pers. Comm., 19 Sept 2016). (Refer to Node 2 in Figure 12).

Integration into the catch assessment system: Data captured in the steps above is used to complete the current catch documentation and traceability requirements. Data captured in the steps above is used to complete the required catch documentation and traceability. In addition, BFAR, as well as National Fisheries Research and Development Institute (NFRDI) and Philippine Statistics Authority do various sample-based catch assessments, and, and port-sampling is undertaken by NFRDI as part of the National Stock Assessment Program (NSAP). There is also remote monitoring of fishing vessel activity through national fisheries Monitoring, Control and Surveillance (MCS) systems, such as the use of satellite-based Vessel Monitoring Systems (VMS). VMS transmitters are required on all commercial fishing vessels (e.g. greater 3 GRT), but given system costs are upward of approximately Php 240,000 and with a monthly maintenance subscription of Php 20,000, uptake has been slow, especially for the smaller or less profitable vessels.

Synopsis: With the introduction of the *BFAR FAO No. 238 (2012)* and its revision in 2013, combined with the *BFAR Administrative Circular No. 251 (2014)* on traceability, it is apparent that there is an existing system for CDS for this fishery. However, it is evident that this system was intended to address the demands of the EU IUU regulation (1005/2008) and indeed is only intended for fisheries supplying the EU. Therefore, whilst it might be more strictly applied for those vessels belonging to processors like TenPoint or Citra Mina, it is not so well followed by smaller vessels or those that are mainly supplying local markets which still account for over three-quarters of landings into Harbor 1. This view is reinforced by the fact that is the current CDT system is entirely paper-based, and thus lacks rigorous quality assessment and verification, especially when product is going onto the domestic market.

Value Chain 2: Fresh tuna from the purse seine and ring net fisheries

Point of Harvest (Node 1 in Figure 13): This second input value chain consists of landings from both smaller purse seiners (e.g. c. 22 GRT), carrier vessels (c. 120 GRT), and a few larger fishing boats of 80 – 90 GRT. As such, they also require the validation of a *Regular Catch Certificate (RCC)*. Given the important role of carrier vessels in this fishery, *Transshipment Certificates* are also required,

together with stowage plans, unless the transshipment is simply a brailing operation from catching boat to carrier boat within the Philippines EEZ. However, as all the vessels are Philippine-flagged, they do not require *Processing Certificates*.

The value chain for this domestic-flagged fishery and the imported frozen landings are shown in **Figure 13**.

Vessels carrying the Philippine flag are currently monitored through a fully functional VMS, particularly for those fishing in HSP1, ICCAT, and IOTC areas, including Philippine-flagged fishing vessels authorized to fish in waters of third countries (e.g. PNG) (BFAR, 2016). For purse seiners, the level of monitoring, control and accounting differs per company.

Some large fishing companies, such as Frabelle, maintain a hundred percent observer coverage and VMS adaption in their operations. Both catcher and carrier vessels have observers during their trip, although carriers are only covered while catch is being transferred. During land transport of their catch, satellite connectivity is also employed to track the exact route and location of the delivery vehicle. Transshipment for these fishing vessels only happens in WCPFC-approved ports.

CDT at first sale (Node 2 in Figure 13): Once landed in Harbor 2 or 3, a representative of the fishing company (i.e. boat captain, clerk, agent, etc.) and BFAR enumerators observe count containers to assess the total catch volume by species. Once sold onto the market, like in Market 1, sales in Markets 2 and 3 are monitored through the PFDA and the auctioneers. Data transferal at this stage is limited as the information captured during sale does not formally enter the catch assessment process, BFAR is no longer involved, and Philippine-flagged fishing fleets that are catching within the country's EEZ are not yet a hundred percent covered by the observer program. Thus, collected data may be unverified, resulting in unverified insufficient control over fishing activities.

Synopsis: Like the handline fishery, purse seine and ring net fishery operation's current CDT documentation system is paper-based. As a result, catch-reporting is very much based on the verification of paperwork and landings at port as declared by boat captains. Radio reports from purse seiners/ring nets back to their companies to request unloading is not provided to the authorities, limiting information capture to port operations.

Of the three input value chains, the purse seine/ringnet fishery presents the largest challenges for robust CDT. It is a major fishery (c. 70,000 mt a year), is prosecuted by a mixture of Philippines, high seas and in other coastal state EEZs, covers a wide variety of vessel sizes, and supplies both the domestic market and indirectly the export market (via canned material).

Given USAID Oceans' focus on ecosystems and biodiversity, this fishery is particularly significant as it commonly lands small and juvenile fish, especially yellowfin and bigeye tuna. The current CDT system is limited in its ability to document and discourage the use of FADs.

Value Chain 3: Frozen tuna from the purse seine and other distant water fisheries

Point of Harvest (Node 1 in Figure 13): This third and final input value chain consists of frozen tuna that is fished by both Philippine and foreign-flagged vessels that is frozen at sea and landed into ports adjacent to the shipping grounds. Following landing, the fish may be stored temporarily in cold storage before being transshipped to General Santos, whether by bulk reefer vessels (both Philippine and foreign-flagged) direct into GSFPC, or via containers that are first landed in Makar Wharf before being sent directly to the processing and canning plants by road.

The vessels involved in this fishery are generally large ‘super-seiners’ between 60 – 100 m in length and over 750 GRT. As they mostly fish in the high seas and EEZs of the Western Central Pacific, they also fall under the jurisdiction of the WCPFC. All have VMS and around 20 vessels are using the CLS Marlin electronic logbook system. This said, the majority follow the paper-based system required by the BFAR FAO No. 238 (2012) & 238-I (2013), and BFAR Administrative Circular No. 251 (2014) and thus are susceptible to a lack of rigorous quality assessment and verification.

Philippines-flagged fishing vessels operating in PNG waters are required to provide the following:

1. Copy of International Fishing Permit
2. Copy of Fishing License from PNG
3. Original or authenticated copy of *Fish Origin Declaration Form* issued by the National Fisheries Agency of PNG
4. Stowage Plan

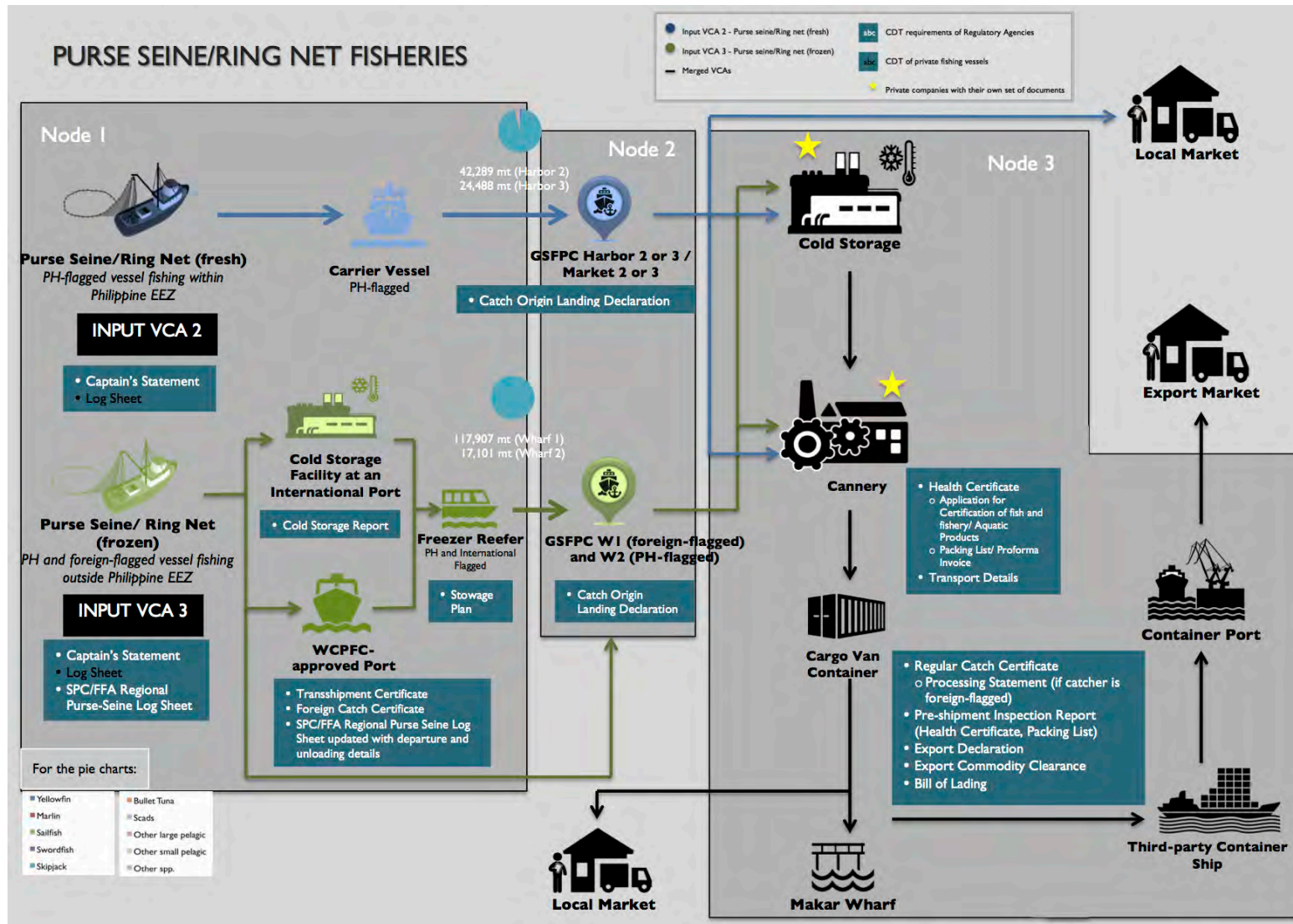
A *Processing Statement* needs to be sought from BFAR in cases where fisheries products from foreign-flagged fishing vessels in high seas or waters of other countries are unloaded and processed (e.g. in the majority of cases for landings from Wharf 1) in the Philippines. This is obtained through presentation and verification of the *overseas/foreign catch certificate* as well as additional information on the catch, total landed weight and in the case of processed raw material, the processed weight.

All fish in this value chain is transshipped, most frequently from PNG ports such as Vidar, Rabaul or Wewak. As such there are requirements for transshipment records and certificates, as well as storage and stowage plans to assist the traceability of different fish batches. This transshipment process is under the aegis of the local fishing authority (e.g. the National Fisheries Agency of PNG), who prepare the *Transshipment Certificate* (also called *Fish Origin Declaration Form*).

CDT at first sale: Prior to unloading in GSFPC, an inspection is conducted by Customs and BFAR. A *Receiving Inspection Report* is produced by Customs, and inspections usually last for a day. After the inspection, the unloaded frozen tuna are weighed through the port weigh bridge and are then transferred to a third-party truck that transfers the fish to the canning or processing plant (Node 2, Figure 13).

Synopsis: Reefer imports of frozen tuna, that represent the majority (75%) of inputs to General Santos’ six canneries, tend to be from well-established larger supply chains (both Philippine-flagged and others) and traceability is well scrutinized by both the overseas buyers as well as BFAR. As such, it is likely to be fairly robust. This said, the complex nature of WCPO landings and transshipment processes means that CDT remains a challenge even in this better regulated area. The introduction of integrated electronic reporting across the value chain, as envisaged by WCPFC, is expected to allow better verification and quality control.

Figure 13: Purse seine / ring net fisheries value chain (domestic chilled and imported frozen)



2.2.2 Downstream Value Chains – Processing, Distribution and Markets

The downstream value chain and associated CDT for the landed product involves both product transformation (e.g. processing or canning) as well as a series of distribution stages, both domestic and international.

As the scope of this report is limited to traceability from initial catch to product distribution from General Santos City (including GSFPC), this section is mainly limited to two elements, (i) fresh fish exports through General Santos International Airport and (ii) canned and frozen fish exports from Makar Wharf in General Santos City. It is to note that although General Santos International Airport is referred to as an international airport, it only caters to domestic flights.

Fresh fish exports by air (Node 4 in Figure 12)

In 2015, the Philippines exported approximately 3,934 mt of whole (including headed and gutted) fresh tuna. Of this, almost all was yellowfin tuna, and about 761 mt of fresh fillets or loins. Spain (17%), Italy (16%), the US (11%), Switzerland (10%) and Japan (8%) are the top destinations for fresh tuna exports from the Philippines (DTI figures for 2015).

At the port (Harbor I) or in General Santos' various processing plants, fish is packed into boxes. At this point, CDT requirements are made (BFAR Administrative Circular No. 251, 2014) including for:

1. Health certificate
 - a. Pre-shipment Inspection Report
 - b. Application Letter for Fishery Products
2. Export Commodity Clearance
 - a. Health certificate
 - b. Pro-forma Invoice
 - c. Export Declaration
3. Airway Bill/Bill of Lading
 - a. AW / BL Number Shipping Line
 - b. Date issued/shipment date
 - c. Shipper
 - d. Consignee
 - e. Name of vessel
 - f. Voyage No.
 - g. Port of Loading
 - h. Port of Destination
 - i. Product
 - j. Net weight

Canned and frozen exports by sea (Node 3 in Figures 12 and 13)

The majority of fish canned in General Santos is produced directly from frozen imports via GSFFPC. Some fresh fish is used—mainly from Markets 2 and 3 in GSFFPC, municipal landings in Mindanao, and also from containerized frozen landings through Makar Wharf. A small volume also arrives by road from locations such as Davao. However, the latter is only in small quantities when all other sources are not able to provide sufficient raw materials.

Incoming raw material checking: Upon delivery, raw material is counterchecked to confirm the agreed quantity and quality of the fish and includes sensory analysis and internal and ice temperature measurements before the fish is processed. Afterwards and at multiple stages in the value-adding chain (e.g. microbiology testing during cutting, metal or foreign object detection before packing). Processing companies, such as Santa Cruz, also perform an audit and inspection of suppliers' fishing vessels and third-party truck providers on a regular basis. Factors considered include cleanliness, proper handling, equipment condition, record keeping, and employee/personnel hygiene and health condition.

In the case of Gen Tuna, the company follows a Quality Management System throughout their entire product process. Aside from ensuring that all their suppliers are accredited, raw materials and ingredients used by the company are delivered and accepted based on an established standard sampling plan and specifications. Although traceability is incorporated into their processing, more focus is placed on assuring the quality of the raw materials and ingredients, rather than the source of catch (e.g. point of harvest, boat captain, vessel name, etc.). On the other hand, another part of their product trace is the process profile trace which elaborates how the raw material is converted to the finished product with the basis lying on established process steps, standard operating procedures and buyer specifications.

Given the traceability requirements of Gen Tuna's clientele, research found their traceability efforts to be one of the best in General Santos and in continuous improvement. Expanding upon the traditional paper-based system, Gen Tuna holds an e-system of recording and gathering the traceability requirements, which they began piloting in October 2016. The electronic traceability system, called "Project TRIS," aims to cover tuna's complete data process—from the fishing vessel up to its final stage, which is the loading of the product for sale. It is to be noted however that information from fishing company is only received and recorded once the delivery arrives at the plant, and encoding is done in the cold storage section. Nonetheless, Project TRIS currently has only been applied to a few sections of the product process (i.e. from cold storage to loining). Other sections are yet to be tapped until final adjustments have been made. The company's record retention equals the shelf life of the product plus one year.

Other canning and processing companies such as PhilBest and Celebes Canning Corporation still operate in a paper-based system and scan electronic copies of all the documents relating to their products, whether this may be issued by their suppliers, government agencies or their own processed documents.

Fish undergoing a complex, multi-stage product process such as canning are subject to a number of intermediate CDT steps following landing authorizations e.g. the RCC and SCC. These include:

Local transport: Fish by road require a local transport permit issued by BFAR and an Auxiliary Invoice issued by the LGU. In some cases, a *Bill of Lading* is required, depending upon the destination e.g. processors outside of the city.

Processing: A considerable number of internal traceability systems are required of processors e.g. by BFAR Administrative Circular No. 251, 2014. These include:

Freezing records: includes batch numbers (linked to the log sheet/RCC), quantities, species codes and date/time

Cold storage record: includes batch numbers (linked to the log sheet/RCC), vessel name, location in cold store, quantities, species codes and date/time and name of processor / cold store.

Processing records: various stages including:

1. *Fish receipt* - batch numbers (linked to the log sheet/RCC), cold store origin, time/date received, quantities, species codes and date/time and name of processor/cold store, temperature log and histamine analysis.
2. *Pre-cooking* - batch numbers (linked to the log sheet/RCC), supplier name, time/date received, fish sizes and weights, pre-cooking duration, temperature, production date, batch code/date.
3. *Can filling* - batch numbers (linked to the log sheet/RCC), fish sizes and weights, production date, packaging details.
4. *Seaming* - batch numbers (linked to the log sheet/RCC), production code and date, species code, no. of cans/pouches produced.
5. *Retorting* - batch numbers (linked to the log sheet/RCC), production code and date, species code, temperature/pressure records, no. of cans/pouches produced & yield.

Dry storage records: batch numbers (linked to the log sheet/RCC), production code, description and date, species code, best before date, establishment approval number, brand and country of origin.

Labeling and identification starts upon the receipt or delivery of the fish. Gen Tuna, for example, maintains control over incoming product by assigning a fish lot code per batch of fish received. This fish lot code is retained until skinning and loining whilst upon packing, a product code lot number will replace the fish lot code. The product code will be the identifier of the whole process the fish went through.

Transport records: includes a Pre-trip Inspection Report and Van Loading Reports.

2.3 Bottlenecks and Areas of Concern for Adopting Traceability in the industry at GSFPC

2.3.1 Opportunities

Whilst there are well-defined catch documentation and record keeping systems in place, they are currently mainly orientated at the largely EU-directed export market. As a result, they are fairly onerous, require high levels of government inspection and validation and given that they are mainly paper-based, lack the ability to make full mass balance verification and quality control. Therefore, there are considerable opportunities for improving CDT in these fisheries. Recommendations include:

1. **Develop a risk-based system** that is proportionate to both the risk of misreporting, non-compliance or other forms of IUU fishing that also reflects the capacity and ability of participants to adopt these measures. This has already been initiated through the 'Simplified Catch Certificate' approach for vessels <20 GRT, but could be better refined and developed.
2. **Integrate more ecosystem indicators into the CDT system**, again through a proportional, risk-based approach. For instance, most of the outputs of Markets 2 and 3 are juvenile tunas and bycatch from the FAD fisheries. This is recognized and indeed an object of considerable NGO protest (e.g. Greenpeace, 2014). Therefore, the ability to identify and trace fish caught on FADs, and with a high risk of being immature fish and thus contributing to recruitment over-fishing would be desirable. This could be done directly or the core issue addressed through better FAD control.
3. **Greater integration of market and landings data with CDT and catch accounting.** There is a considerable amount of information being collected on market throughput, species, size grades and quality through the market auctions and other sales processes. On the whole, this is not being integrated into the catch accounting process, nor available to cross-correlate with CDT-derived data. Therefore, some level of integration between PFDA and BFAR data collection would be desirable, especially as electronic reporting becomes more widely established (see next).
4. The current CDT requirements are, with the exception of larger vessels operating in WCPFC waters, almost entirely paper-based. As recognized by WCPFC, there is a possibility to adopt the systems and experience of a world-wide **move towards electronic reporting (e-reporting)** of catch and traceability data. There are many advantages to this, including an ability to enforce standard templates and data entry, the automation of data transmission, allowing verification and potentially reducing duplication of CDT steps, amongst others. However, this is a major challenge, and a WCPFC-wide e-reporting system is still some years away from reality. However, it can be initiated, with a particular focus on initial data collection at the catching stage. This might include the development of electronic logbooks/reporting systems using appropriate technology e.g. PC-based systems with satellite links on larger vessels, and smartphone applications (apps) for smaller vessels.
5. Moving towards **electronic markets and landing records** will improve e-reporting. This has a number of advantages, including an ability to integrate catch reporting and market sales, better market prices, and ultimately increased demand for GSFPC fish as external buyers are

able to bid for fish remotely and with improved fish quality. Again, this is a considerable challenge, but could be phased in across the different markets in GSFPC.

2.3.2 Barriers

There are a number of barriers to improving CDT in GSFPC. These are examined below:

1. **Complex supply chains:** There is no single 'value chain' in General Santos. The fish supply and usage systems have developed into a complex, integrated and inter-dependent system that allows the industry to survive the inevitable changes in both supply and demand. For instance, the canneries commonly rely on a supply of imported frozen fish, but are able to obtain additional fresh fish supplies from the largely domestic purse seine/ring net fishery. This is a major fishery in its own right (landing c. 70,000 t a year), fished by a mixture of domestic and foreign vessels that range from 6 GRT upwards. The vessels fish in Philippines, high seas and other coastal state EEZs, and cover a wide variety of vessel sizes that supply both the domestic market and indirectly the export market (via canned material). This inevitably imposes considerable logistical challenges to ensuring a proportional and effective CDT regime across these different actors.
2. **Limited affordability:** Whilst the study team does not have any access to cost-earnings data, based on vessel and operator interviews, it is apparent that many fishing operations are struggling financially. This reflects declining fish stocks, especially in the Philippines EEZ, as well as decreasing numbers of large fish. This means that measures to increase CDT must be sensitive to the costs involved and the potential financial burden to these already struggling businesses. This is already an issue, as the uptake of VMS (required for all vessels >3 GRT) has been severely limited by its initial and on-going costs. This latter point illustrates that the cost of data transmission will be a particular issue, especially as vessels move out of Global System of Mobile communication (GSM) range and data volumes increase with increasing CDT complexity.
3. **Capacity barriers:** Required skills and other human capacity associated with increased CDT reporting requirements must be considered, especially if documentation is moving to a digital platform. As CDT requirements are expanded, both at domestic and regional seas levels, this will require a combination of awareness-raising, formal and on-the-job training in a wide range of disciplines, from marine biology to information technology. Literacy and cultural barriers may also be issues, especially in the less complex part of the value chains.
4. **Transparency:** Fishing is often a competitive business, especially in markets where resources appear to be declining. CDT will inevitably lead to a demand for more information and transparency on issues such as catch location, volumes, species, and size grades. Furthermore, this information will be increasingly transmitted through digital means, thus raising issues of data confidentiality (Poseidon, 2016a).

3. END MARKET ANALYSIS FOR PHILIPPINES TUNA

3.1 Key markets for exports, weighting the percentage of fish per origin and value per origin

3.1.1 Types of tuna products exported from the Philippines

For this study, the Bureau of Fisheries and Aquatic Resources (BFAR) provided the project team with data from the Philippines Statistics Authority (PSA) and the Department of Trade and Industry provided the Philippines' tuna export data for the last five years. This data was analyzed and compared with information from or relating to the key importer markets.

Tuna is exported from the Philippines in **three main product categories**, which are summarized in the table below and described in more detail in the following pages.

Table 8: Main exported tuna products and markets (2015)

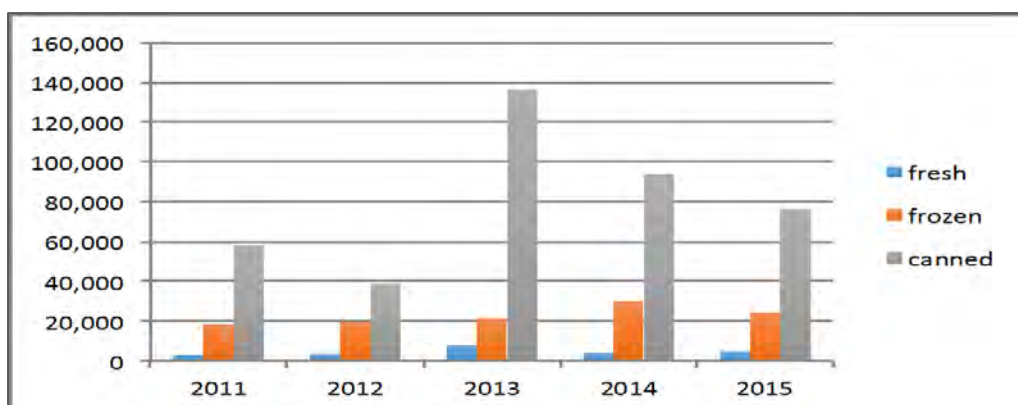
Product type	Species	Export volume	Export value	Main markets
Canned tuna	Skipjack	72%	66%	55% to EU 29% to US 11% to Japan
Frozen tuna (whole and loins)	Yellowfin (approx. 90%)	23%	29%	60% to EU 15% to US 20% to Japan + fillets to Israel
Fresh tuna (whole & loins)	Yellowfin (approx. 90%)	4%	5%	50% to EU 10% to US 9% to Japan + fillets to Switzerland
Total		105,466 mt	\$357 million	

Over recent years, data has shown increased export volumes, however, growth in export value has not increased at the same rate. In 2015, total tuna exports amounted to 105,466 mt, valued at \$357.2 million. This represents a growth of 32% by volume over the last five years, but only a 14% growth in value. There has been a decline in both export value and volume since a peak in 2013 of nearly 166,000 mt valued at \$682 million. These trends are strongly influenced by the global market for canned tuna given the commodity-nature of canned tuna and with raw material prices having fallen over 2012-2015 (see Figure 16). Canned tuna makes up the main tuna export product category for the Philippines: 72% by volume and 66% by value, as Figures 14 and Figure 15 illustrate.

The following sections describe the main product forms and export market destinations, however, it is difficult to distinguish exact export proportions, as export data⁷ may record tuna by species, but is generally under generic tuna product codes.

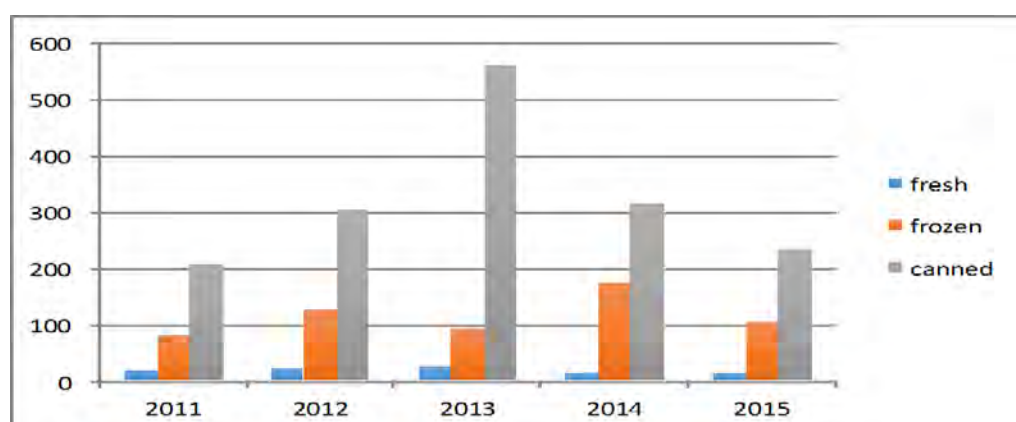
⁷ Provided by BFAR from PSA and processed by DTI-EMB (Oct 19th 2016)

Figure 14: Tuna exports by the Philippines by main category 2011-15 (tonnes)



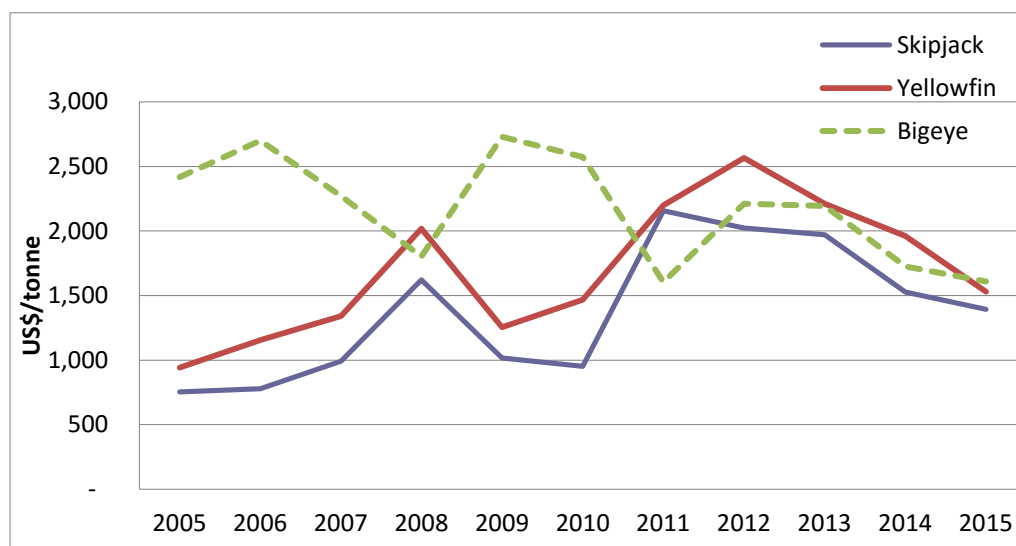
Source: PSA

Figure 15: Tuna exports by main category 2011-15 by value (\$million)



Source: PSA

Figure 16: Purse seine frozen tuna import prices for canning, Thailand (cif) (US\$/tonne)



Source: Globefish

NB: Prices based on weighted average value of imports to Thailand from various countries. Cif = carriage, insurance and freight (costs); source: <http://www.customs.go.th>. Prices in nominal terms

Canned Tuna Products

Globefish, part of the UN FAO's fisheries and aquaculture department, reports trends in world seafood markets. Its latest 2016 'Globefish Highlights' publication reports that the canned tuna market was stable in terms of demand volumes, although raw material prices were at a six-year low (Globefish, 2016). However, growth was seen in US imports of fresh and frozen tuna.

Falling tuna prices and stagnant demand in the traditional large import markets have caused export revenues to fall in the top five exporting countries, Thailand (-16.3%), Ecuador (-30%), Spain (-20%), China (-11%) and the Philippines (-31%) since 2010. Over this same time period, the total volume of exports of canned and processed tuna also declined for Thailand, Ecuador, China and the Philippines—though less declines in value (Globefish, 2016).

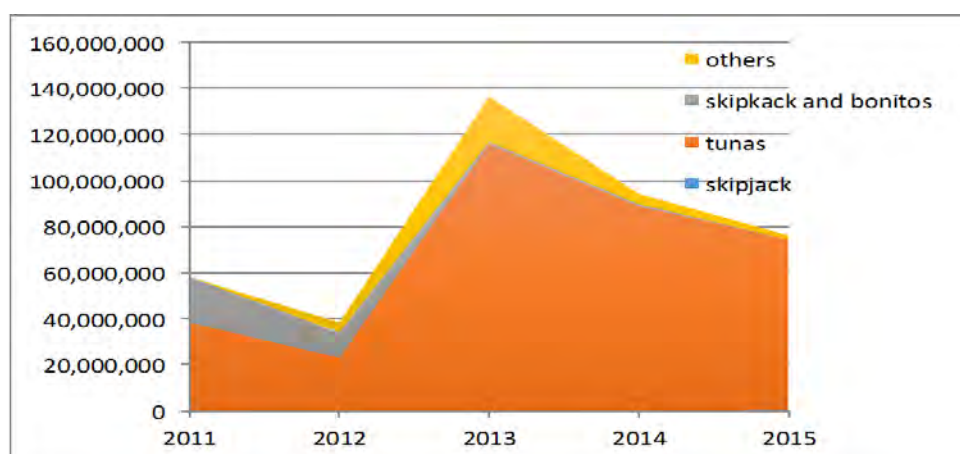
In 2015, lower tuna prices generated increased demand for canned tuna in the emerging markets but failed to make much of an impact on US and EU imports for conventional products. Although US imports of pouched tuna increased during the reporting period, import trends for canned tuna remained mixed in the Asia/Pacific region. Imports in Japan were stable at 55,000 tonnes, while domestic production of canned tuna increased following softening of raw material prices and increased raw material imports (Globefish, 2016).

Canned tuna exports in 2013 account for 72% tuna exported from the Philippines. In 2013, the volume of processed tuna exports peaked at just over 136,000 mt, but have since reduced to near the 5-year average of around 80,000 mt. Hamilton *et al* (2012) also reports exports fluctuating around this level for 2008 and 2009.

In 2009, the volume exported increased. On average, across 365 samples of canned tuna, the drained weight of tuna in cans was 68% of the canned product weight (Poseidon, 2016). The average weight of exported processed tuna meat therefore equates to around 54,400 mt (with weight of the can included in reported tonnage), with a conversion rate during processing of around 40%-45% of the whole weight of fish being tuna meat placed into cans.

Export data mainly reports canned tuna under the general 'tunas in airtight containers' (ATC), rather than specifying the species.

Figure 17: Volume (kg) of processed tuna exports (2011-2015)

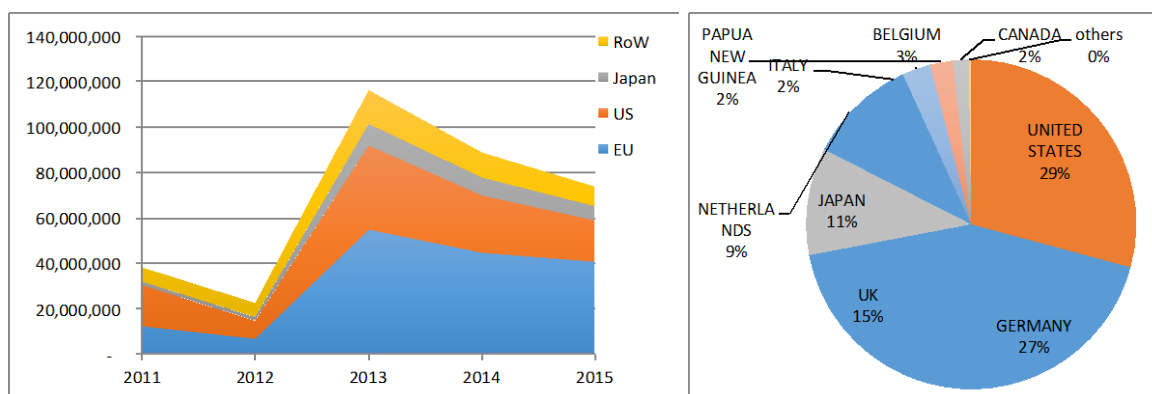


Source: PSA

In terms of export markets, Figure 18 shows that overall exports of canned tuna from the Philippines has more than doubled over the last 5 years to around 74,000 mt in 2015 and that 55% of this is now destined for the EU market. The EU market has grown by more than three times the exports seen in 2011 when it accounted for 32% of total exports. By contrast, US imports have dropped back to 2011 levels of around 18,000 mt. Due to the growth in EU markets, the share of total exports going to the US has dropped from 47% in 2011 to 24% in 2015. Japanese imports of canned tuna from the Philippines have grown, albeit from a low base in 2011 to 6,400 mt in 2015, but this destination market still accounts for less than 10% of canned exports. In terms of other markets, Papua New Guinea has been a consistent destination for exports, while other market destinations fluctuate year to year: Peru was significant in 2015, as was Canada, while Singapore and Puerto Rica were also significant in recent years.

There is also a large domestic market for canned tuna, which accounts for 10-12% of total production, and is supplied primarily by two canners (General Tuna, Permex), as well as several other smaller-scale processors.

Figure 18: Volume (kg) processed tuna export market trends (left) and destinations 2015 (right)



Source: PSA

In taking a closer look at the EU market, Philippine canned tuna continues to make strong inroads, with Germany, the UK and the Netherlands as the three major importers. In all three markets, supermarkets are the main destination and are increasingly demanding in relation to responsible sourcing, with many insisting on eco-labels such as the Marine Stewardship Council (MSC) to provide assurances about the sustainability of fish they buy. The emergence of demand for sustainability assurance is explored further in Output 4.

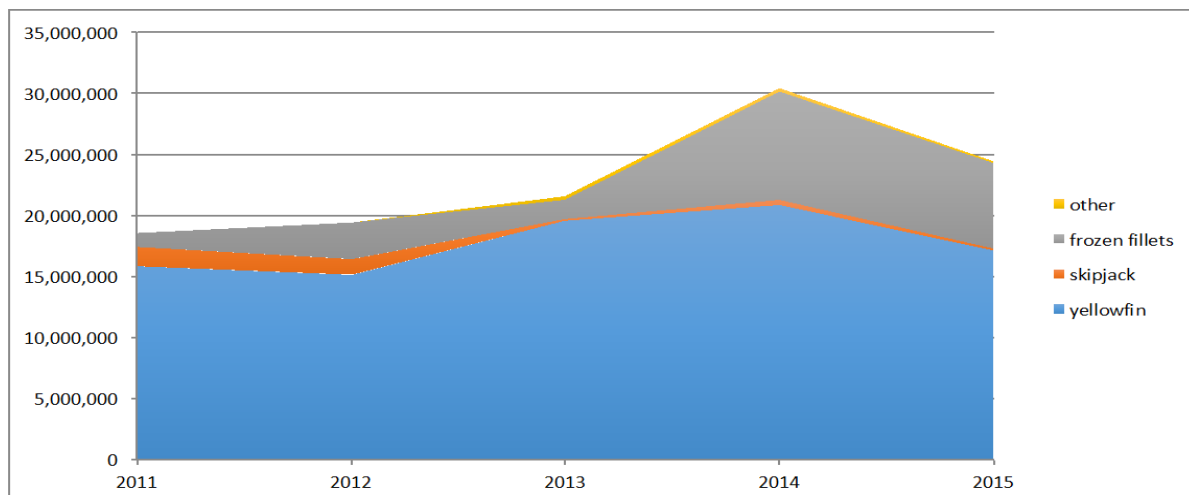
In 2009, 14% of the EU canned tuna market (54,000 tonnes) was supplied by the Philippines.⁸ This share then fell to 12.3% in 2010 and 9% in 2011, representing 45,000 tonnes and 35,000 tonnes respectively of canned tuna imports to the EU from the Philippines. This was likely due to fact that the five-year EU Single Tariff Quota scheme, which allowed the Philippines, Thailand and Indonesia to export 25,000 mt (in total) of canned tuna to the EU at a 12% tariff. This scheme ended in June 2008, with reversion to the previous MFN tariff rate of 20.5%. However, the Philippines was granted GSP+ status in December 2014 that now allows canned tuna to enter the EU duty-free, helping to explain the renewed importance of the EU market and with an increasing volume of canned tuna again being exported to the EU (back to over 40,000 tonnes in 2015).

⁸ Based on EU trade data

Frozen tuna exports

Frozen tuna exports are the second most important export form after canned tuna, accounting for 23% by volume and nearly a third of tuna export values. Exports mainly consist of yellowfin, accounting for 77% on average over the last 5 years. While it appears that yellowfin export levels have stayed at around 17,000 mt, 'frozen tuna fillets' have become more significant, growing to 7,000 mt in 2015, which also mainly consists of yellowfin. Overall yellowfin is thus thought to account for over 90% of frozen exports as illustrated in Figure 19.

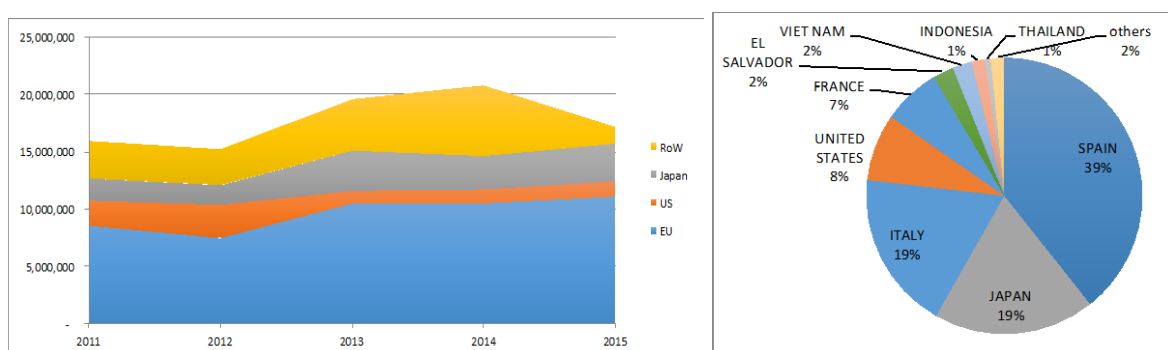
Figure 19: Volume (kg) of FROZEN tuna exports



Source: PSA

Figure 20 shows the importance of the EU market for frozen yellowfin exports (65% of the total amounting to 11,100 mt). The key EU markets are Spain, Italy, and France where in contrast to the EU destinations for EU canned tuna, sustainability labels are less relevant. Quality is paramount in these markets, but there is some interest in sustainability emerging. This is also the case for the key non-EU market, Japan, accounting for 19% (3,200 mt) of frozen yellowfin exports in 2015.

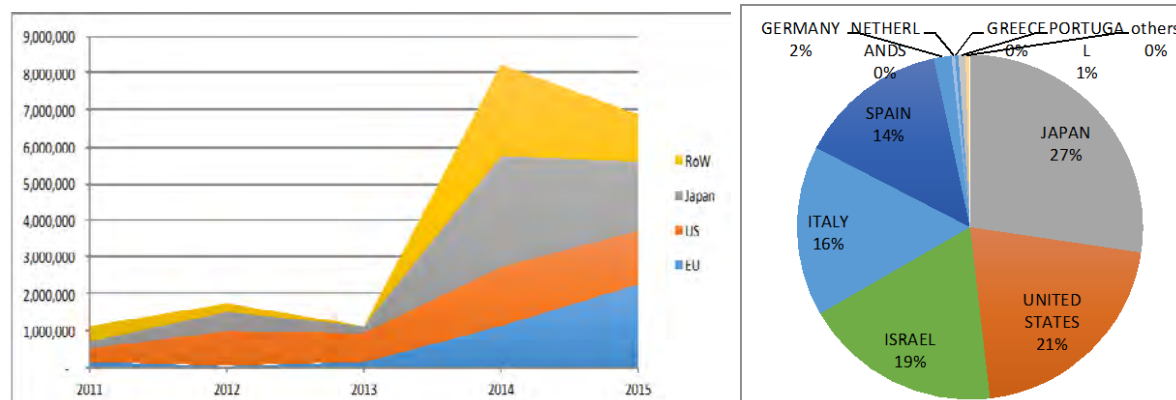
Figure 20: Volume (kg) FROZEN yellowfin tuna export market trends (left) and destinations 2015 (right)



Source: PSA

In contrast to the relatively stable exports of whole frozen yellowfin, exports of frozen tuna fillets have grown substantially in the last couple of years with key destination markets in Japan, the US, and Israel (Figure 21). Italy and Spain remain key EU importers of frozen tuna from the Philippines. This represents a partial shift in product form preference by key export markets towards frozen fillets, although volumes are still around half the total for frozen yellowfin.

Figure 21: Volume (kg) FROZEN tuna fillets export market trends (left) and destinations 2015 (right)



Source: PSA

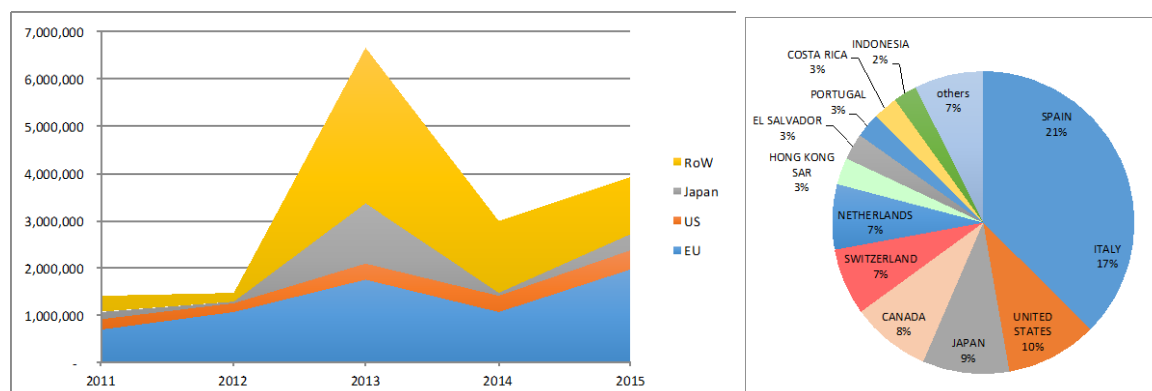
Fresh tuna exports

Fresh tuna exports accounts for only 4% of volume and 5% of value of exports, and consists almost entirely of yellowfin and unspecified tuna fillets, which are expected to also be predominantly yellowfin. Very small quantities of fresh skipjack, bigeye and Bluefin are reported in some years. Fresh exports have seen growth from a low base in 2011, but as with canned products the total of around 4,000 mt reported in 2015 is well below the peak of over 6,000 mt reported in 2013 (Figure 22).

As reported in the earlier scoping report, the relatively low quantities (c. 3,000 mt) of sashimi-grade and better quality yellowfin tuna from the handline fishery is exported by air, normally to the US and Japan (anonymous export agent, pers. Comm., in GSFP, 21 May 2015).

The EU accounted for 50% of export volume in 2015, as with frozen exports, and were mainly exported to Spain and Italy, but also the Netherlands and Portugal. The US and Japan accounted for 10% and 9% respectively, with other key export markets being Canada and Switzerland.

Figure 22: Volume (kg) FRESH yellowfin tuna export market trend (left) and destinations 2015 (right)



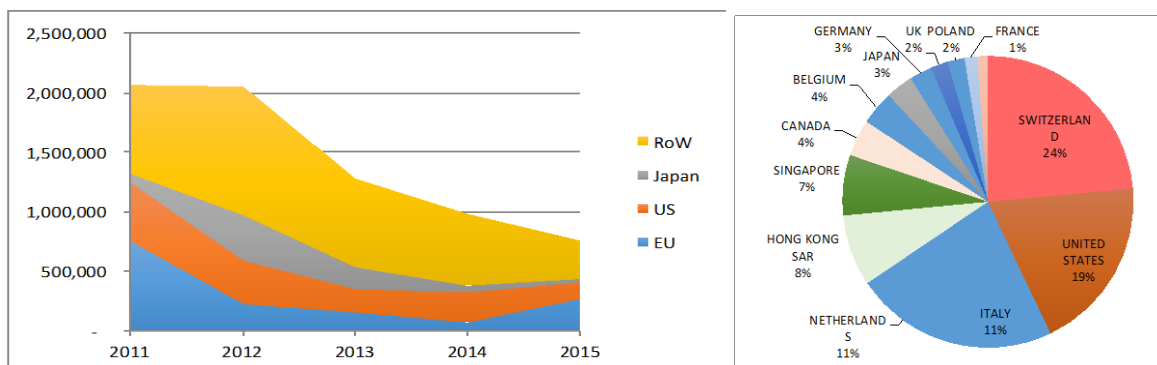
Source: PSA

In contrast to the growth seen with frozen tuna fillets (and fresh yellowfin exports), exports of fresh tuna fillets have declined from an already very low level of approximately 2,000 mt in 2011 to 760 mt in 2015 (Figure 23). Switzerland is the single largest market for fresh tuna fillets from the Philippines,

accounting for 24% of exported fresh fillets in 2015, overtaking the US as exports to the US and other key markets such as Japan and Canada continue to decline. 12% of Switzerland's total fresh tuna imports are sourced from the Philippines.

Switzerland's food regulations are aligned with EU requirements and seafood shipments require the same certifications as EU Member States. Along with other northern European countries, key Swiss buyers such as the Migros retail chain have led buyer demands for sustainability labeling such as the MSC.

Figure 23: Volume (kg) FRESH tuna fillets export market trend (left) and destinations 2015 (right)



Source: PSA

3.1.2 Key international destinations for tuna from the Philippines

As illustrated in Figure 24 and detailed the previous section, the EU is the key export market for Philippines tuna products. In 2015, the EU accounted for 55% of the Philippines' exports (by volume), followed by the US (21%) and Japan (12%). Data from these key importers are explored below, along with other significant importers for certain products.

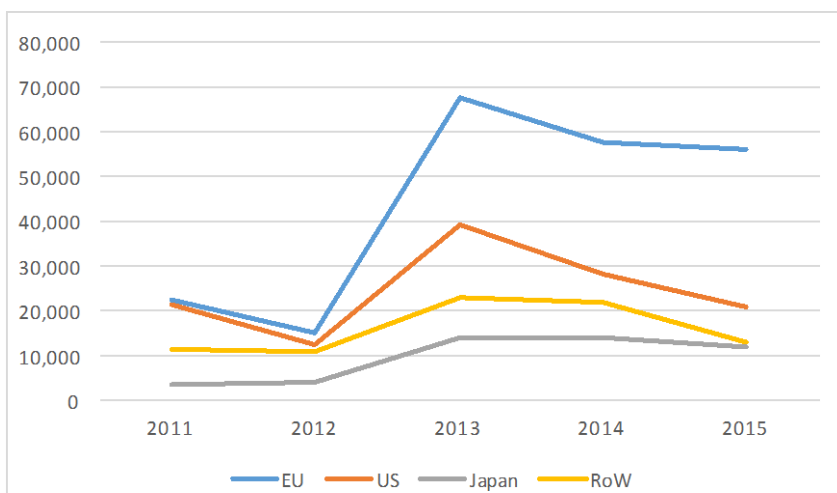


Figure 24: Total Philippine tuna exports to key markets (kg), 2011 to 2015

Source: PSA

United States of America

In 2015, US imports of canned and processed tuna totaled 206,000 mt, which had a custom declared value of USD877 million, a decline of 14% and 17.5% respectively from 2014. During this period, Thailand, China, Ecuador, Vietnam and the Philippines were the top five suppliers in the US market, with imports declining from all except Ecuador, which reported a 14% increase. US imports of processed tuna mainly consisted of 64,160 mt of cooked loins, 33,065 mt of pouched tuna and 105,000 mt of canned tuna (NOAA, 2015). The Philippines supplied approximately 18,000 mt or 17% of this canned tuna total, making it the 3rd largest supplier to the US—recently overtaken by Vietnam. Thailand remains the primary supplier of canned tuna to the US, accounting for around half of all canned tuna imports (Table 9).

In comparing 2014 and 2015, imports of cooked loins and canned tuna declined, as imports increased for pouched tuna—a higher value product. China and Thailand were the top suppliers of cooked loins and Thailand was the lead supplier of pouched tuna (Globefish, 2016).

Table 9: Country of origin for US imports of canned tuna, 2014

Country of origin	mt	%	\$ million	%
Thailand	79,592	51%	327	49%
Ecuador	16,042	10%	102	15%
Vietnam	17,990	12%	78	12%
Philippines	20,106	13%	73	11%
Indonesia	7,557	5%	31	5%
Mexico	5,657	4%	23	3%
China	5,761	4%	19	3%
South Korea	706	0%	4	1%
Costa Rica	379	0%	3	0%
Other	1,402	1%	7	1%
Total	155,192		667	

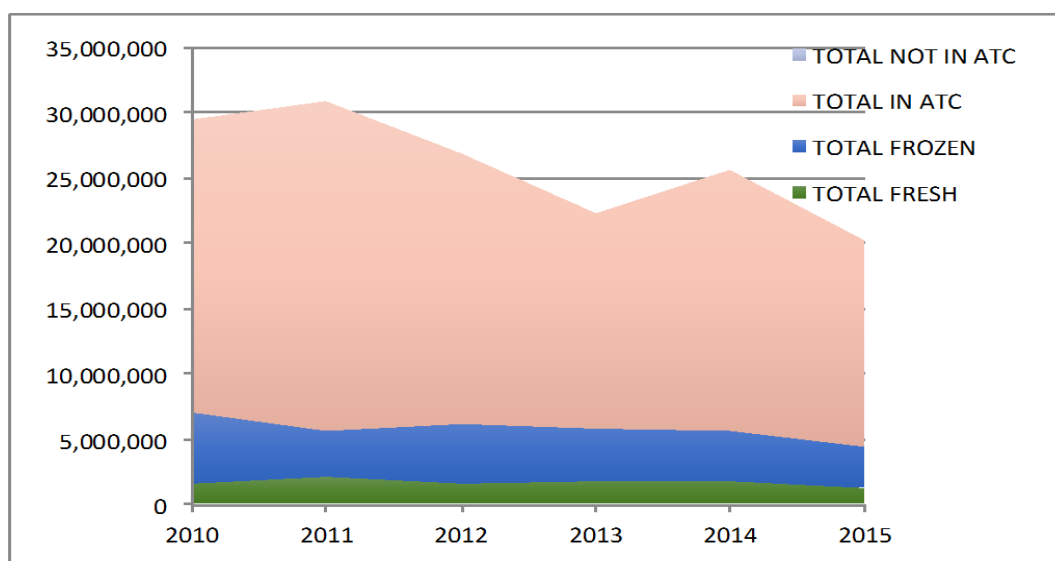
Source: US Department of Commerce

In 2014, imports of fresh and frozen tuna were 166,272 mt, down 40,852 mt (19.7%) from 2013. The value of fresh and frozen tuna imports decreased by 11% to \$951 million. Imports of canned tuna were 155,193 mt, down 2,383 mt (12.4%) from 2013. Imports of all fresh and frozen fillets and steaks amounted to 715,020 mt, an increase of 17,238 mt (less than 1%) from 2013. (NOAA, 2015)

2015 saw significant growth in US imports of frozen tuna (whole/dressed and fillets) by 24% compared with 2014 to total 27,850 mt. Nearly 26,000 mt of frozen tuna fillets comprised 92% of the total volume, for which the average import price was USD 11.5 per kg. Indonesia was the lead supplier with a 38% market share, followed by the Philippines and Thailand. Altogether the US market imported 51,000 mt of fresh and frozen tuna for non-canned usages in 2015, supported by strong demand from retail and catering trade (Globefish, 2016).

In 2015, imports of products labeled as ‘tuna’ from the Philippines totaled just over 20,000t valued at \$102 million, of which 78% in weight terms was canned (termed ‘tuna in air-tight containers (ATC)’), 16% was frozen and 7% fresh. This is a significant decrease from a peak of over 30,000t in 2011 (Figure 25).

Figure 25: US Imports from Philippines specified as Tuna (kg), 2010-2015



Source: NOAA

These statistics are somewhat less than the volumes indicated in the PSA data where exports of canned tuna to the US in 2015 amounted to 17,838t. The US data reports 15,694t canned tuna (12% less than the PSA data). Some of this difference may be due to tuna in airtight container (ATC) not being labeled as tuna, but imported under the general “not specifically provided for” or NSPF code, but the amounts under this code only equate to around 100 tonnes and so does not account for most of the difference. However imports under the product group ‘BONITO, YELLOWTAIL, POLLOCK CANNED NOT IN OIL’ does amount to over 1,000t in 2015. Overall the PSA and NOAA data are comparable with both showing the declining trend in Philippine exports to the US, which is still dominated by canned tuna.

European Union

In terms of value, the EU is the largest trader of fishery and aquaculture products in the world. It provides for its domestic consumption mostly through imports, the majority of which are either frozen or prepared products. Shrimps, tuna, white fish and fishmeal are the most imported species. Values of extra-EU imports skyrocketed by more than \$5.5 billion between 2009 and 2014, due to increasing imports of high-value species and products (EUMOFA, 2016).

Extra-EU imports of tuna and tuna-like species totaled 722,000 mt in 2015, worth \$2.58 billion. The majority of this (73%) consists of “processed tuna”, which includes canned tuna (80%), and prepared and preserved loins (20%). In 2015, there was a slight decline (-0.5%) in EU imports from extra-EU countries to 485,700 mt of prepared and canned tuna, including cooked loins at a value of \$2.14 billion. However, the import value declined significantly by 18.8% due to raw material prices weakening worldwide.

Table 10: Country of origin for main EU imports of tuna products, 2015

Country of Origin	Volume (mt)	%	Value(\$million)	%
Ecuador	118,000	16%	441	17%
Seychelles	59,095	8%	237	9%
Mauritius	66,081	9%	254	10%
Thailand	56,925	8%	199	8%
Philippines	56,916	8%	168	7%
Other countries	365,142	51%	1,281	50%
Total	722,159		2,579	

Source: Eurostat, 2016

The top five import markets in the EU were Spain, the UK, Italy, France and Germany (Globefish, 2016). This tallies with the PSA data with Germany and UK dominating exports from Philippines of canned tuna exports to the EU, and Spain and France more significant for frozen imports.

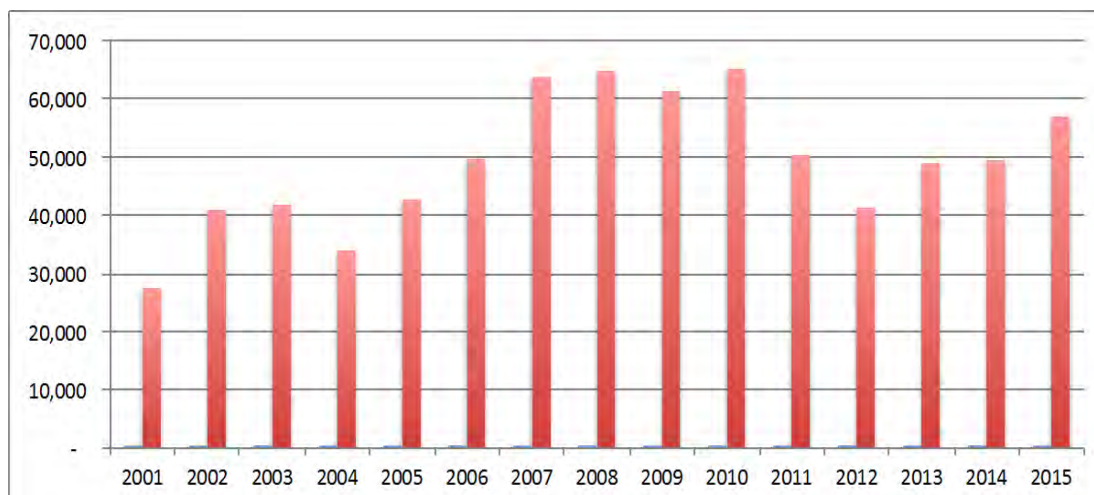
The top five suppliers to the EU market from extra-EU countries in 2015 were Ecuador, Mauritius, the Seychelles, Thailand and the Philippines, all of which have been the predominant suppliers of canned tuna in recent years. In 2015, supplies declined from these countries except for the Philippines. Imports increased from Ghana, Côte d'Ivoire, Madagascar and the Solomon Islands.

In 2015, the EU imported \$200 million worth of fishery products from the Philippines, which equates to 2.7% of EU total imports and 0.8% of the EU's total foreign (extra-EU) trade. This has grown from \$178 million in 2012. The tonnage of imported fishery products in 2015 is reported as just under 57,000 mt (Figure 26), which is broadly in line with the Philippine export data (approx. 20,000 mt frozen yellowfin and frozen fillets and 40,000 mt canned).

Volumes of canned tuna from the Philippines to key EU markets have decreased from a peak in 2013. In Germany volumes in 2015 were down 22% and in the UK down 46%, but there was growth in the much smaller Dutch market (up 35%) for Philippines canned tuna. The recent growth seen in Figure 26 is mainly due to increased supplies of frozen yellowfin and fillets to Spain, Italy and France, and to a lesser extent fresh supplies to Spain and Italy.

Philippine exports are benefitting from the enhanced access to EU market under GSP+, particularly products like coconut oil, **preserved tuna**, bicycles, pineapple products, fruit jams, and some garments and footwear. In 2015, the percentage of Philippine exports entering the EU duty-free was expected to reach 85-90% (EC, 2016).

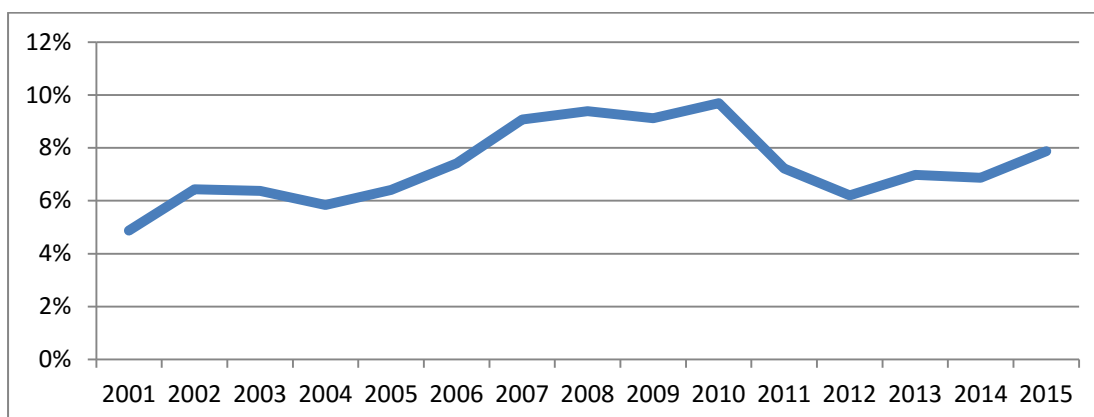
Figure 26: EU imports of tuna and tuna like species from The Philippines (t)



Source: Eurostat, 2016

As illustrated in Figure 27, supply from the Philippines as a percentage of total tuna imports has grown steadily since 2001. Imports peaked in 2010, but has fluctuated in recent years, with a dip in 2012 to 6%. It has since regained some market share to 8%.

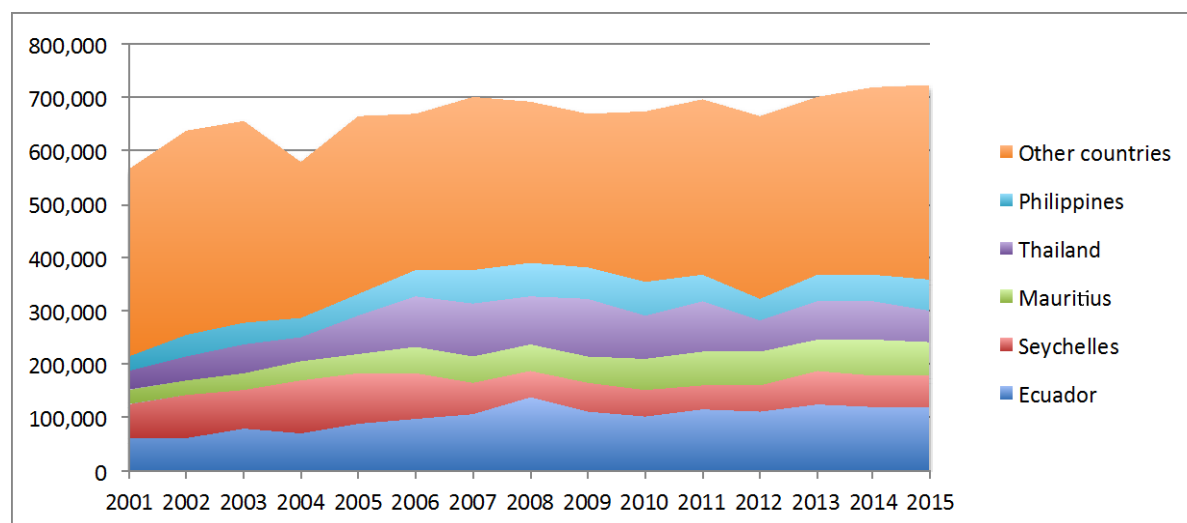
Figure 27: Tuna from the Philippines as a % of total EU imports



Source: Eurostat, 2016

The Seychelles, Mauritius and Thailand held similar shares of the EU market in 2015, but Ecuador remained the largest supplier to the EU; its share increased steadily from 2001 to 2008 before remaining stable at 16% of total supplies (Figure 28). There has been growth in the volume supplied by all these main supplier countries except for the Seychelles, where supplied volumes have remained relatively static.

Figure 28: Extra-EU imports of tuna and tuna-like species by country (tonnes)



Source: Eurostat, 2016

Japan

The Japanese tuna market is dominated by imports of fresh and frozen tuna. Supplies of fresh and frozen tuna in Japan amounted to 353,000 mt in 2015, declining from 362,800 mt a year before.

Japan has historically dominated global sashimi consumption. However in recent years, other markets have grown rapidly especially for product such as tuna loins, steaks, etc. Approximately 20% or more of global consumption is now in other markets, primarily the US; EU; other Asian markets of Korea, China and Taiwan; and other growing markets in South America, Eastern Europe and Australia/New Zealand. Nevertheless, Japan remains by far the largest market, and may still account for around 75-80% of the global sashimi market.

The declining trend of Japan's sashimi tuna imports continued in 2015. Supplies of air-flown tuna from overseas were 20.6% lower than compared with 2014, once again highlighting falling consumer demand for raw tuna in the world's largest sashimi market and increasing demand in other markets. Lower imports of whole/dressed frozen bluefin, bigeye and yellowfin tuna also indicated that sashimi consumption in Japan declined. Moreover, the weak yen made imports costly and competition by cheaper salmon contributed to the decline (Globefish, 2016).

Imports of deep frozen tuna fillets (for sashimi usage) increased in Japan by 13% compared with 2014 to total roughly 40 355 tons, including 13,172 mt of yellowfin. Notably, in the tuna fillet market, the share of red meat quality tuna (bigeye and yellowfin) was much higher in 2015 with increasing demand due to affordable prices and a longer shelf life compared with bluefin. The Republic of Korea and China are the main exporters of red meat quality tuna fillets to the Japanese market (Globefish, 2016).

Data from trade statistics under the Ministry of Finance shows that fish imports from the Philippines, including fish and shellfish, totaled around 22,500t for 2015. The great majority (around 99%) of this is labeled as fresh or frozen. The level of detail in the breakdown does not enable a direct comparison with PSA data as the amounts labeled to a species level are very limited and there are differences in the units used, nonetheless, it is evident that the Philippines provides a relatively modest supply (less than 10%) to the Japanese fresh and frozen tuna market.

Table 11: Imports of tuna into Japan from the Philippines by product form (2015)

	Quantity (t)	Value (Yen)
007 FISH AND FISH PREPARATION	22,525	2,281,214
00701 FISH (FRESH)	22,485	2,227,204
0070101 FISH, FRESH, CHILLED, FROZEN	22,477	2,217,691
00701011 SKIPJACK AND BONITO	234	34,875
0070103 CRUSTACEA AND MOLLUSKS	4	8,428
00705 FISH PREPARATION	39	54,010
0070501 FISH IN AIRTIGHT CONTAINER	6	12,673
00705011 ALBACORE, TUNA AND BONITO	2	3,812

Source: Trade Statistics Japan, 2016

Other markets for Philippines tuna

The three export markets described in the sections above account for 88% of Philippine tuna exports in volume terms. Other significant export markets (by product type) include:

- **Canned:** Papua New Guinea, Canada and (in 2015) Peru each accounted for more than 1,000 mt in recent years;
- **Frozen:** Israel has recently emerged as a significant importer of frozen tuna fillets amounting to 1,275 mt in 2015. Frozen yellowfin is also exported to regional processing centers.
- **Fresh:** Switzerland accounted for 24% of fresh tuna fillets as well as 7% of fresh yellowfin exports in 2015, although some may consequently be sold in Germany. This was however a major decrease in volume to 180 mt of fresh fillets from a peak of 430 mt in 2013. There are also significant exports of fresh fillets to Hong Kong, Singapore and Canada.

In addition to end user markets, there are sporadic exports of frozen product to other processing centers, reflecting the global nature of the tuna supply chain. Exports of frozen yellowfin made to other processing centers in the region such as Thailand, Vietnam and Indonesia have been significant in recent years, but declined sharply in 2014 and 2015. There are significant exports to processors further afield in Kenya, Mauritius reported for 2014 as well as El Salvador for re-export to the US.

3.2 Current import requirements related to food safety, anti-IUU and other issue that require CDT in key end markets

This section provides an analysis of the main import and traceability requirements by the main end markets for tuna from the Philippines. This covers several elements, including mechanisms to prevent fish entering from IUU fisheries, as well as phytosanitary, labor, and environment-related requirements. This section refers only to the statutory requirements e.g. those required by law.

3.2.1 USA Import Requirements

Food Safety

The US Food and Drug Administration (FDA) is responsible for the safety of all fish and fishery products entering the United States. It operates a risk-based Imported Seafood Safety Program (ISSP) involving several associated components, including the requirement for prior notification of imports⁹.

The FDA is also implementing a new screening system for imports, the Predictive Risk-based Evaluation for Dynamic Import Compliance Targeting ([PREDICT](#)), which will improve the current electronic screening system by targeting higher risk products for exam and sampling and minimizing the delays of shipments of lower risk products (FDA, 2016). There is no online reporting of tuna products from the Philippines being recalled nor have FDA country assessments resulted in increased sampling of tuna originating from the Philippines as it has with other seafood from China, Chile, and India.

Current requirements

The US provides an [online compliance guide](#) specifically for tuna importers which states that:

“The National Marine Fisheries Service (NMFS) is transitioning from our current, paper-based trade documentation programs to an electronic reporting system operated by U.S. Customs and Border Protection (CBP). As part of this transition, NMFS will issue a single/consolidated permit that will replace the two separate international trade permits currently issued for the Highly Migratory Species and Antarctic Marine Living Resources programs. Additionally, the new consolidated permit will be required of importers of products subject to documentation under the Tuna Tracking and Verification Program (TTVP). The monitors compliance under the Dolphin Protection Consumer Information Act (DPCIA) (16 U.S.C. 1385)¹⁰.”

The Highly Migratory Species International Trade Program (HMS ITP) regulates trade, including import, export, and re-export, of the following:

- Atlantic bluefin tuna (*Thunnus thynnus*)
- Pacific bluefin tuna (*T. orientalis*)
- Southern bluefin tuna (*T. maccoyii*)
- Swordfish (*Xiphias gladius*)
- Bigeye tuna (frozen) (*T. obesus*)
- Shark fin

As of September 20, 2016, the Highly Migratory Species International Trade Permit (HMS ITP) and the Antarctic Marine Living Resources Dealer Permit (AMLR Dealer Permit) were eliminated and replaced by the National Marine Fisheries Service’s International Fisheries Trade Permit (IFTP). Importers of products covered by the NOAA Form 370 Tuna Tracking and Verification Program (TTVP) are also required to obtain the IFTP. A single IFTP will entitle the holder to conduct trade under any of the three current NMFS trade programs: HMS ITP, AMLR, and TTVP.

All importers and exporters who deal with HMS ITP, AMLR and TTVP program covered products need to establish a National Permit System (NPS) account (available online for \$30) to obtain an IFTP.

⁹ More details are available on the FDA website: <http://www.fda.gov/Food/GuidanceRegulation/ImportsExports/Importing/ucm248706.htm>

¹⁰ See <http://www.nmfs.noaa.gov/pr/dolphinSAFE/tunaHTScodes.htm>

As the great majority of fresh tuna imports from the Philippines are of yellowfin and skipjack, there are no NMFS import monitoring programs or forms associated with the product.

For frozen and canned tuna imports, a completed **NOAA Form 370** (see Document I in Appendix B), including applicable **Captain** and IDCP-member nation certifications, is required to be submitted to U.S. Customs and Border Protection at the time of, or in advance of, importation via the Automated Commercial Environment (ACE) system. An **International Fisheries Trade Permit (IFTP)** is also required.

More broadly in terms of trade-related measures to address IUU fishing, the Magnuson-Stevens Fishery Conservation and Management Act requires the US government to strengthen Regional Fisheries Management Organizations (RFMOs) and to address IUU fishing and bycatch of protected living marine resources. The Moratorium Protection Act requires the Secretary of Commerce (through NOAA Fisheries) to produce a biennial report to Congress that lists nations that the US has identified for IUU fishing and/or bycatch of protected living marine resources and shark catches on the high seas. The US limits the definition of IUU fishing to operations in international fisheries in which it is directly involved, either as a member of an RFMO or as a party exploiting a high seas resource not yet managed by an RFMO. A country is “identified,” with associated trade-related measures imposed, if in the view of the US administration, it has vessels under its flag engaged in IUU fishing. Potential trade measures under the Moratorium Protection Act may be issued in relation to specific fish or fisheries products from given countries that have been negatively certified. Since 2009, 28 countries have been identified under the MSRA as having had vessels engaged in IUU fishing, but the Philippines is not one of them.

Future requirements

Published in December 2016, NMFS final rule established procedures relating to the importation of certain fish and fish products identified as at risk of IUU or seafood fraud (NMFS, 2016)¹¹. The compliance date for this final rule is January 1, 2018. Under the final rule, the collection of catch and landing documentation for certain fish and fish products will be done via the government-wide, ‘single window’ International Trade Data System (ITDS), thus replacing three previously separate systems, HMS, AMLR and TTVP¹² (see below). This requires electronic data submission through the Automated Commercial Environment (ACE) maintained by the Department of Homeland Security, Customs and Border Protection (CBP). Under this final rule, NMFS requires an annually renewable International Fisheries Trade Permit (IFTP) and specific data for certain fish and fish products to be filed and retained as a condition of import to enable the United States to exclude the entry into commerce of products of illegal fishing activities

Albacore, bigeye, skipjack, and yellowfin tuna are identified as ‘at-risk species’ in relation to seafood fraud. Although bluefin tuna species were determined to be at a lower risk of IUU fishing and seafood fraud than other tuna species and were not included on the list of at-risk species, the reporting and recordkeeping requirements proposed in this rule apply to Harmonized Tariff Schedule (HTS) codes

¹¹ Magnuson-Stevens Fishery Conservation and Management Act; Seafood Import Monitoring Program within Federal Register/Vol. 81, No. 237/Friday, December 9, 2016/Final Rule.

¹² HMS Highly Migratory Species (e.g., tunas, swordfish); AMLR Antarctic Marine Living Resources; and NOAA 370 Tuna Tracking & Verification Program (TTVP) – Dolphin Protection / product labeling (Import only program)

for fish and fish products of all tuna species including bluefin tuna. Importers would therefore be subject to the permitting, reporting and recording keeping requirements, which are described below.

Regulatory requirements for reporting and recordkeeping already exist for tuna under the TTVP. Those entities currently subject to the TTVP requirements will only have to report the required information to the ACE portal once (and, similarly, those entities subject to both sets of requirements will only keep one set of records for purposes of tracking and verification).

International Fisheries Trade Permit (IFTP)

The recent ITDS rule establishes the IFTP to consolidate existing permits under the highly migratory species international trade program (HMS ITP) and Antarctic marine living resources (AMLR) program, and would require a permit for the TTVP (80 FR 81251, December 29, 2015).

To obtain the IFTP, US importers of record for designated at-risk species covered by this rule and seafood products derived from such species would electronically submit their application and fee for the IFTP via the National Permitting System Web site designated by NMFS.

The fee charged for the IFTP would be calculated at least annually, and an importer of record who is required to have an IFTP only needs one IFTP. Separate permits are not required, for example, if the imported species are covered under more than one program or the importer trades in more than one covered species.

Reporting and Record-keeping

The proposed rule would require that an IFTP holder (i.e., importer of record as identified on CBP entry/entry summary) report certain data for entries of at-risk species covered by this rule. NMFS would provide detailed information to permit holders regarding submission of such data, as well as on recordkeeping, in a compliance guide for industry that will be prepared in advance of NMFS' implementation of a final rule (NMFS, 2016).

The IFTP holder/importer of record would be required to maintain or have access to, and make available for inspection, electronic or paper versions of records associated with an entry for at-risk species at their place of business for a period of five years after the date of entry.

NMFS believes the costs of this rule will be relatively minor.

This proposed rule recognizes that the importer of record may be different from the entity that completes CBP entry filings (i.e., customs broker). An importer of record must obtain an IFTP and is responsible for complying with all the requirements of this rule.

Verification of Entries

To implement this proposed regulation, business rules would be programmed into ACE to automatically validate that the importer of record has satisfied all of the NMFS Message Set and document image requirements as applicable to HTS codes subject to multiple programs (e.g., all data fields are populated and conform to format and coding specifications, required image files are attached).

Absent validation of the NMFS requirements in ACE, would trigger the entry filed to be rejected and the entry filer would be notified of the deficiencies to be addressed in order for the entry to be certified by ACE prior to release by NMFS and CBP.

In addition to automated validation of the data submitted, entries may be subject to verification by NMFS to ensure that the supplied data elements are true and can be corroborated via auditing procedures (e.g., vessel was authorized by the flag state, legal catch was landed to an authorized entity, processor receipts correspond to outputs). For shipments selected for verification, if verification of the data cannot be completed by NMFS pre-release, NMFS may request that CBP place a hold on a shipment pending verification by NMFS or allow conditional release, contingent upon timely provision of records by the importer of record to allow data verification. A risk-based screening system within ITDS is proposed.

The US continues to explore its current plans for seafood importation requirements, including how its proposed Trusted Trader Program, could contribute to improved assurances of good labor practices, and how it might be used to streamline entry processing for designated at-risk species¹³. NMFS is considering how voluntary third party seafood certification programs could simplify entry filing for designated at-risk species or could be used to meet reporting requirements under this proposed rule. The Trusted Trader Program is intended to streamline entry processing by ensuring that all traders in the supply chain comply with applicable US regulations. Participants in the Trusted Trader Program would collect or have access to the same data as non- participants, but may not need to provide it prior to entry (NOAA, 2016).

3.2.2 EU Import Requirements

Requirements can be divided into: (1) *legal requirements* you must meet in order to enter the market; (2) *non-legal requirements*, which are expected by most EU buyers; and (3) additional requirements for specific segments. Here the focus is on legal requirements.

To export to the EU, the country of origin must be on an EU-approved list. Approval is granted based on the country's public health and control systems to ensure that the fishery products exported meet the EU's strict health requirements. If the country has been approved, it also has a competent authority in place, which further approves establishments and factory vessels. Approved establishments receive a unique identification code, usually referred to as "EU number."¹⁴

Important legislation includes the Common Organization of the Market, reformed in 2013 and in force from 2014 onwards, which contains the rules of the organization of the market for fishery and aquaculture products in the EU¹⁵. Catch certificates and health certificates must accompany exports to the EU.

Food Safety

Compliance with EU Food Law and traceability is required:

- The EU Food Law is the basis for legislation with respect to food safety in the EU. The EU Food Law is supplemented by other EU legislation regarding hygiene and the use of forbidden substances;

¹³ See <http://www.iuufishing.noaa.gov>

¹⁴ A current list for the Philippines is available here: <https://webgate.ec.europa.eu/sanco/traces/output/PH/FFPPHen.pdf>

¹⁵ Regulation (EU) No 1379/2013 of the European Parliament and of the Council of 11 December 2013 on the common organization of the markets in fishery and aquaculture products, amending Council Regulations (EC) No 1184/2006 and (EC) No 1224/2009 and repealing Council Regulation (EC) No 104/2000

- Traceability is defined by the EU as the ability to trace and follow tuna and other seafood products that will be used for consumption, through all stages of production, processing, and distribution;
- EU companies that deal with tuna, and other seafood products have to provide information about the supplier and the buyer on a batch level; and
- Companies in the EU are required to have systems in place that allow for information regarding traceability, in order to be able to identify where and how tuna was produced and processed in the third country. Therefore, traceability is also important for exporters from developing countries.

Tuna that is imported into the EU must comply with the following general health requirements:

- Country health approval: The European Commission's Directorate General for Health and Consumers (DG SANCO) applies a procedure to assess if your country complies with EU Public and Animal Health conditions. Part of this procedure is an on-site review by the EU's Food and Veterinary Office (FVO);
- Approved establishments: Tuna can only be imported into the EU if they have been processed and prepared in establishments that are on a list approved by DG SANCO. The competent authority in the exporting country is responsible for the approval of each company. Approved companies receive an EU approval number, which must be specified on the product label;
- Health certificates: Imports of tuna into the EU must be accompanied by a health certificate signed by the competent authority of the exporting third country. This certificate states that the products are suitable to be exported to the EU. In practice, various models of health certificates are used, which can depend on the category of products, the species concerned or special health conditions; and
- Hygiene and health control: Upon arrival in the EU, tuna and the accompanying certificates must be inspected by veterinarian officials. The result of the inspection is reflected in the Common Veterinary Entry Document (CVED).

The EU operates a Rapid Alert System for Food and Feed (RASFF) portal listing issues with imported food stuff. A search of the category 'fish & fish products' from the Philippines gives the listings presented in Appendix C. These show 25 food safety issues detected since 2004 of which:

- 13 relate to contaminant levels, mainly histamine and cadmium;
- 5 relate to poor temperature control; and
- 2 relate to the absence of a health certificate.

Control of Contaminants

Imports of tuna must comply with EU legislation designed to ensure that the product is safe to eat and does not contain contaminants at levels that could threaten human health. Elements of this legislation include that:

- Tuna containing contaminants at a level that is unacceptable for public health will be rejected;
- The level of contaminants must be kept as low as can reasonably be achieved; and
- For several contaminants, maximum levels are set to protect public health.

Catch Certificate

The EU IUU Regulation¹⁶ consists of a law (EC 1005/2008), passed in 2008, and an implementing regulation (EC 1010/2009) adopted in 2009. Both texts define a legal EU regime to bar products derived from IUU fishing from entering the EU market. The regulation consists of a catch documentation requirement for all imports of marine fish into the EU and a separate but related rule involving the possible restriction of fisheries imports from countries identified as having unsatisfactory control of IUU fishing by their flag vessels.

Tuna, along with other species, needs to be accompanied by a catch certificate. This certificate is needed to show that tuna products do not come from IUU fishing, and are issued to catches from specific vessels. To accommodate artisanal fisheries and the challenges they may face in obtaining catch certifications, the EU IUU Regulation (EU 2009) provides a functional best-practice model of a simplified procedure for the collection of harvest information from small-scale fisheries, through a simplified catch certificate.

The EU's catch documentation scheme relies on the cardinal principle of flag state validation, placing little formal emphasis on the roles to be played by port, processing, and trading states. UK government guidance¹⁷, in relation to EU catch certificates, clarifies that a validated catch certificate is required from the flag state of the fishing vessel to import fish from non-EU countries into the EU. An extra certificate is required if the fish have been processed or stored in a country that's not the flag state. Each country has its own form based on the [template EU catch certificate form](#)¹⁸.

Catch certificates must:

- Be validated by the relevant authority from the country where the vessel is registered
- Contain all information included in the template
- Give accurate weights of the fish imported into the EU
- Give a 6-digit product code to identify the fish

Document 2 in **Appendix B** presents the Catch Certificate Form provided by BFAR, which does contain all the information included in the EU template.

Exporters must request the catch certificate for catches destined for the EU. The following information is relevant for obtaining an EU catch certificate (CBI, 2015):

¹⁶ Some text in this section taken from: http://www.ictsd.org/sites/default/files/research/trade_measures_to_combat_iuu_fishing-post_publishing_corrections_-_1_-_done.pdf

¹⁷ <https://www.gov.uk/guidance/catch-certificates-for-non-eu-imports-and-exports-of-fish>

¹⁸ See Annex II of the regulation: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2008:286:0001:0032:EN:PDF#page=27>

- The catch certificate must be drawn up in accordance with Annex II of the IUU Regulation, or Annex IV of its implementing Regulation (for small-scale fisheries fulfilling the requirements of Article 6 of this Regulation);
- The catch certificate should be submitted by the importer to the competent authorities of the Member State in which the tuna will be imported. The certificate must be submitted at least three working days before the estimated time of arrival at the place of entry into the territory of the EU. [The exporter must therefore supply the catch certificate to the importer in good time];
- Products listed in Annex I of the IUU regulation are exempted from the obligation to submit a catch certificate;
- Catch certificates should be validated by a public authority of the flag state of the fishing vessel that caught the tuna;
- Landing operations by third country fishing vessels can only take place in designated ports;
- The competent authorities of the Member States may carry out verifications to ensure the legality of the tuna; and
- A catch certificate must contain the following information:
 - Product name, code, and volume landed;
 - List of vessels names and/or registration numbers;
 - Flag state authority validation;
 - Transport details; and
 - Importer declaration.

The EU IUU Regulation also provides for the “identification of non-cooperating third countries.” Third countries can be identified by the EU based on the review of information related to a series of chapters of the regulation. These chapters cover not just the catch documentation scheme, but also extend to other matters such as compliance with EU port entry rules, compliance with RFMO conservation and management measures, control over nationals, the existence of IUU-listed vessels, and the performance of third states with regard to “mutual assistance requests” formulated by the EU Commission.

The EU first began identifying non-cooperating countries at the end of 2012, through a procedure which is now widely referred to as the “yellow and red card” approach. These cards are issued after a period of ‘dialogue’ between the third country and the EU if the dialogue and any improvements/assurance are not deemed sufficient by the Commission. After receiving a yellow card, a country is required to formulate an official response and to provide a formal roadmap (or plan) to the EU Commission that includes a timeline showing how it intends to rectify the situation. At the end of the process—which may go through several extensions—the Commission decides if the country has provided sufficient assurances that existing IUU issues have been addressed. If so, the country’s identification is lifted (i.e. a “green card” is issued). If not, the country is then formally identified (i.e. a “red card” is issued), and a trade embargo on all fisheries products originating from vessels flagged to that country is instituted.

In 2013, the Philippines, along with PNG, was warned it was not doing enough to combat IUU fishing. The country risked being identified as being a “non-cooperating countries,” and in June 2014 a ‘yellow card’ was issued as a formal warning by the EU. The EU’s decision to remove the yellow card came

in 2015 after the Philippine government enacted a new fisheries law to 'ensure compliance to international agreements on fishing as well as institute measures to help curb illegal fishing and protect marine resources.' It is interesting to note that the GSP+ status was also confirmed during this period.

A comment from the US NMFS when comparing requirements with US plans states:

"The EU's IUU regulations do not include a traceability scheme equivalent to that as contemplated by the IUU Task Force and as proposed in this rule. However, NMFS is interested in comments on how some of the elements inherent in the EU's IUU regulations may be adapted to this rule as a means of facilitating compliance and reducing burden for exporters, either through the design of the traceability process itself or as part of a trusted trader program" (US, 2016).

As reported at a recent WCPFC meeting, the EU is moving towards the establishment of an IT database to manage catch certification information in support of an effective implementation of the catch certification scheme (WCPFC, 2016).

Labeling

In 2014 the European Council (EC) updated its seafood labeling requirements, which differ depending on the extent of processing (i.e., canned goods differ from fresh/frozen product). The contents of labelling must be provided in the language of the country to which the product is exported. When importing fishery and aquaculture products into the EU that are unprocessed (such as fresh or whole frozen tuna], the following information must be provided on the labelling or packaging of the fishery product, or by means of a commercial document accompanying the goods (EC, 2014). Each EU member state has a competent authority that is responsible for the implementation of EU regulations with respect to labelling.

1. Name of the product: The commercial and scientific name of the species. Member States publish a list of the commercial and scientific names accepted in their territory for this purpose;
2. Production method: caught at sea;
3. Catch Area: one of the FAO catch areas;
4. Presentation: fresh, skinless / skin on, with bones/boneless;
5. Net weight: the net weight must be stated on pre-packed products;
6. Date of minimum durability: consisting of day, month, and year in that order and preceded by the words "best before" or "best before end" or the "use by" date;
7. EU seller: the name or business name and address of the manufacturer, packager or seller established in the EU;
8. Conservation temperature: the minimum temperature for conservation must be stated;
9. The package must contain an EU approval number;
10. The packaging must also contain a batch number; and
11. Nutrition: nutrition must only be stated if a nutritional claim is made on the product packaging.

When pre-packaged foodstuffs (such as canned tuna), are traded with the EU, the following is required:

- List of ingredients;
- Net quantity;

- Date of minimum durability (best before date);
- Any special storage conditions or conditions of use;
- Name or business name and address of manufacturer or packager, or of a seller established within the community;
- Name under which the product is sold;
- Particulars of the place of origin or provenance;
- Instructions for use; and
- Approval number, issued by the EU to the production facility (in case of processing).

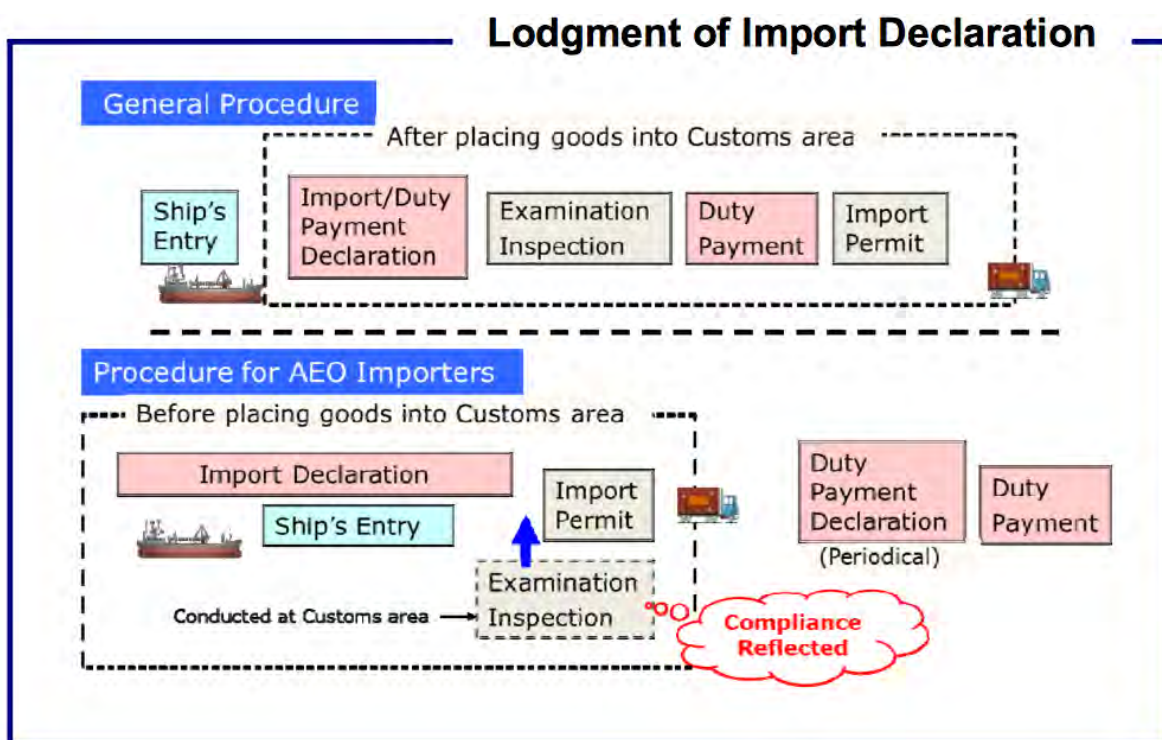
3.2.3 Japan's Import Requirements

The Japanese Customs & Tariffs Bureau, Japan Customs states that “Any person wishing to import goods must declare them to the Director-General of Customs and obtain an import permit. This starts with the lodging of an import declaration and ends with issuance of an import permit after examination of goods and payment of Customs duty and excise tax.”

More than 90 percent of import procedures are computerized and the basic procedure for submitting declaration documents to Customs is further described on the [Japan Customs website](#).

Under the Authorized Economic Operator (AEO) concept, exporters with prior approval and clearance have to comply with simplified requirements in terms of documentation and customs intervention. The program provides AEO Importers and AEO Exporters with benefits such as compliance-reflected reduced examination and inspection. Furthermore, “pre-arrival lodgment of import declaration and permission,” “release of cargoes before duty/tax payment declaration,” and “periodical lodgment of duty/tax payment declaration” are allowed for AEO Importers, and the requirement to deposit cargoes into the Customs area before export permission is waived for AEO Exporters. This simplified procedure is shown in the Figure 29.

Figure 29: Japan's simplified import procedure under the AEO program



Source: <http://www.customs.go.jp/english/aeo/pamphlet.pdf>

Japan's documentation requirements for imports of all types via maritime containers have recently been amended¹⁹. Since March 2014 Advance Filing Rules have been implemented, which require a shipping company or agent to electronically submit information for maritime container cargoes to be loaded on a vessel intending to entry into a port in Japan, to the Customs in principle no later than 24 hours before departure of the vessel from a port of loading.

3.3 Performance issues the Philippines faces in meeting import market regulations and requirements

The following challenges relating to or potentially affecting CDT systems were identified through discussions with stakeholders in General Santos and Manila during September to October 2016:

3.3.1 At Sea

Loss/damage of paper documents: Since the Captain's log is paper-based and completed on-board the vessel, the logbook is prone to get damaged by various elements such as getting wet by the rain or sea water, or getting lost entirely. Paper-based systems are also generally less accurate, more onerous to include in subsequent stages, and more difficult to verify.

Estimated catch volumes onboard: The unavailability of weighing scales on board vessels presents several issues. Firstly, it is not possible to make an accurate log of the actual volume of fish caught at a specific point of harvest. This means until the vessel arrives at the port, the actual volume of catch remains unknown. This presents an opportunity for uncontrolled fish losses or at-sea distribution without any control measures and records in place. Secondly, vessels occasionally pass their catch to a competing company to unload at GSFPC because they are not scheduled to return to the port yet. This poses a second level of ambiguity around catch volume and point of harvest.

Poor or weak telecommunication signals at sea is a hindrance to electronic transmission of data by observers and boat captains. This results in the bulk of data recording occurring at the BFAR satellite office. There are also issues of higher costs for equipment and services in the Philippines compared to elsewhere in the region.

Inadequate enforcement that results from inadequate resourcing of government agencies. The wages of some fishers is influenced by what they report in catch forms, creating an incentive to misreport. Verification systems supported by enforcement are necessary to ensure compliance.

3.3.2 Land-side

Completeness of documentation: Interviews conducted with exporters raised that some of the requirements from suppliers are particularly onerous and seem unnecessary given the type of fishing gear being used. This was raised by the handliners, in particular, who are required to complete dolphin safe certificates even though handlining is a more eco-friendly form of fishing gear, and the opportunity for bycatch is rare. In the handliners' view, this type of certificate should only be completed by larger vessels or purse seiners that are prone to catching bycatch. The key message coming from this interview was that data collection should be fit for purpose and relevant so as to minimize unnecessary administrative burden on the fisherfolk.

¹⁹ More details are available here: <http://www.customs.go.jp/english/summary/advance/index.htm>

In the initial stage of rolling out EU catch certification, there was some resistance from the catchers in terms of completing the required forms and documentation. However, since the tuna suppliers and exporters have to be accredited by the EU, they eventually realized that there were no other way suppliers can sell to the exporters if they do not comply with these requirements. Now that catchers have the experience with these forms, they are finding it easier to get the forms and documents from their suppliers.

Certifications and permits, especially for international accreditations, are costly and can be burdensome for some exporters, particularly for those who are only selling tuna in low volumes. In some instances, foreign buyers sponsor getting these certificates and accreditation.

Lack of consistency in data collection. Each buyer, canner, and processor has their own unique form for data collection—all of which are paper-based. Completion of various forms is both time-consuming and confusing if you have multiple buyers, canners, or processors. Furthermore, as the forms are paper-based, there is an opportunity for forms to be misplaced, damaged, or unreadable due to poorly written English or handwriting.

Lack of consistency in export market requirements. The various government departments, EU, and US each have forms that must be completed for export, making form completion very time-consuming. It is hoped that new US requirements will have a 'good fit' with EU requirements, resulting in a more streamlined process.

Delayed transshipment certificates: For vessels fishing in PNG waters, vessels must show a valid International Fishing Permit, fishing licenses, and an original or authenticated copy of Fish Origin Declaration Form issued by the National Fisheries Agency of PNG. According to BFAR, due to competition in export markets, the issuance of the transshipment certificate or the fish origin declaration form by the National Fisheries Authority of PNG (if catch is from PNG waters by foreign or Philippine-flagged vessels) is delayed for a few weeks. This document is a prerequisite in order to export and thus slows down the process for Philippine products. Hence, this requirement and practice may be a hindrance to the implementation of a fully electronic CDT system.

Unloading practices at Harbor 2 and 3. The estimated weight on board is not rigorously verified upon landing which could allow some of the catch to be sold informally outside of the market halls. An estimation is made about the typical weight and species of fish contained in the *banyera* (tub), with more accurate weighing and oversight needed to verify species and absence of juvenile fish in the catch. Consideration should be given to technology that enables this without additional manpower being required for unloading (an additional cost for the operator).

3.3.3 Wider Challenges

The Comprehensive National Fisheries Industry Development Plan (CNFIDP 2016-2020) identified the following issues impacting on the potential development of the export market:

1. Limited market access;
2. Marketability and competitiveness of Philippine seafood products in terms of product variety, packaging, labeling, etc.;
3. Unstable market prices;
4. Existence of trade measures like Sanitary and Phytosanitary Measures (SPS) and conservation measures;
5. Stringent and tedious export-import requirements; and

6. Export rejection at the border of importing countries.

The most commonly reported reasons for export rejection include (a) food quality in relation to SPS requirements, (b) food safety issues in relation to contaminants and (c) non-compliance with regulatory requirements (e.g. EU approval, US Seafood HACCP, HALAL certification, etc.). Industry and agency stakeholders interviewed confirmed some of these aspects and raised the following additional general issues:

- The fishers responsible for completing the forms generally have limited education having left school early to work in the fishing industry. This makes it a considerable challenge to complete important—but extensive—paperwork in a correct, comprehensive, and legible manner.
- There is a sense of informality and a lack of professionalism within the various fishing fleets operating at the port, with the desire to follow procedure and act professionally when completing a form is lacking. Their interests lie with catching fish and selling them, not form completion.
- Secrecy challenges data reporting. Boat captains want to protect their fishing grounds from rival fisherfolk. Therefore, the boat captains might be inclined to hold back the truth when completing forms.
- The canneries and processors assessed seemed to have thorough data collection processes and forms for completion. But, as with all databases if the data being captured is not valid, especially early in the value chain (e.g. original catch documentation at sea), it doesn't matter how good the system is.

Resource access issues: The main problem the tuna industry is currently facing is the declining tuna supply. Most of those interviewed attributed this to the fact that Philippine-flagged vessels are no longer allowed to fish in Indonesian waters due a national level ban on all foreign fishing vessels and trawl activities, as well as the fact that the supply of tuna in the allowable fishing grounds has decreased. Some mentioned that since tuna is a highly migratory species, climate change factors like El Niño have affected their migration patterns.

Some of those interviewed suggested that purse seine and ringnet fishing companies deploy FADS in great numbers, and in excess of BFAR's limit of 40 FADS per catcher vessel. This has caused a distortion in the migratory pattern of tuna coming from open oceanic waters, which means they no longer reach the inland coastal or municipal waters. This deprives the municipal fishers the chance to fish within their fishing area.

The decline of tuna supplies has caused some canning and processing companies to rely on imported tuna for the supply of their raw materials. This has also led some vessel owners to decrease the number of fishing vessels they deploy.

Poor product quality of the catch: It is not only the quantity of catch that has declined, but the quality as well. This may be attributed to handling, as well as to the travel time from the fishing grounds to the port. Some vessels do not have adequate refrigeration or ice boxes, which reduces the quality of the catch.

PFDA also mentioned that GSFPC still needs to be improved so that it can be on a par with international markets (i.e. -60° refrigeration facilities, making it a fully-air-conditioned market, etc.). However, since it was the most recently developed port, the government will not make further

investments in GSFP. PFDA also mentioned that waste water is an issue in terms of EU compliance. Due to budgetary issues, the waste water treatment plant is progressing slower than expected.

Price: The price of tuna in the Philippines is higher than in other tuna-producing countries, which makes the Philippines less competitive as a tuna exporter. Some overseas tuna buyers opt to buy from countries such as Maldives and Thailand due to the lower prices they can offer. This may affect future sourcing and industry development.

Supplies: Handliners have difficulty in complying with some government regulations, particularly in terms of procuring supplies from the agency's accredited suppliers. The prices of the products from these suppliers are higher than other suppliers, yet compared with other suppliers the quality is very low (e.g. life vests).

Compliance: Some interviewees identified certain fishing violations by other fish catchers, (catching juvenile fish), giving them an unfair advantage on the volume of their catch and suggested that BFAR should be stricter with their regulations. BFAR responded that they do not have any law enforcement power making them incapable of penalizing violators. The Philippine Department of Budget and Management did not allocate any budget for BFAR to deploy more staff to check and monitor activities related to fishing.

The number of observers from BFAR is inadequate which sometimes leads them to taking on additional responsibility and may also cause conflicting schedules. To address this issue, BFAR hire fisheries graduates to fill out the scarcity of observers.

3.3.4 Risk Analysis

Table 12 overleaf presents a risk analysis considering the requirements of the key export destinations (the EU and the US, which also have the most stringent requirements) against the challenges faced by the tuna supply chain in the Philippines. The impact level relates to whether a lack of compliance with a requirement results in all exports from the Philippines being impacted (high); exporters impacted (moderate); or individual shipments impacted (low). Repeated non-compliance is likely to escalate the scale of impact. For example, failing PSP and quality standards impact individual shipments, but there is a significant risk that authorities in those export markets impose a ban on all shipments.

As the main destination for exports, compliance with the EU's requirements on IUU fishing is critical. The lifting of the Philippine's yellow card in 2015 resulted with the enactment of the new fisheries law, but this will be continually monitored and the status regularly re-evaluated. Ensuring a robust Monitoring Control and Surveillance (MCS) system supported by a system for recording and verifying Catch Certificates is paramount.

A comprehensive and effective CDT system would also contribute to the mitigation of the various other risks areas identified in complying with current export market requirements and emerging requirements related to sustainability and labor practices.

3.3.5 Summary

In the last couple of years only one shipment was returned to the Philippines from Europe because it did not meet compliance requirements (C. Baltazar BFAR Post Harvest Division pers. comm.) indicating that exporters are generally meeting current requirements despite the numerous challenges identified above. However, this adequate performance in relation to the EU is somewhat

of a contradiction compared to the CNFIDP findings and specific issues with other export destinations were not reported to the team.

The development of an electronic CDT system will itself address many of the challenges resulting from an inconsistent paper-based system. It has the potential to integrate the wide variety of current and emerging export market information and verification requirements. As some are regulatory requirements while others are for specific customers, the system should include both mandatory and optional fields, along with the flexibility to add information fields as future requirements are specified.

To ensure the benefits of such a system are maximized, other challenges need to be addressed. First, the system must be designed for ease of use with the end users not only kept in mind, but fully involved in development and testing to ensure a workable system. Second, the roll out of the CDT system should be accompanied by extensive training and ICT support.

Table 12: Risk analysis of non-compliance with export requirements

Export Compliance Issue	Impact	Likelihood of non-compliance	Mitigation	CDT system contribution
IUU fishing	High (national)	Moderate – since EU yellow card lifted, but remains under scrutiny.	Robust MCS and catch certificate	Cross check process to verify adherence to monitoring and reporting obligations and that catches, effort and transshipments are verified.
Quality	Low (single shipments)	Moderate – but only temp control at point of entry is assessed.	Good cold chain and traceability system	Documentation of storage/handling temperature throughout supply chain.
Phyto-Sanitary Provisions (PSP) & contaminants	Low (single shipments)	Low – only a few instances of rejection in recent years	Environmental health monitoring and inspection system	Document testing and official inspections.
Dolphin-safe	Moderate	Low – operating approved gears and current compliance with documentation	Monitoring industry standards (observer scheme)	CDT system records capture method and info for Certificate of Origin (for US imports)
Labor practices	Moderate (growing)	Moderate – progress seen, but fisheries sector identified as risk area	3 rd party social audits of supply chains. National monitoring and enforcement of labor standards	Traceability records enterprise details on official incorporation and employer status.
Sustainable sourcing	Moderate (growing)	Moderate – not at present, but regional management strengthening	3 rd party sustainability audits of supply chains. National MCS and full implementation of regional management.	Catch, Bycatch, ETP and traceability. Provides verification that authorities can monitor compliance.

3.4 Future import traceability requirements that may impact or disrupt current trade flows

The primary focus and driver for the CDT is to combat IUU fishing, which has the consequential benefits of improved governance and natural resource management. By incorporating a traceability system alongside catch documentation, there is also the potential to address regulatory requirements on food safety and market requirements on quality.

Another emerging area of interest is labor standards, which is increasingly important to EU and US buyers. This aspect is described below as an additional aspect to be considered when building a CDT system. The growing interest in sustainability certifications is also an emerging market requirement.

3.4.1 Labor Standards

Labor standards have come under increasingly scrutiny in key export markets of the EU and the US in recent years following both mainstream and industry media highlighting instances of forced labor within the seafood supply chain²⁰. This has prompted reactions from the public and private sector. Major tuna companies have updated their sourcing policies to strengthen consideration of labor practices within their own operations and by their raw material suppliers, both through in-house and third-party certification. Companies are increasingly using third party certification to assure customers of their performance in relation to social as well as environmental criteria. A good summary of third party social accountability certifications used in the tuna industry is provided by Atuna.com²¹ and this element is covered more in Section 4.1.3.

The EU response has been through progressing GSP+ requirements in relation to International Labor Organization (ILO) principles as described below. Individual EU Member States have taken further steps, such as the UK's Modern Slavery Act.

In the US, the State of California has introduced the Transparency in Supply Chains Act to give consumers critical information about the efforts that companies are undertaking to identify and prevent human trafficking and slavery in their product supply chains within the US and overseas. The Act requires large retailers and manufacturers doing substantial business in California to disclose on their websites information related to five specific areas: verification, audits, certification, internal accountability, and training. This does not mandate that businesses implement new measures to ensure that their product supply chains are free from human trafficking and slavery. Instead, the law only requires that covered businesses make the required disclosures – even if they do little or nothing at all to safeguard their supply chains. Companies subject to the Act must therefore disclose particular information within each disclosure category, and the Act offers companies discretion in how to do so (Harris, 2015).

A key strategy under USAID Oceans is to encourage the adoption of and adherence to safe, legal, and equitable labor standards within the region's seafood industry. To do this, USAID Oceans will work with its private sector and government partners to explore if and how relevant data on labor practices and working conditions can be incorporated into the design of the CDT system, or enabled by CDT technology. In turn, the actual costs of labor associated with fisheries operations will be

²⁰ E.g. see: <http://edition.cnn.com/2015/05/11/asia/freedom-project-thailand-fishing-slave-ships/> and <https://www.theguardian.com/global-development/2015/nov/24/nestle-admits-forced-labour-in-seafood-supply-chain>

²¹ See <http://www.atuna.com/index.php/en/processing/social-accountability-certifications>

more transparently reflected while workers will be empowered to make informed employment decisions and have increased access to enforcement and grievance communication (USAID, 2016).

3.4.2 The EU GSP+ requirements

The EU's GSP+ treatment of the Philippines requires certain environmental, social and governance standards to be maintained and/or improvements towards achieving those standards. Each country's progress is reviewed by the EC at a national level and it is not directly considered in relation to individual operators within the private sector, or for specific sectors such as fisheries. However, consistent with good governance, it is logical that the EU expects national governments to ensure operators within their country also adhere to these standards. Therefore, the various environmental and labor standards described below could be considered as future requirements for the EU market.

Under the GSP Regulation, the Special Incentive Arrangement for Sustainable Development and Good Governance, or "GSP+", is an instrument of the EU trade policy which aims to encourage third countries to comply with core international standards in the areas of human rights, labor rights, environmental protection and good governance. It is a special arrangement of the Generalized Scheme of Preferences. While the general GSP arrangement ("Standard GSP") generally grants tariff reductions or suspensions to developing countries on about 66% of EU tariff lines, the GSP+ offers additional advantages through complete duty suspensions for essentially the same goods. In return, beneficiary countries must commit to ratifying and effectively implementing core international conventions on human and labor rights, environmental protection, and good governance. Beneficiaries must also commit to cooperate with both the monitoring procedures imposed by those conventions, and the EU's monitoring procedure on the GSP+ (EC, 2016).

The 27 international conventions relevant to the GSP+ are listed in Annex VIII to the GSP Regulation. Part A of Annex VIII contains seven United Nations (UN) conventions on human rights, and eight International Labor Organization (ILO) conventions on labor rights. Part B of Annex VIII contains eight conventions on the protection of the environment, and four conventions on good governance principles.

The Philippines was granted GSP+ treatment only in December 2014, which means that the reporting period for compliance with GSP+ obligations is only 12 months (EC, 2016²²). The conclusions are:

In relation to human rights:

“While the overall human rights situation in the Philippines appears to be significantly better than that under the previous administration, there has been little further improvement during the — short — 12-month reporting period, i.e. from December 2014 to December 2015; during this period some progress has been made mainly as regards social and economic rights...The Partnership and Cooperation Agreement between the EU and the Philippines signed in 2012 is expected to enter into force in 2016. As it foresees cooperation on human rights, it will provide an institutional opportunity to further engage on the matter in a more structured format.”

In relation to the ILO Labor Rights Conventions:

The government directions on labor policies, its issues and challenges were formalized under a Labor and Employment Plan (2011-2016). The ILO has appreciated important progress achieved by the

²² European Commission Staff Working Document (SWD 2016/8) "The EU Special Incentive Arrangement for Sustainable Development and Good Governance (GSP+) covering the period 2014 – 2015"

current administration to improve awareness and implementation of labor and employment policies, and to ensure compliance with the eight core ILO conventions, in particular at the level of national authorities. Challenges continue to arise in the regions and sub-regions, especially in areas with high levels of unemployment, in fisheries, mining and extractive industries sectors. In 2012, the Philippines ratified the ILO Maritime Labor Convention and the ILO Domestic Workers Convention. External circumstances such as deadly typhoons have, however, to an extent exacerbated problems, including child labor and trafficking. Other actions taken are progressive, for example training the military and the police on the difference between insurgents and union associations.

In relation to environmental protection:

There has not been any specific problem reported in relation to the implementation of the CBD, Basel and Stockholm Conventions. In relation to the CITES convention, Philippines has not submitted any biennial report and should ensure its submission, in compliance with the CITES convention. In addition, in 2013 the Philippines was identified as country of primary concern due to its role as transit place for illegal ivory trade and should address the situation and implement the recommendations made by the CITES Standing Committee.

Current government priorities include the Intended Nationally Determined Contributions (INDCs), under the UNFCCC, as the country's contribution to the future global climate agreement. Sector-specific mitigation targets are included, with various levels of prioritization and ambition. The Philippines is, as a non-Annex I country, expected to make some mitigation efforts conditional on climate finance, technology transfer, etc. (Article 4.7 of the convention).

In relation to good governance principles:

Philippines drugs law enforcement officials continued to make progress in promoting interagency coordination in 2014, as well as cooperation with international enforcement partners. This increased cooperation led to numerous successful operations which highlighted the high volume of methamphetamine being smuggled into the Philippines for local consumption, as well as onward shipment to other regional destinations. Meanwhile, the Philippines recognized that further progress is needed to intensify its anti-drug courier campaign.

Governance issues are for good reasons the center of attention of the current government that — despite enormous challenges — is making progress on tackling the issues. Challenges identified by the UNCAC review include legislative measures on trading in influence, bribery, and definition of public officials, among others, as well as coordination between different organizations working against corruption.

3.5 Development of Regional CDT Mechanisms

This section examines current and emerging regional approaches to catch documentation and traceability in the Western Central Pacific.

3.5.1 SEAFDEC ASEAN CDT Requirements

The Philippines is a member of the Association of Southeast Asian Nations (ASEAN) and thus a party to the ASEAN Free Trade Area and to the five regional FTAs that ASEAN has concluded with six countries (China, South Korea, Japan, India, Australia and New Zealand), and has also one purely bilateral FTA with Japan.

Market-driven measures on trading of fish and fishery products, specifically, the EC Regulation 1005/2008 has impacted countries that send their products to the EU by both direct and indirect means.

As ASEAN requirements are still in development they are yet to have a direct impact on the Philippines tuna industry and it is hoped that ultimately those requirements will be aligned with or at minimum compatible with EU and US export market requirements. However it should be noted that the ASEAN Member States have developed a Catch Documentation Scheme (CDS), rather than a broader scope including traceability. The CDS is in the process of being finalized with the assistance of the USAID Oceans and Fisheries Partnership. A draft was presented at the meeting April 2016 (SEAFDEC, 2016), describing it as follows:

The ASEAN Catch Documentation Scheme (ACDS) shall initially be voluntary for all AMS before later becoming mandatory. It will cover catch from small fishing vessels (which meet the criteria) that can contribute to trade among the AMS, and accordingly a simplified catch document would be applied. Non-AMS's existing Catch Certification [e.g the EU CC] may be recognized as equivalent to the ACDS based on specified minimum requirements.

Provisions of the main ACDS consists of 1) Catch Flow/Movement of the ACDS, 2) ACDS Catch Documents focusing on (a) Catch Documents for Large Fishing Vessels, and (b) Simplified Catch Documents for Small Fishing Vessels.

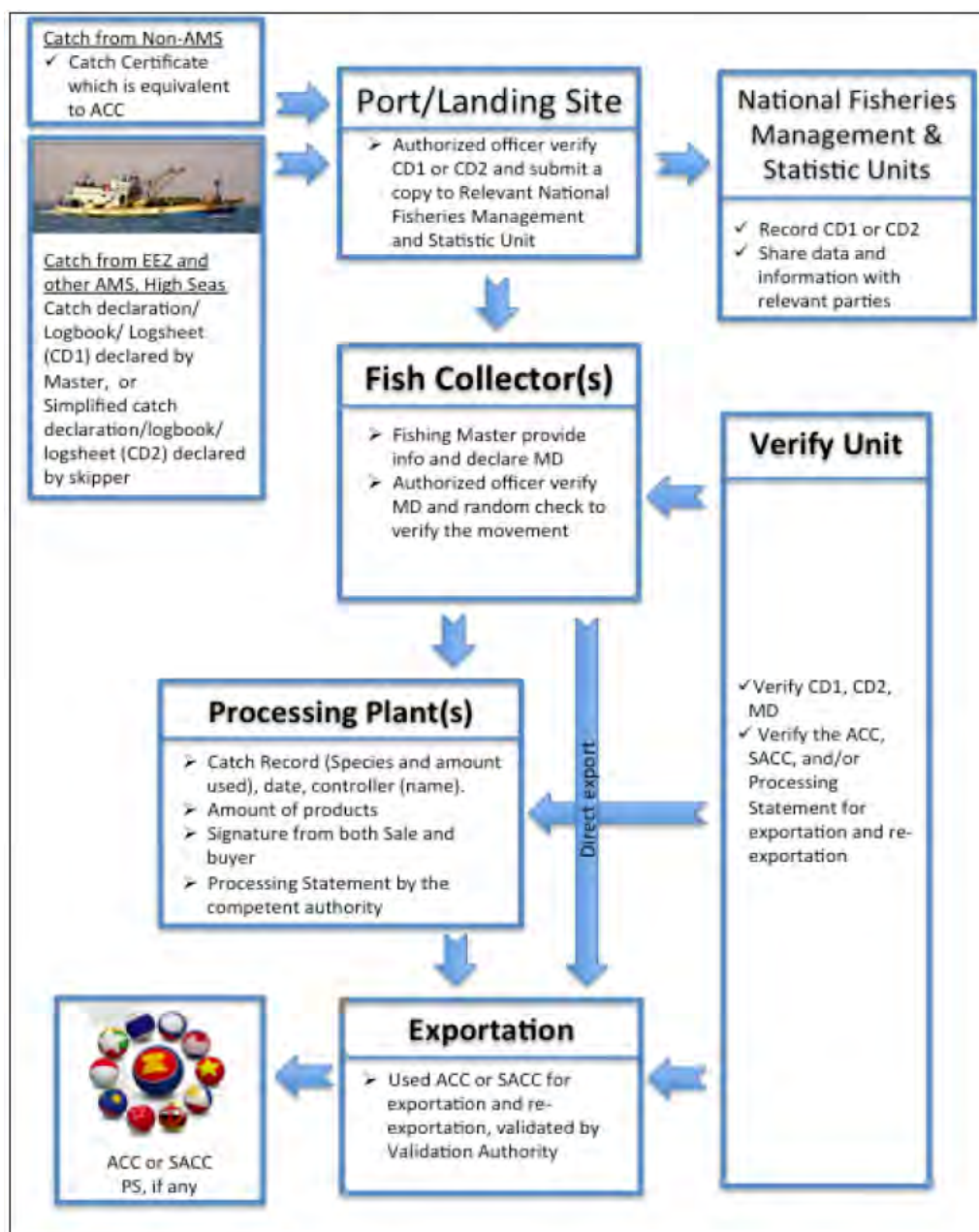
Section 2.2 of the draft provisions states that *“Exportation and re-exportation of fish and fishery products, processed or not, caught by AMS flagged fishing vessels within their EEZs that of other AMS and/or the High Seas, shall be accompanied by ACC [ASEAN Catch Certificates]. The ACC shall be validated by the Competent Authority of flag State of the fishing vessel from which the fish and fishery products have been obtained. It shall be used to certify that such catches have been made in accordance with applicable national laws and regulations.”*

The ACDS comprises the following documents for ‘large fishing vessels’:

1. Catch Declaration/Logbook/Logsheet (CD1)
2. Simplified Catch Declaration/Logbook/Logsheet (CD2)
3. Movement Document (MD1)
4. Simplified Movement Document (MD2)
5. Processing Statement (PS) for Re-export processed fish
6. ASEAN Catch Certificate for Exportation (ACC)
7. Simplified ASEAN Catch Certificate (SACC)
8. ASEAN Re-export Certificate (AREC) for Imported Fish and Fisheries Product

The draft presents a number of infographics showing a variety of scenarios and how documentation should pass through the system.

Figure 30: ASEAN Catch Documentation Scheme*



Source: SEAFDEC, 2016. *Fish landed by Flag state vessels operating within their EEZ, other AMS, High Seas and Non-AMS

3.5.2 E-Reporting and E-Monitoring of Tuna Fisheries by WCPFC Members

As described by the VCA report (Output 2), the current CDT systems are, with the exception of larger vessels operating in WCPFC waters, almost entirely paper-based. As recognized by WCPFC, there is a possibility to adopt the systems and experience of a worldwide move towards electronic reporting (e-reporting) of catch and traceability data.

While many tuna RFMOs are considering electronic CDS, few are currently implemented and are also at a development stage. In addition, the FAO is seeking to develop voluntary guidelines for CDS, but at the Committee on Fisheries (COFI) meeting in July 2016 there was no agreement on the guidelines and further development is required (FAO, 2016).

In its background paper to the WCPFC Working Group on CDS in September, ISSF summarizes the development of CDS in RFMOs to date. In summary, there are only three RFMO CDS currently active (ISSF, 2016b):

- (1) CCAMLR for Patagonian toothfish implemented in 2000;
- (2) CCSBT for Southern Bluefin tuna implemented in 2010, and
- (3) ICCAT for Atlantic Bluefin tuna implemented in 2008.

The WCPFC has an 'Electronic Reporting and Electronic Monitoring Working Group' (ER&EMWG), which is tasked with developing regional agreements, and protocols on data standards, format and transmission protocols. The working group is initially focusing on end-of-trip reporting (with later implementation in real-time) and the introduction of end-of-trip reporting for observers and log sheets in parallel.

SPC has been providing assistance to its member countries, WCPFC, FFA and PNA on e-reporting products e.g., eTUBs (a web-based observer database management system) and eTUNALOG (a Windows-based laptop/tablet/desk-top application to replace manually completed hard-copy vessel trip log sheets for submission to national and sub-regional authorities) [see the box below].

There are many advantages to an RFMO-wide CDS system, including an ability to enforce standard templates and data entry, the automation of data transmission, allowing verification and potentially reducing duplication of CDT steps, amongst others. This is a major challenge, and a WCPFC-wide e-reporting system is still some years away from reality. It may be initiated, with a particular focus on initial data collection at the catching stage. This might include the development of electronic logbooks / reporting systems using appropriate technology e.g. PC-based systems with satellite links on larger vessels, with smartphone applications (apps) for smaller vessels. As such it would initially represent a contribution to a CDT system for the Philippines tuna supply chain rather than a full solution.

Box 1: The SPC Oceanic Fisheries Program eTUNALOG

The eTUNALOG application, developed by SPC/OFP, is designed to run on any Windows-based laptop/tablet/desk-top installed on-board commercial tuna fishing vessels operating in the WCPFC Area. It should replace the need for skippers to manually complete hard-copy vessel trip LOGSHEETS for submission to national and sub-regional authorities as a licensing condition. At this stage, eTUNALOG covers the Purse Seine, as well as (more recently) the Longline fishery.

In addition to the RFMO activities, some tuna companies have increased their product traceability systems in recent years through the use of online tracking systems, enabling consumers to track the product they are purchasing. For example, [Bumble Bee Seafood's online traceability system](http://www.bumblebee.com/tracemycatch/)²³ enables a consumer to enter the relevant details on the purchased product (albacore tuna) and see a range of information about the product, including the date of the fishing trip and the possible vessels that caught the fish in real time.

The mass balance and the product tracking systems implemented by processors demonstrates the ability to implement a CDS scheme for bulk tuna products. However, it is important to note that the processor systems are not currently able to provide verification of the catch to the individual vessel

²³ <http://www.bumblebee.com/tracemycatch/>

and throughout the supply chain and so there is still a need to implement the CDS scheme with the processor systems being integral to the overarching scheme (ISSF, 2016b).

The development of a CDT system in the Philippines must be consistent with the developing WCPFC arrangements, but it should not wait the years expected for this region-wide initiative to be fully developed. It should also wherever possible allow integration with private sector traceability systems to avoid duplication, which would weaken efficiency gains and risks confusion.

4. CURRENT BUYER AND CUSTOMER PREFERENCES

4.1 Tuna Market Preferences for Traceability

Seafood buyers – and to some extent end consumers - demand for information on three key topics:

1. **Product quality and food safety:** the freshness and safety of seafood in terms of its post-harvest deterioration, presentation, pre-and post-harvest contamination risk, etc.;
2. **Environmental sustainability:** the direct and indirect impact of the fishery on target and non-target fish stocks, habitats and the wider ecosystem; and
3. **Social and ethical practices:** the treatment of workers in terms of wages, working hours and conditions, collective bargaining and other forms of exploitation, both at sea and in the subsequent post-harvest value chain.

These are examined in more detail below.

4.1.1 Product quality and food safety

Consumers have always been concerned with the quality of food they buy, and this still remains the primary purchasing determinant after price (Macfadyen *et al*, 2005). Indeed, price is often (but not always) a good indicator of quality.

Food quality and safety can be defined in a number of ways:

- **Type of product:** quality can vary within a product. Canned tuna is a good example. The best cuts of meat taken from the loin are referred to as steak, whilst lesser grades of meat progress from chunks, to flakes and shredded meat at the lower price scale.
- **Freshness:** the freshness of fish depends upon a variety of issues such as the catching method (which can change meat quality if fish are stressed as they are harvested), post-harvest storage, the time taken until fish are frozen or cooked, the type of freezing (the brine freezing of most purse seiners has relatively high storage temperatures of around -18°C, as opposed to sashimi grade fish stored at -40 to -70°C) as well as the integrity of the chill / cold chain. There are a number of indicators of freshness, from the appearance of whole fish, organoleptic tests, as well as biochemical and microbiological tests for decomposition byproducts such as histamine.
- **Contamination:** top-level predators such as tunas tend to accumulate fat-soluble metals (e.g. mercury, cadmium and lead), toxins (dioxins, PCBs and PAH) as well as radionuclides. These may be harmful if eaten in quantity, and have been responsible for a number of major consumer health scares e.g. the public and media response to the Hites report on salmon (Hite *et al*, 2014).

The seafood market is very sensitive to product quality and safety. The ‘freshness’ of a product (both fresh and frozen) has implications both for the taste and visual appearance of the product as well as its safety. Seafood buyers want assurance of consistent freshness and a negligible risk of safety issues, as well as a guarantee of consistent supply being the main factor in establishing forward contracts with suppliers. There are two elements to this:

- **'At sea' harvest process:** as mentioned above, the fishing method, handling and subsequent storage of catch all have a profound influence on the quality of fish as it enters the value chain. For instance, the handline fishery (VCA 1) allows pristine fish to be landed on board the boat, but may suffer from inadequate storage, poor initial chilling (tropical tuna need to be cooled rapidly before they can be stored) and poor and / or over-long storage on ice. These factors combine to reduce the quality of the flesh and reduce the post-harvest storage life. Given the diverse nature of fishing vessels and skill levels, this stage is the most difficult to both control and monitor.
- **Post-harvest chill / cold chain:** once fish is landed and in the chill / cold chain, there are often more opportunities to control and monitor product quality. The introduction of the **Hazard Analysis and Critical Control Point (HACCP)** process in the 1990s provided a control system designed to identify and prevent microbial and other hazards in food production. It includes steps designed to prevent problems before they occur and to correct deviations as soon as they are detected. Such preventive control systems with documentation and verification are widely recognized by scientific authorities and international organizations as the most effective approach available for producing safe food and are mandatory for food production both in the US (see box below) and the EU.

Box 2: HACCP in the USA

The U.S. Food and Drug Administration (FDA) has the primary Federal responsibility for the safety of seafood products in the U.S. In 1997 the FDA adopted a regulation (21 CFR Part 123) that required all seafood processors to utilize the HACCP (Hazard Analysis Critical Control Point) process. Seafood was the first food commodity in the U.S. to utilize this science based system of preventive food safety controls. Other commodities that now require a similar system of mandatory HACCP controls include meat and poultry and juice products. The FDA's seafood HACCP regulation requires that all shore side businesses that handle seafood after it is landed by fishing vessels until it reaches retail stores or restaurants to identify any food safety hazards that are likely to occur and implement a system of controls at critical steps in their operation to prevent, eliminate, or reduce these hazards to an acceptable level. This regulation also requires any firm in a foreign country that exports seafood products to the U.S. to implement the same system of HACCP controls.

A key element of food quality and safety monitoring is the development of **traceability** systems. In their basic form, they allow the tracing of the original raw material from the final product, an essential tool for allowing product recalls in the event of a food safety issue being identified. Traceability forms the core of quality management systems such as **ISO 9001**, which has been widely adopted by the food and retail industry in the USA and the EU.

Traceability mechanisms also provide a central platform for communicating other relevant information e.g. environmental, social etc. via **labelling**. In the USA, the US Food & Drug Administration (FDA) '**Seafood List**' (FDA, 2016) provides a list of acceptable names of fish, and usefully gives links to 'species-specific and process-specific related safety hazards'. This shows that tuna is identified particularly with scombrottoxins (histamine) and in the case of smaller fish, parasites.

In the EU, the **Common Organization of the Markets Regulation (CMO)** introduced in 2000 required Member States to provide consumers with certain catch information at point of sale. This included the commercial designation, production method and catch area that is applied mainly to fresh and not processed products. EU Member States were also required to establish a list of the

commercial designations accepted in their country together with their scientific name. Subsequent measures defined twelve catch areas for product caught at sea. The subsequent fisheries control regulation (EC) 1224/2009 requires the traceability and availability of production information on unprocessed fishery and aquaculture products throughout the supply chain and is allied to EU Regulation (EC) 1005/2008 that establishes a control system to prevent, deter and eliminate illegal, unreported and unregulated (IUU) fishing, on fishery products entering the EU market.

Emerging issues: according to one industry source, an emerging traceability challenge is ensuring that the species of fish is what is declared on the product. This issue has become a major concern for multiple retailers in the EU, especially since the ‘horsemeat scandal’ in 2013²⁴. Whilst major substitutions of different species for tuna are unlikely, there is considerable scope for mislabeling different tuna species. For instance in the US, DNA tested various yellowfin tuna products and found that “One of our 10 tuna samples labeled “yellowfin” was actually bigeye. Four samples labeled “ahi tuna” were yellowfin, and four others, including three sashimis from Bonefish Grill, were bigeye” (Consumer Reports Magazine, 2011). The US FDA recognizes this to be a potential issue and have developed a web-based resource [Regulatory Fish Encyclopedia](#) (RFE) to aid in the identification of commercially important species of fish, including integration into the Barcode of Life initiative where DNA barcode sequences have been generated for fish contained in the RFE.

4.1.2 Environmental sustainability

Whilst consumers have always been conscious of food quality and safety, the increasing awareness of the environmental provenance of seafood is a relatively recent event. This has been accompanied by a wider rise in **Corporate Social Responsibility** (CSR). This is particularly so in seafood, where multiple retailers have come under considerable scrutiny over their buying behavior, especially given that consumers also regard responsible buying indirectly as a retailer obligation (see 3 below).

Box 3: Who is responsible for fisheries sustainability?

A global online survey of 25,420 consumers in 50 countries asked those consumers: ‘Who should assume responsibility for ensuring fish stocks are not overused?’ In response:

- 67 percent of respondents said ‘governments’;
- 46 percent said the ‘fishing industry’;
- 28 percent said ‘fish manufacturers and processors’; and
- 16 percent said ‘retailers of fish products’.

Source: Nielsen Global Online Survey (2009)

Statutory protection: whilst quality assurance is seen to be the sole priority of governments to impose public regulatory mechanisms on seafood producers and processors, ensuring environmental sustainability is very much a non-statutory process (see next paragraph). This said, there are a number of mechanisms to prevent the import and consumption of endangered or threatened species, such as **CITES (the Convention on International Trade in Endangered Species of Wild Fauna and Flora**, also known as the Washington Convention) that now has 183 parties, including 182 states (including the US) and the EU region. This multilateral treaty prevents the trade of a number of endangered species, such as various sharks, sea turtles and sea mammals that might be vulnerable to tuna fishing. The US has embedded the provisions of CITES into the **Endangered Species Act (ESA)**

²⁴ Described by the Guardian newspaper as the biggest food fraud of the 21st century (22 Oct 2013) the revelation that as much as 29% of meat in beef burgers from a large multiple retailer was in fact horse meat.

of 1973. In Europe, the CITES provisions have been transposed into the **EU Wildlife Trade Regulations** such as Council Regulation (EC) No. 338/97 on the ‘Protection of the Species of Wild Fauna and Flora by Regulating Trade Therein’.

Third party certification: in order to address the diverse and ever evolving demand for assurance of the environmental sustainability of seafood products, the main approach by seafood buyers is to purchase seafood that has been through third party certification against an established standard of sustainability framework. This is collectively termed ecolabelling.

Tuna ecolabels first appeared in the United States and have been widely adopted elsewhere over time. The **Earth Island Institute Dolphin Safe** emerged in the 1980s in response to concerns about by-catch in tuna fisheries. The initial concern was with yellowfin tuna caught in the Eastern Tropical Pacific Ocean, the source of much of the tuna consumed in the US, where dolphins are known to associate with tuna and where there have been instances of dolphins being killed or injured during the capture of tuna using purse seines (Washington & Ababouch, 2011). During the 1980-90s, environmental groups lobbied and used publicity campaigns to raise awareness of the issues and create pressure for stronger policies.

While concerns over dolphin-safe fishing practices originated in the US, a combination of factors, including environmental campaigns and consumer concern, led to the issue also being taken up in Germany and then in the UK in the 1980s and 1990s (Brown, 2005). This was despite the fact that virtually all canned tuna on sale in these northern European markets was skipjack and thus did not suffer from the same association with dolphins encountered with yellowfin tuna in the Eastern Tropical Pacific fishery. As a result of the specific nature of the issue, it was fairly easy for the tuna fishing industry to adopt ‘Dolphin Safe’ or ‘Dolphin Friendly’ labelling and to minimize costs associated with meeting the Earth Island Institute standards. As a result, adoption became widespread with the dolphin safe label a mainstream industry standard in tuna production networks.

Two other drivers for certification of tuna fisheries have been identified. The first of these is the **pressure on retailers from environmental NGOs** to introduce sustainable procurement policies for fish and seafood. An influential example of this is the Greenpeace league table, “Ranking of the sustainability of supermarkets’ seafood” (Greenpeace, 2006a and 2006b) introduced in the UK market and since replicated elsewhere. The campaigns run to place pressure on retailers tend to identify pole and line caught skipjack tuna as the most sustainable source (based on a combination of the stock status and impact of the fishing method). Greenpeace also undertook **a wide-ranging assessment of the canned tuna from the Philippines** and Indonesia, looking at (i) traceability, (ii) sustainability, (iii) legality, (iv) equity, (v) sourcing policy, (vi) transparency and customer information and (vii) driving change (see box overleaf).

Box 4: Tuna Cannery Ranking - Indonesia and Philippines (Greenpeace, 2015a)

Of the nine Philippines tuna canneries examined, only one (Century Canning Corp.) was ranked ‘fair’, and all the rest were poor. Greenpeace provided the following recommendations:

Canneries must help drive improvements to the traceability of canned tuna by ensuring:

1. No tuna enters the cannery unless it has strong traceability back to the vessel and point of capture.
2. There are good processes in place to separate tuna by supplier, species, and fishing method, with a low risk of mixing.
3. All tuna that leaves the factory is properly labelled with the minimum of the full species name (common and scientific), stock, catch method, date of catch and cannery name. Other traceability information must be available to 3rd party auditors.

Canneries must help drive improvements to the sustainability and equity of canned tuna by ensuring they:

1. Develop clear publicly available standards for all tuna entering and leaving the cannery. These should be publicly available and contain clear goals and timelines for implementation.

Canneries must provide transparency through labelling and public information so customers know:

1. What species of tuna is in the can (common and scientific name, e.g. skipjack *Katsuwonus pelamis*)
2. Where it came from (stock and ocean area e.g. Indian Ocean or Western Central Pacific Ocean)
3. How it was caught (e.g. Purse seine caught in free schools or on FADs)
4. When it was caught (Date of fishing trip)
5. Which vessel caught it (Fishing vessel name)
6. Who owns the vessel (Fishing company)
7. What has been done to ensure the tuna was caught legally and did not involve human trafficking or slavery.

A recent update of the 2015 Tuna Cannery Ranking found some improvements in the performance of Philippines canneries, with three being ranked as ‘fair’ (Ocean Canning Corp., 51.46; Celebes Canning, 44.63; and Century Pacific Food, Inc., 44.09). However, Vince Cinches (Oceans Campaigner for Greenpeace Southeast Asia-Philippines) stated that the “*Philippine canneries need to step up,*” and that “*If canneries want to maintain their international market standing, they should comply with strict industry standards and do away with double standard practices, especially when disclosing public information only to a particular consumer market*”²⁵.

The second driver has been from those **fisheries wishing to demonstrate sustainability and maximize the value of their resources**, through ecolabels such as the **Marine Stewardship Council (MSC)** standard for responsible fisheries (see **Section 4.2** for more details). This process has now developed into a fairly mature and stable approach with a plethora of over-arching guidelines and frameworks, such as the FAO Guidelines for the ecolabelling of fish and fishery products from marine capture fisheries (FAO, 2005). At ISO, Technical Committee on Fisheries and Aquaculture (TC 234) is responsible for standard development in the field of fisheries and aquaculture which includes, but is not limited to, terminology, technical specifications for equipment and for their operation, characterization of aquaculture sites and maintenance of appropriate physical, chemical and biological conditions, environmental monitoring, data reporting, traceability and waste disposal. TC 234 has published eight ISO standards²⁶, including **ISO 12875:2011 Traceability of finfish products - Specification on the information to be recorded in captured finfish distribution chains**.

One relevant example of fisheries-led ecolabeling is that of the Parties to the Nauru Agreement (PNA) in the South Pacific. This group of countries who collectively enter fishing agreements certification and ecolabelling represents a means to demonstrate the sustainability of the tuna fisheries within their waters and potentially charge a premium for access to fish those resources. The MSC certificate covers fishing for skipjack tuna by setting on free schools as opposed to the use of Fish Aggregating Devices (FADs). The broader, ecosystem-level requirements of the MSC certification have been identified as key to the innovation on the part of the PNA of shifting away FAD fishing to setting on free schools of tuna (Miller *et al*, 2014). This could have benefits for the PNA as well as provide an alternative source of ‘sustainable’ tuna beyond pole and line caught to meet their supply needs. As such, this case represents what Miller and Bush (2014) identify as a landmark case,

²⁵ <http://www.greenpeace.org/seasia/Press-Centre/Press-Releases/Southeast-Asias-major-canneries-fall-short-on-sustainability-and-social-responsibility-issues/>

²⁶ http://www.iso.org/iso/home/store/catalogue_tc/catalogue_tc_browse.htm?commid=541071&published=on&includesc=true

legitimizing FAD-free fishing in an industrial tuna fishery and representing a new definition of sustainable purse seine tuna fishing.

Emerging issues: environmental accountability in seafood started fairly simply, focusing on target stock condition and habitat impacts from fishing gears, especially mobile bottom trawls and dredges. This has expanded to include non-target species, including endangered, threatened and protected (ETP) species and now covers the wider trophic impacts resulting from sustained fishing pressure. This focus on the **ecosystem impacts** of fishing is the most difficult to assess, as many of these are indirect, and therefore not necessarily attributable to a certain fishery. As a result, both fisheries managers and seafood buyers have spent less time on this aspect than might be warranted.

Other emerging elements include the use of **Life Cycle Assessment (LCA)** to assess the environmental impact of a product through the value chain (including vessels construction and operation, product processing, transport, storage and packaging) and assessment of the **carbon footprint** of seafood. This later element is a complex issue – for instance it can be either measures in CO₂ / km or CO₂ / \$ value. The former deep-water tuna purse seine fishing may fare badly, but in the latter case would do much better.

The final emerging environmental issue is that of **climate change**, and the impact of fisheries on coastal ecosystems and communities. MSC recognized that fisheries certified to their standard will build resilience, but are looking to see if additional measures might be needed as climate change impacts become more apparent (David Agnew, Science & Standards Director, pers. Comm., 23 Nov 2013).

4.1.3 Social and ethical practices

Over the past five years, there has been increasing publicity about the human abuse and unethical practices being conducted both at sea and in some on-land processing operations. There are a number of elements to social and ethical practices, which cover the following principles (ETI, 2014):

1. Employment is freely chosen
2. Freedom of association and the right to collective bargaining are respected
3. Working conditions are safe and hygienic
4. Child labor shall not be used
5. Living wages are paid
6. Working hours are not excessive
7. No discrimination is practiced
8. Regular employment is provided
9. No harsh or inhumane treatment is allowed

At the international level, the **International Labor Organization (ILO)** sets labor standards that are backed by a supervisory system that helps to ensure that countries implement the conventions they ratify. ILO's Convention no. 188 '**Work in Fishing Convention**' (ILO, 2007a) is highly detailed and specific to fishing vessels but has only been ratified by Angola, Argentina, Bosnia and Herzegovina, Congo, Estonia, France, Morocco, Norway and South Africa. ILO also has Recommendation No. 199 **Work in Fishing Recommendation** (ILO, 2007b), but this is a recommendation only. As a result, most countries rely upon the more widely ratified, but more generic ILO conventions such as the following:

- **Maritime Labor Convention, 2006:** Ratified by the Philippines, most EU countries amongst others but not the US. Although the MLC has not been ratified worldwide, it has widespread effect because vessels from non-signatory states that attempt to enter ports of signatory states may face arrest and penalties for non-compliance with the MLC.
- **Right to Organize and Collective Bargaining Convention, 1949 (No. 98):** ratified by the Philippines, most EU countries amongst others but not the US.
- **Worst Forms of Child Labor Convention, 1999 (No. 182):** ratified by the Philippines, US and most EU countries amongst others.
- **Minimum Wage Fixing Machinery (Agriculture) Convention, 1951 (No. 99):** ratified by the Philippines, most EU countries amongst others but not the US.

Most of the larger US and EU seafood processors use national legislation on minimum wages, overtime rules, collective representation, child labor and other aspects of worker welfare. This is relatively straightforward to apply and monitor on land. However, it may be less easy to evaluate the social and ethical compliance levels in third countries where national legislation might be less detailed or well implemented, or greater still at sea, where it is difficult to manage or monitor crew welfare, especially when in high seas.

Various approaches have been taken. There are a number of private sector and not for profit codes and best practice frameworks, such as **Sedex** (the Supplier Ethical Data Exchange) and the **Ethical Trading Initiative (ETI)**. One major UK tuna processor, New England Seafoods, use the ETI Base Code as their starting point (Lucy Blow, CSR Director, pers. comm., 21 Nov 2016). This is used throughout this supply chain, both in their own factories as well as in supplier vessels and factories overseas. A major global tuna canning company, **Thai Union**, have developed their own 'Thai Union Business Ethics and Labor Code of Conduct'.

This is largely based upon the ILO Convention No. 188 (see above) and includes the following principles:

1. Business is conducted lawfully and with integrity.
2. Work is conducted on the basis of freely agreed and documented terms of employment with legal compliance.
3. All workers are treated equally and with respect and dignity.
4. Work is conducted on a voluntary basis with no forced or compulsory labor.
5. All workers are of an appropriate age.
6. All workers are paid fair wages.
7. Working hours for all workers are reasonable.
8. All workers are free to exercise their right to form and/or join trade unions and to bargain collectively where permitted by law.
9. Workers' health and safety are protected at work.
10. Workers have access to fair procedures.
11. Business is conducted in a manner that embraces sustainability and reduces environmental impact.
12. Progress and compliance are monitored.

All Thai Union's tuna suppliers are required to commit themselves to the Code of Conduct, and are indeed being audited by independent consultants against this company standard. According to the

agreement, failure to comply with this Code of Conduct or recommended remedial action “*will result in supplier contract termination and legal actions, without recourse*”.

MSC is actively considering how to include labor issues in their environmental standard. They will require a declaration by MSC certified fisheries that they are free from unacceptable labor practices and are able to supply evidence to support this claim by the end of 2018, and are considering options for either a set of auditable social requirements or a declaration that will be implemented in the MSC Chain of Custody Standard in 2018. This may include recognition of solutions offered by other standard setting organizations.

FairTrade USA already includes a number of human right and working condition requirements in their standard. In particular, their Capture Fisheries Standard (v1) includes (i) *Fundamental Human Rights* (non-discrimination, freedom from forced labor & human trafficking, protection of children & young persons, & freedom of association) and *Wages, Working Conditions & Access to Services* (conditions of employment, & occupational health & safety).

4.2 Potential Traceability Platforms

This section builds upon the description of market preferences and traceability mechanisms in the previous chapter and applies it directly to the two main value chains operating in GSFPC. This discussion is conducted in two stages, (i) specifically examining the two value chains to identify and characterize the voluntary seafood sustainability and traceability platforms relevant to these products; and then (ii) applying this to the overall situation for CDT implementation in the Philippines.

4.2.1 Case Studies

Two case studies were evaluated:

- (i) fresh yellowfin tuna exported by air; and
- (ii) preserved (e.g. canned or pouch) tuna (mainly skipjack and yellowfin) originating for both the fresh domestic waters purse seine/ring net fisheries and the frozen purse seine fisheries from external waters (both Philippines and foreign-flagged catching vessels).

4.2.2 Fresh air-freighted yellowfin tuna

The handline fishery for tuna produces large yellowfin tuna with the potential for high value export to Spain (18% in 2015), Italy (16%), the US (11%) and elsewhere as whole fish or loins. It is a relatively low volume (<10,000 t per annum) fishery, with around 40% of the best quality fish being exported fresh (see **Output 2: Market Report**). The lower grade fish mostly enter the local canning value chain (see next case study and VC diagram overleaf).

Being a fresh product, the value chain is short. This highly selective fishery is conducted on free schools and FADs. In the past, this fishery has used traditional *banca* type outrigger vessels of around 3 GRT, which have implications for the handling and quality of the landed fish. Their average fishing trips are of 7 – 15 days, of which 5-10 days is fishing, with around two days' transit time. Fish is chilled using an ice/water mix, utilizing block ice which is crushed when needed. Average landings are about 1.5 mt per vessel. These vessels have recently been replaced by larger (20 – 35 GRT) mothership vessels (both with and without outriggers) that carry up to 20 *pakura* (handlining dories/auxiliary boats). Once landed, the fish is washed and packed for rapid airfreight to its international destination.

The main buyers of this fresh tuna will be multiple retailers and food service companies, with the products eventually consumed as tuna fillets, steaks or other products such as sushi and sashimi. They are high value products, often sold to highly discerning customers, often with an interest in the quality and environmental and social provenance of the fish they are eating. For the handline VCA, see Figure 12.

Box 5: Fresh tuna consumption in the US

In the United States, eating fresh tuna became popular only in the late 1990s. The most popular tuna is the so-called *ahi*, the Hawaiian name for bigeye, but in reality, *ahi* tuna can be either yellowfin or bigeye. *Tombo* is the Japanese colloquial name for albacore and albacore is also sold in the United States market as *tombo*. *Tombo* are mostly served as seared steaks. If the quality is good (though not necessarily), sushi restaurants as well as households may use albacore for sashimi and sushi. This makes it difficult to separate sashimi from fresh fish consumption categories.

Source: Miyake *et al*, 2010

Given the small but discerning nature of the market involved, it is likely that seafood buyers and consumers will be seeking the following information:

Table 13: Information sought by seafood buyers and consumers

Information needs	Importance to buyer (* low ***high		
	Processor	Food service	Consumer
Mandatory labelling information* (for fresh fish includes species, whether wild-caught or farmed, and location of production).	***	***	**
Full traceability back to the fishery and, given the large size and limited number of individual fish involved, the catching boat and even the fisher responsible for landing the fish.	*	**	**
Factors impacting quality of fish e.g. date of capture and subsequent storage / transfer points, storage type	***	**	*
Information on the fishery (principally location, vessel / fleet identity, gear type and species) and assurance that the fishery is environmentally sustainable	**	**	**
Assurance that the fishery and value chain is conducted on an ethical and socially-acceptable basis.	**	**	**

Source: Consultant views

In a recent study Sterling *et al* (2015) determined that critical; dates (e.g. best before) were the main consumer concern when buying fresh / frozen tuna (see table overleaf). Price was a close second, with sustainability and production type third. The production system (e.g. wild or farmed) and species was least important.

When fresh fish is presented to the consumer in the US as a 'raw single ingredient' product (both fresh and frozen), nutritional labelling is voluntary. However, for the retail store to be in compliance with the voluntary program, the nutrition labelling information must be available at point of purchase (i.e., be displayed in close proximity to the product) of both the fresh and frozen fish (FDA, 2013).

There are a number of voluntary seafood sustainability and traceability platforms that can provide much of this information (see Table 15). The concept of ecolabels was covered in outline in the previous section, but specific schemes are reviewed specifically in relation to the fresh tuna exports from the handline fishery.

Table 14: Consumer research findings for fresh / frozen tuna in the US and Germany

Country	US	Germany
Overall rankings	Critical dates: 29% Price: 23% Sustainability: 20% Production: 20% Species: 8%	Critical dates: 32% Price: 27% Sustainability: 23% Production: 14% Species: 4%
Production: wild or farmed	While farmed tuna is very rare in both countries, Americans placed greater overall weighting on having production method on the label: 20% influence compared to 14%.	
Species verification	Americans placed twice as much emphasis on species verification for fresh / f frozen tuna than for canned tuna, but this factor still only accounted for 8% and 4% of decision making.	
Sustainability verification	In all these cases, sustainability verification by government agency is valued more than by an independent 3rd party, and verification by manufacturer or retailer was valued only marginally more than no verification. In all cases, sustainability verification was associated with notably less perceived consumer value.	
Critical date verification	Uniquely among the products tested, critical date verification ranked more highly in perceived value than price. The verification using best-before and packaging date together was preferred to just best-before date.	

Source: Sterling *et al*, 2015

Marine Stewardship Council (MSC)

MSC globally is probably the best-known seafood ecolabel. A number of yellowfin tuna fisheries have been MSC certified, including the following fisheries in the Pacific:

Table 15: MSC certified YFT fisheries in the Pacific Ocean

Fishery	Species	Gear type	FAO region	MSC status	Tonnage
Solomon Islands SKJ and YFT tuna	YFT & SKJ	Purse seine (FAD & free), pole & line	Western Central Pacific	Certified	27,192
PNA Western and Central Pacific skipjack a...	YFT & SKJ	Purse seine (free-school)	Western Central Pacific	Certified	790,670
SZLC, HNSFC & FZLC Cook Islands EEZ south Pacific	YFT & ALB	Handlines; longlines	Southwest Pacific	Certified with component(s) in assessment	2,302
Walker Seafood Australian longline	YFT, ALB & SWO	Longlines	Southwest Pacific	Certified with component(s) in assessment	665
North-eastern Tropical Pacific Purse Seine	YFT & SKJ	Purse seine (free-school)	Eastern Central Pacific	In Assessment	N/A

Source: MSC (November 2016)

To date the emphasis has been on certifying the larger purse seine fisheries (see next case study for further consideration), but there has been recent interest in certifying smaller, niche fisheries such as the Philippines handline fisheries. Indeed, there is currently a 'Fisheries Improvement Project' (FIP) (see Box overleaf) being conducted by Blueyou Consulting as part of the ARTESMAR Fishery Improvement Program for Artisanal Small-Scale Fisheries (ARTESMAR, 2014), same as an MSC thesis

proposes a FIP for the handline yellowfin tuna fishery in Lagonoy Gulf (Doddema, 2012). There are also FIPs for handline fisheries in other similar fishers in the WCPO.

Box 6: Fisheries Improvement Project (FIP)

A Fishery Improvement Project (FIP) is a multi-stakeholder effort to address environmental challenges in a fishery. FIPs utilize the power of the private sector to incentivize positive changes toward sustainability in the fishery and seek to make these changes endure through policy change.

A fishery improvement project must have the following characteristics:

- Draw upon market forces that includes supply chain participants, to motivate fishery improvements.
- A work plan with measurable indicators and an associated budget.
- Explicit willingness from participants to make improvements.
- Willingness from participants to make the investments required to make improvements.
- A system for tracking progress.

Source: CASS (2016). See also www.fisheryprogress.org to learn more about global FIPs

Other relevant tuna FIPs in the region include (i) the Eastern Indonesia yellowfin tuna – handline (2013 – 2017) and the Vietnam yellowfin tuna - longline/handline (2014 – 2019)

An MSC pre-assessment in 2015 for yellowfin handline fisheries in Mindoro and Lagonoy Gulf, Philippines. (WWF, 2015) prepared for WWF-Germany suggests that certification of this fishery would not be without its challenges. The yellowfin stock is currently not overfished and overfishing is not occurring (WCPFC, 2016), although the 2015 WCPFC SC meeting (WCPFC, 2015) recognized that levels of fishing mortality and depletion differ between regions, and that fishery impact was highest in the tropical region, including the Philippines (see **Output I: VCA Report** for more details). However, it would need to be proven that this fishery, and the wider stock, has a suitable harvest strategy and harvest control rules (HCRs), including likely effort controls at local level. The ecosystem elements (P2) should be straightforward as it is a highly selective fishery, with no major non-target species, ETP or habitat impacts.

Perhaps the major weakness is in MSC's Principle 3 (fisheries governance and fisheries-specific management). This would have to demonstrate the presence of clear short and long-term objectives for the handline fishery, a precautionary approach and an effective MCS strategy and implementation. Whilst some of the former issues have been addressed through the new National Tuna Management Plan, the later, fishers-specific aspects are still lacking.

If certified, the MSC Chain of Custody (CoC) process would ensure a high degree of traceability from the fishery. Under the MSC system, CoC certification provides credible assurance that products sold with the MSC trademarks originated from a certified fishery and can be traced throughout the supply chain to a certified source. Companies certified against the MSC CoC Standard are audited by a third-party accredited certification body and are subject to periodic surveillance audits over the three-year period of a CoC certificate. Auditors must conduct full traceability tests (see box below).

Box 7: Traceability testing as part of the MSC CoC audit process

A traceability test is a record-based trace of a batch sold / ready for sale back to its related purchase(s). The traceability test shall test that these records are available and link the batch through each step where it is handled, including handling at any subcontractors or off-site facilities. An input-output reconciliation may be carried out between 2 time periods, in relation to one batch, or in relation to one batch within a defined time period. The purpose of the input-output reconciliation is to demonstrate that certified outputs are not greater than the inputs, except as

related to added ingredients, and that where product is transformed the yield (conversion rate) is accurate and justifiable. In verifying justifiable yields, it is recommended to cross check the product specification with the factory records and with yields reported at previous audits.

Source: MSC Guidance 8.2.9 – 8.2.11. In the ‘MSC Chain of Custody Certification Requirements (MSC, 2015).

Friend of the Sea

Friend of the Sea has also seen wide-scale adoption. It is a less rigorous (and therefore much cheaper) process than MSC, with a substantially simpler audit framework. The standard is wider than MSC, covering:

- The target stock is not over-exploited
- There is no impact on the seabed;
- It is a selective fishing method (max 8% discards);
- No bycaught species are included in the IUCN Red List of endangered species;
- Compliance with legal requirements;
- Energy balance and yearly fuel efficiency improvement;
- Waste management;
- Social accountability.

With respect to this handline fishery, the ‘FOS - Wild – Non-Freezer Vessels Sustainable Fishing Requirements’ checklist (FOS, 2015) is required. FOS also has a separate checklists for traceability (FOS, 2016), that covers both product traceability and social accountability through the value chain, and includes the requirement for a traceability test (see **Box 6** for MSC’s example).

FOS have their critics – for instance in a 2009 study by WWF and Accenture, MSC was found to be fully compliant with an ecolabel assessment framework, scoring 95.63%, whilst FOS only scored 55.83% and was ranked semi-compliant (Accenture, 2009).

Fair Trade USA

Fair Trade focuses mainly on human rights and labor force welfare, as well as sustainability issues, so is wider in spectrum than MSC. It is also more consumer-focused than MSC, which tend to be business to business (B2B). The wider Fair Trade movement has a high (55% in the US, and probably more in the EU) consumer awareness. The audit process is less focused on science and management, and is likely to be slightly cheaper than MSC to operate.

In 2014, Fair Trade USA launched their capture fisheries ecolabel standard. There are three cost elements to Fair Trade USA fisheries certification:

1. Program Implementation costs e.g., getting ready for the audits. Often conducted with NGOs as part of a FIP. Typically costs USD 5 – 20,000.
2. Audit costs. Initial and annual audits over the 3-year lifespan of the certificate. Again, costs around USD 5 – 20,000 per audit.
3. Service fee. 2% of the wholesale value of the labelled product.

Each certified fishery must develop a ‘Fair Trade Premium Plan’ allows a price premium to be used to “address the needs of the registered fishers, workers, community, and/or environment”. This cost usually falls on the downstream value chain, and is determined on a fishery by fishery basis. After certification, the fishery must continue to develop elements of the standard, which are introduced

yearly over the six year certification period. For example, under the Discrimination & Abuse Prevention (FHR-DAP) component, the fisheries must develop (i) a program helps improve the socioeconomic position of disadvantaged/minority fishers (by Year 3), (ii) a policy prohibits unwanted sexual conduct (also by Year 3) and (iii) a record system helps prevent unwanted sexual conduct (by Year 6).

Table 16: Private ecolabelling schemes for capture fisheries

Scheme Name	Website	Scheme Category											Scheme format				Sector						Issue Scope				Geographic scope										
		Ecolabel	Public	Private	Type 1 ecolabel	Type 2 ecolabel	Type 3 ecolabel	Initiative	Business initiative	Environmental NGO initiative	Consumer NGO initiative	Government initiative	Mandatory/ Voluntary (M/V)	Business-to-Business	Business-to-consumer	Code of conduct	Certification scheme / standard	Consumer guidance	Benchmarking	Label / Logo	Capture Fisheries	Aquaculture	Agriculture	Forestry	Organic	Other?	Environment	Social/ Ethical	Animal health & welfare	Food quality	Food safety	Traceability	International	Region	Nation	sub-national/local (where)	Country
BRC Global Standards	http://www.brcglobalstandards.com/	x		x	x							V	x		x				x	x	x								x		x						Global
Conservation Alliance for Sustainable Seafood	http://www.solutionforseafood.org/			x					x			v	x				x			x	x					x						x				Global	
Dolphin Safe Tuna - Earth Island Institute	http://www.earthisland.org/dolphinSafeTuna/index.php	x		x		x						V		x	x				x	x						x		x								Global	
Fair Trade USA Capture Fisheries	http://fairtradeusa.org/products-partners/seafood	x		x								V		x	x					x						x	x									Global	
Flipper Seal of Approval	http://earthtrust.org/archive/fsa.html	x		x					x			V		x	x				x	x						X							x			USA	
Friend of the Sea	http://www.friendofthesea.org/	x		x	x				x			V		x	x				x	x	x					x	x				x					Global	
IFFO RS	http://www.iffonet.net/iffors	x		x	x							V	x		x				x	x						x			x	x	x					Global	
Marine Stewardship Council (MSC)	http://www.msc.org/	x		x	x							V		x	x				x							x										Global	
Seafood Safe	http://www.seafoodsafe.com/			x	x			x				v		x	x				x	x								x								Global	
Wild American Shrimp Certification	http://www.wildamericanshrimp.com/main.html	x		x		x						V		x					x	x								x					x			USA	

Source: Poseidon (unpublished)

Unlike MSC where there is a separate chain of custody (traceability) standard, Fair Trade has traceability integrated into the fisheries standard itself. This (Section TR-TD 1) requires that all Fair Trade certified products are clearly identified as 'Fair Trade Certified' in purchase and sales documentation (i.e. invoices, delivery notes and purchase orders) and (TR-TD 2) documentation of Fair Trade transactions allows a sale to be traced back to a purchase. SCS have been engaged to oversee the fisheries and traceability audit program (SCS, 2014).

Fair Trade have certified a number of small-scale single hook handline yellowfin tuna fisheries along the coasts of Ambon and Buru islands in Indonesia. The fishermen have partnered with the non-profit organization *Yayasan Masyarakat dan Perikanan Indonesia* (MDPI) to assist with obtaining and sustaining their Fair Trade certification. MDPI staff undertook initial training, organizing meetings among fishermen, and preparing the island's Fair Trade Committee for the first audit. Yellowfin tuna is imported in the United States by Anova Seafood, a subsidiary of Bumble Bee Foods. The tuna is processed and sold as frozen tuna steaks and burgers. Traceability systems throughout the processing and supply chains track Fair Trade tuna from Ambon and Buru to its final destination (Fair Trade, 2016).

4.2.3 Canned skipjack tuna

The production of canned skipjack tuna in General Santos is a much more complicated value chain than the handline case study. The upstream catching operations include both the domestic purse seine and ring net fisheries that land fish fresh into GSFPC, as well as the distant water large purse seine operations by both Philippines and foreign flags landing frozen fish into GSFPC and the Makar Municipal port. The downstream value chain is a little more straightforward as it carries a single, cooked product type that does not undergo further processing or packaging (although may be re-labelled). See Figure 13 on page 36 for an infographic on the value chain.

The main buyers of canned tuna are large wholesalers, retailers, lower-end food service businesses (for inclusion in sandwiches, salads and other ready meals), and end-consumers for home use.

Compared to the fresh product considered in the first case study, expectations for fisheries-related information are likely to be different in the following aspects:

1. **Quality control** is less of an issue. As canned tuna is a cooked product, it is expected that it will already have undergone stringent raw material and final product testing when being canned, and that further product deterioration is unlikely with such products. This said, there will be a demand for statutory information in terms of location of catch, date of processing, best before and final expiry dates.
2. **Traceability** is important, but is usually an integral component of the canning process e.g. printing of batch numbers, use of ISO 9001 quality assurance systems, etc.
3. **Environmental sustainability** is important, but might be restricted to information on the fishing method (pole and line-caught fish has been strongly advocated by NGOs such as Greenpeace over recent years) and the fact that the product is 'dolphin-friendly'.
4. **Social and ethical considerations** are relatively new, and have yet to be fully embraced by most consumers. However, a number of the major tuna canning companies, such as Thai Union, have come under increasing pressure from NGOs such as Greenpeace, who accused them of being "*seriously implicated in horrendous human rights and environmental abuses*" and warned shareholders and investors "*of the financial risks associated with these destructive and harmful practices*" (Greenpeace, 2015b). This, rather than consumer pressure, is driving the

major tuna fishing and canning companies towards more control and transparency in their parts of the value chain.

In contrast to the fresh / frozen tuna example in Table 14 above, Sterling *et al* (2015) determined that the price was the main consumer concern when buying fresh / frozen tuna (see table below). Critical dates (e.g. best before) were a close second, with sustainability and production type third. The production system (e.g. wild or farmed) and species was least important.

Table 17: Consumer research findings for canned tuna in the US and Canada

Country	US	Canada
Overall rankings	Price: 30% Critical dates: 28% Sustainability: 23% Production: 14% Species: 4%	Price: 28% Critical dates: 24% Sustainability: 21% Production: 15% Species: 12%
Production: wild or farmed	While farmed tuna is rare in both countries, production method matters less to Americans when choosing canned tuna than when choosing fresh/frozen tuna (just 14% weighting, compared to 20%).	
Species verification	Canadians valued verification of species much more highly than Americans (15% influence on decisions, compared to just 4%) and they especially valued skipjack, even giving albacore a negative value—worse than no verification.	
Sustainability verification	In all these cases, sustainability verification by government agency is valued more than by an independent 3rd party, and verification by manufacturer or retailer was valued only marginally more than no verification. In all cases, sustainability verification was associated with notably less perceived consumer value. Little distinction was seen between U.S. and Canadian consumers. The preference for verification by government agency was stronger for canned tuna than fresh / frozen.	
Critical date verification	Both markets rated this as the 2nd most significant driver after price.	

Source: Sterling *et al*, 2015

Marine Stewardship Council (MSC)

As can be seen from Table 15 on page 86, there are already two yellowfin tuna purse seine fisheries certified by MSC in the Western Central Pacific Ocean (WCPO). Given that the yellowfin tuna being caught in the WCPO is a single stock, this suggests that in terms of Principle 1 (Target stocks) there should be no major barrier to certification. However, there are some issues associated with the high levels of juvenile yellowfin catch associated with the FAD-based domestic purse seine / ring net fisheries that may contradict this. For instance, scoring element (f: Review of alternative measures) of MSC's Performance Indicator 1.2.1 requires that there is a "There is a regular review of the potential effectiveness and practicality of alternative measures to minimize UoA-related mortality of unwanted catch of the target stock and they are implemented as appropriate" (MSC, 2014) that would likely fail and require a major condition at a minimum.

To date, most purse seine fisheries that have passed MSC have been those fishing on free schools, as the bycatch of both non-target fish and ETP species from FADs have been a particular issue. This said, the recently certified (July 2016) Solomon Islands skipjack and yellowfin tuna fishery includes both

free-school and anchored FADs, suggesting that this should no longer be considered a major barrier to certification. Indeed, all the Principle 2 elements associated with non-target bycatch and ETP species passed without any conditions. According to a number of WCPFC Technical and Compliance Committee (TCC) annual reports, the Philippines has been noted to have a number of non-compliance issues with WCPFC CMMs, including on reporting small-scale fishing effort and catches, IUU issues with Philippines-flagged purse seiners, have failed to implement purses seine effort limits or controls on FAD numbers.

Probably the biggest challenge for the MSC assessment of this VCA would be defining the Units of Certification (UoC). This defines what is covered by the certificate and is composed of (i) the target stock(s), (ii) the fishing method or gear type/s, vessel type/s and/or practices and (iii) the fishing fleets or groups of vessels or individual fishing operators pursuing that stock. The obvious single unit would be the domestic fleet fishing in the Philippines EEZ, but this only lands around 10% of the fish being canned in General Santos. If this fleet only was certified, it would require a segregated chain of custody through the port, into freezing and cold storage, and then the canning process itself. This would be logistically complex, and given the relatively small size of the fishery, may not warrant the high costs of the operation.

The alternative then is to add the domestic fleet operating outside the Philippines EEZ and landing into the Philippines and PNG. In 2014, around 58,000 t of skipjack and 36,000 t of yellowfin tuna was caught in PNG waters by Philippines-flagged vessels. A further 30,000 t of both species was caught in Kiribati and High Seas Pocket 1 waters. This would complicate the assessment, but might be attractive to some of the larger integrated fleet / processing operators such as Frabelle and RD Fishing. For purse seine/ring net fishery VCA, see Figure 13 on page 36.

Friend of the Sea

Friend of the Sea already has one Philippines-owned purse seine operator certified under their sustainable seafood standard (Certification Criteria Checklist for Tuna Purse Seine and Longline Fleets). This is the Frabelle (PNG) Limited purse seine fleet catching both yellowfin and skipjack tuna operating in the PNG EEZ outside of the 12 nm territorial water limit. 23 vessels are included on the certificate, most of which are PNG flagged, with around 10 being Philippines-flagged (FOS, 2010). It is presumed, but not confirmed, that this is the source of much of the tuna being imported from PNG into GSFPC, although Frabelle do have tuna processing facilities in both PNG and the Solomon Islands.

It is the author's view that the Friend of the Sea standard and audit process lacks the scientific and third party rigor of other seafood ecolabels, and is not so well viewed by the seafood buying community. This said, in the consumer's eyes, there is little differentiation between different labels, and thus Friend of the Sea certification may be sufficient for most end users. We also have doubts over the rigor and credibility of Friend of the Sea's traceability system, which is essentially self-declaration with very limited independent over-sight.

Fair Trade USA

The Fair Trade USA program is focused on small-scale, community-based producers. As such, it is unlikely that it would consider fisheries associated with this second case study. This said, there may be some potential for considering the smaller, family-operated domestic purse seine and ring net vessels operating on coastal waters in the Philippines EEZ. One potential issue would be the willingness of General Santos canning companies to consider developing a separate 'Fair Trade' canned product. Given the results of the consumer survey by Sterling *et al* (2015), where price and product

freshness outweigh sustainability in terms of buyer preference (see Table 17), this is by no means guaranteed.

4.3 Potential Contribution to CDT in the Philippines

This discussion is focused on the potential contribution of voluntary sustainability and traceability platforms for tuna fisheries in the Philippines. As such, there are two main voluntary approaches to improving CDT that can be taken by the private sector in the Philippines, these being (i) using an environmental standard with strong traceability systems and (ii) adopting other forms of traceability mechanisms.

4.3.1 Engagement with third-party certified environmental responsibility standards

Both MSC and Fair Trade USA offer credible, robust approaches to seafood certification with allied chain of custody traceability processes. However, as discussed earlier, they are very different standards, with MSC being restricted mainly to environmental issues, whilst Fair Trade USA is more wide-ranging, but is only really appropriate for small-scale, community-based fisheries. It is also less widely accepted by seafood buyers outside the US (see table below).

Table 18: Strengths and considerations of MSC & Fair Trade USA standards and traceability mechanisms

Standard	Strengths	Considerations
MSC	<ul style="list-style-type: none"> Established, robust system with high levels of over-sight High levels of recognition across the globe, esp. in the US and Europe. Is a recognized sustainability assurance tool for many seafood buyers Has a growing 'Fisheries Improvement Project' movement Traceability via the CoC process is regularly audited. 	<ul style="list-style-type: none"> Can be expensive Does not include quality or social / ethical elements (under consideration)
Fair Trade USA	<ul style="list-style-type: none"> Is a simple, participatory certification process Is wide-ranging, covering labor and welfare issues Has high levels of consumer acceptance, esp. in the US. 	<ul style="list-style-type: none"> Not so suitable for larger industrial fisheries e.g. distant water purse seine operations. Less well accepted by seafood buyers on a B2B basis. Not well recognized outside of the US market

Source: Consultant views

Small-scale handline fisheries for yellowfin tuna

Both MSC and Fair Trade certification could be considered for the handline fishery in VCA I. It is a relatively small fishery, mostly conducted in the Philippines EEZ, with some level of family level vessel ownership and crewing arrangements. To progress the Fair Trade approach, it would be necessary to further examine both the vessel ownership / crewing arrangements, as well as the degree to which there is a homogeneous fleet with common representation (e.g. through the 'Alliance of Tuna Handliners').

MSC certification of handline fisheries in the Philippines is also potentially possible. As discussed earlier, an MSC pre-assessment (WWF, 2015) indicates that the Mindoro and Lagonoy handline fisheries are not yet ready for full assessment. WWF's **'Partnership Programme Towards**

Sustainable Tuna was a five-year program focusing on hand-line caught yellowfin tuna. This was facilitated by WWF-Germany, implemented by WWF-Philippines and funded during Phase I by Bell and Coop, Sea Fresh and the DEG for the 15 municipalities bordering Lagonoy Gulf and the six municipalities along Mindoro Strait. A first MSC pre-assessment was undertaken in 2011 by Blueyou Consulting and subsequently updated by Banks in 2015 to both re-evaluate the fishery and consider it against MSC's new (version 2) of the Fisheries Certification Requirements (FCR). This is now entering into a formal 'Fisheries Improvement Project' (see box below).

Box 7: Fisheries Improvement Project for yellowfin tuna in Mindoro Strait and Lagonoy Gulf

WWF together with its partners and stakeholders is promoting a Fishery Improvement Project (FIP). The FIP will support the goal of MSC certification of the handline yellowfin tuna fishery in Mindoro Strait and Lagonoy Gulf. All stakeholders have endorsed the Fishery Improvement Plan. Outputs from the FIP are expected to support the strength of fisheries management both within the Philippines tuna sector as a whole, and for the handline fisheries in particular. In 2013, after the first internal pre-assessment, a corresponding FIP Plan was formulated and fifty-two (52) milestones were identified. In 2015, after the last FIP review, twenty-six (26) milestones were met, ten (10) milestones are still to be implemented effectively, and fourteen (14) milestones were withdrawn. Only two (2) milestones outcomes related to governance still remain in the fail category. These are being prioritized in the WWF advocacy strategy. The revised FIP Action Plan now contains nineteen (19) milestones, which need to be achieved before the project fisheries can go into the full MSC certification process. The original aim of this FIP is to enter full certification in 2017, although this milestone is now considered unlikely for the time being.

Source: WWF (2015)

The main FIP implementation challenges are considered as follows (WWF, 2015):

Compliance on Licensing of Tuna Vessels: the Local Government Code of 1991 (R.A. 7160) mandates the municipalities to have the exclusive authority to grant fishery privileges in the municipal waters and impose rentals, fees or charges. With this autonomy of the LGUs, the implementation of the licensing systems varies from one municipality to the others, even the cost and scheme of payments on licensing fees as imposed by their respective Municipal Fisheries Ordinances differs, some are free, some with affordable licensing fees and others are expensive for the fishers to pay.

Complexity of the Supply Chain: there were many variations in the structure of the tuna supply chain in every site, some operate with middlemen, some with associated buying stations while others are direct with exporters.

Changes in administration and political leadership: the LGU structure changes every three years through local elections. This impacts both the rapport and buy-in with key LGU officials.

It is also understood that a major barrier to potential certification of this fishery is the continued opposition to WCPFC CMMs by the Philippines purse seine vessel owners, and a failure by BFAR to enforce these. This impacts small-scale fisheries such as the YFT handline. To our knowledge, not detailed Chain of Custody assessment has been conducted for the FIP value chain.

Domestic purse seine and ringnet fleets

The Philippines has two main classes of purse seiner / ring netters, these being (i) medium scale (20.1GT – 150 GT) commercial ring net, and purse seine vessels, targeting largely skipjack and juvenile yellowfin tuna; and (ii) large scale (> 150GT) commercial vessels, mainly purse seiners, fishing outside municipal waters, including the high seas and the waters of neighboring countries. All these fisheries tend to utilize FADs, both anchored and to a lesser extent, drifting FADs.

As discussed earlier, the Frabelle large-scale purse seine fleet operating in PNG waters is already certified under the Friend of the Sea label, but this does not provide with the assurance that most seafood buyers seek in terms of environmental sustainability, nor is it accompanied by a robust, third-party certified chain of custody. One option is to consider MSC certification of part or all of the Philippines-flagged purse seine fleet.

The medium-sized (e.g. 20 – 150 GRT) domestic fleet is mainly based in – and land into - General Santos. They mostly operate in Philippines waters, especially since access to Indonesian waters was banned. A potential Unit of Certification (UoC) could be all ‘medium-sized’ fishing vessels using (i) purse seine and (ii) ring net fishing gear targeting skipjack tuna in the Philippines EEZ. This would almost certainly require support prior to entering the full MSC assessment process. One approach would be to conduct a pre-assessment (a quick and relatively cheap benchmarking tool that identifies strengths and weaknesses against the MSC standard), which would then be used as the basis for developing a formal Fisheries Improvement Project to bring the fishery up to a standard where MSC certification is a realist opportunity. Based on previous FIP examples, this is likely to involve at least a five year development period.

A second UoC could be the large-size (>150 GRT) purse seine fleet that mainly operates outside territorial waters. An MSC pre-assessment would be the best tool to define the possible UoC and fleet structure. Like the recently MSC certified Solomon Islands skipjack and yellowfin fishery, the Philippine boats also tend to used anchored FADs, but in their case located in the Papua New Guinea EEZ outside the 12 mile zone, mainly in Bismarck Archipelago seas. Given the similarity with the Solomon Islands fishery, there is potential for the Philippines fishery to be a valid candidate for certification. However, a pre-assessment will be essential to identify its readiness and if necessary provided the basis for a Fisheries Improvement Project to bring it up to a level where it could be considered for full assessment.

Traceability

In both small-scale handline fishery and the purse seine fleets, if certified, any product carrying the MSC label would have to go through a certified chain of custody. This would start on the vessels (e.g. to ensure that any drafting FAD-caught fish was not included in the certified catch) and continue through to landing, freezing and storage and then canning. MSC requires that every part of the value chain is audited for full traceability. The MSC CoC certificate lasts for three years (before re-certification is required) and is subject to periodic surveillance audits over this period. It should be noted that many of the major retailers and food service companies in the US and Europe already have MSC CoC certification.

4.3.2 Utilization of other traceability systems

Whilst the third-party certification schemes considered above have the benefit of including both assurance of responsible fishing practices combined with an integrate traceability system, they may not be suitable for all fisheries situations in the Philippines. We are therefore briefly assessing other voluntary traceability only schemes that might be considered. These are subdivided into two parts, e-reporting systems that can be used by vessel operators to provide catch data and (ii) holistic traceability software solutions.

Electronic catch reporting (e-reporting)

With growing interest from a wide range of fisheries stakeholders (e.g., fishermen, fisheries managers, scientists and fleet operators) in electronic reporting and monitoring, which has been reflected in a number of fisheries administrations starting to require mandatory electronic reporting (ER) for larger segments of the fleet, there are now a number of ER systems on the market. Electronic logbooks are also increasingly being used in the US, including NOAA Fisheries' Electronic Logbook (ELB) Program, which now includes a cellular-based system (cELB) for transmitting catch information back to NMFS. The EU now requires that all vessels >12 m should submit the fishing logbook in electronic form²⁷ and that landing and transshipment declarations should be submitted electronically and the system is being extended on a voluntary basis to small-scale fishing operations and the recreational fishing sector. This has stimulated the development of many systems, resulting in some national authorities requiring a testing and approval process.

The fourteen largest of these are briefly examined in the form of a comparative table below. These are summarized very briefly in **Table 19** below and their main features compared in **Table 20** on page 101.

Electronic reporting does not necessarily guarantee traceability (in fact most current e-logbooks don't include fully integrate product traceability) but they are able to provide rigorous systems for catch documentation purposes. At present, they are largely bespoke designs, but as and when RFMOs such as WCPFC start to introduce mandatory catch documentation requirements, these can usually be rapidly integrated through a software update. It should also be noted that the use of electronic catch documentation systems has a number of cost implications, both in terms of initial system installation as well as on-going data transmission and maintenance. This is likely to restrict their adoption to larger vessels e.g. the large-sized purse seine fleet and possibly the medium-size purse seine / ring net vessels as well.

Table 19: Outline of major fisheries ER solution providers and their uptake to date

Company	Product names	Uptake
Marlin	Marlin Pro, Halios Catch Manager, Fishweb	There are currently 20 purse seine vessels using the Marlin in the Philippines, and 400-500 other vessels using the system in Vietnam, potentially expanding up to 3,000 units by 2015 (primarily for weather forecasting to warn fishermen of approaching typhoons). The Marlin can also be programmed to suit other activities apart from purse seine e.g. such as longline, pole and line etc. as per SPC logsheet format
Catchlog	Caltchlog, Fleet manager, Fishery manager	Catchlog is used in Australia and the UK, and is also being trialed in the Maldives and Canada. It has been adapted to suit a number of different fisheries using a variety of gear types including trawl, gillnet, long-line, dredge, seine and trap. It has been used in the Northern Prawn Fishery since 2008, and in the UK since October 2010. There are currently 52 Northern Prawn Fishery (Australia) vessels 43 other vessels in Australia using Catchlog. There are 117 vessels using CatchLog in the UK Fisheries and 6 in Spain.

²⁷ Council Regulations 1966/2006, 1006/2008 and 1224/2009 and Commission Regulations 1077/2008 and 201/2010

Company	Product names	Uptake
E-Logbook	Chartworx E-Logbook, Qodfisd & Trax	E-Logbook is used by over 160 vessels in the Netherlands and UK, and is available for all FAO fishing gears. Chartworx have been supplying electronic logbooks since 2010 in the Netherlands and 2011 in the UK.
eCatch	eCatch e-log & eCatch Management	Dualog has been providing electronic reporting systems since 2006, and there are currently over 530 vessels based in Norway and the UK that use eCatch. All FAO defined gear types are supported.
E-catch	E-Catch	E-catch began installations during 2010, includes 61 different gear types and is installed on over 1000 vessels in 7 different countries including Netherlands, Belgium, United Kingdom, Scotland and Germany.
Turbo Catch	Turbo Catch & Turbo Tactic	Turbo Catch is used by about 450 vessels in France, including the entire French Ocean Tuna fleet. It is currently configured for use with trawl, net, pot, longline, tuna seiner, and other seine fishing gear. IXBLUE have been providing Turbo Catch since early 2010 to meet French/EU ERS requirements.
Elogbook		eLogbook has been used in Alaska, US, since January 2011 by the Trawl Catcher Processor fleet, and since 2013 by the Freezer Longline fleet. There are 119 vessels that have registered eLogbooks for 2013.
OLRAC DDL		OLRAC DDL has been installed on more than 350 vessels, covering numerous gear types including otter trawl, Danish seine, mussel farming, scallop dredging, lobster and crab potting, gillnets, demersal and pelagic longlining, charter boat and reel reef fishing. OLRAC have been providing eLog solutions for about 10 years, and their products have been used in at least 10 different countries including Australia, Netherlands, Namibia, Chile, New Zealand, South Africa, United States, UK. http://www.olsps.com/elog/index.php/company/globalinstallations
Pole Star eforms	Catch Reporting	Pole Star's electronic logbooks have been used since 2006, and cover a range of fishing gears including Danish seine, trawl, longline and scallop dredge. Pole Star have provided eForms for several thousand vessels in the US, while 50-100 vessels are using their hardware systems in Belize.

Deckhand	Deckhand	Deckhand has been implemented in the South Australian Rock Lobster pot fishery, but can be converted any other gear type with "low cost customization". It is currently configured for 3 different Rock Lobster fisheries, and other fisheries including pipi, trap, blue swimmer crab and octopus.
eTUNALOG	eTUNALOG	eTUNALOG is currently only used on Purse seine vessels (since January 2013), but trials on longlines are planned for 2014. There are currently 12 vessels using the system from the Solomon Islands, New Zealand, Japan, Korea and the Federated States of Micronesia.
Maritime		TrackWell have been supplying Maritime since 2007, and there are currently about 500 active users in Iceland, Norway, Faroe Islands and Canada. It supports all main fishing types including seine nets, surrounding nets, gillnets and entangling nets, longlines, hooks, trap, lift nets and dredges.
Themis		Software suites for fishing fleet management

Source: Solution provider websites and Dunn & Knuckey (2013).

‘Vessel to Plate’ traceability solutions

There are a number of traceability software providers who have both specialist seafood systems as well as wider food that include seafood value chains. The specialist seafood traceability systems usually involve some degree of integration into catching operations. For instance, one such system, **WiseFish**²⁸ has various different fishing modules that provide detailed catch recording, trip costing, environmental traceability and quota management. These can be combined with different modules e.g. WiseFish Quality Inspection, WiseFish Production and WiseFish Trader covering a wide array of functions including HACCP complaint quality inspections, batch management and input – output reporting. Other traceability systems are less specialized to seafood but cover food value chains in general, and include **Trace Register**²⁹ and **Frequentz**³⁰.

Some systems have been developed specially to allow fisheries value chains to meet with the EU’s IUU regulations. For instance, **TT Fish Pass**³¹ allows seafood exporters to integrate catch reporting with their suppliers, compile catch certificates from flag state authorities and send catch certificates onto buyers electronically. Other solutions include enterprise resource planning software for seafood processing and distribution (e.g. **Seasoft**³², and **ParityFactory**³³). The applicability of such software-based solutions to the Philippines tuna catching and processing sector is questionable. They often require a high degree of customization and follow-up support, and rely upon well-functioning IT and internet systems.

²⁸ <http://www.wisefish.com>

²⁹ <http://www.traceregister.com/>

³⁰ <http://frequentz.com/>

³¹ https://www.tracetracker.com/products/tt_fish_pass.html

³² <http://www.caisoft.com/seasoft.html>

³³ <http://www.parityfactory.com/case-studies/alaska-seafoods/>

Table 20: Comparative analysis of different e-reporting systems

Product	Company	Transmission				Integration		Comprehensiveness			Functionality	
		report data transmission via VMS	timeliness	universal format	security & encryption	Fleet Management	Traceability	bycatch	mapping	TEP interactions	reporting capability	customizable
Catchlog	Catchlog Trading	yes	satellite	yes	encrypted	yes	no	yes	yes	yes	yes	yes
E-Logbook	Chartworx	in dev	internet only	yes(xml)	encrypted	no, AIS only	no	yes	yes	yes	simple	somewhat
Marlin	CLS France & CLS Argos	yes	satellite	yes(any format)	NA	no	no	yes	no	yes	yes	yes
eCatch	Dualog	NA	satellite	yes(xml)	encrypted	yes	partial	yes	yes	yes	yes (add-on)	yes
E-catch	E-catch	yes	satellite	yes(any format)	encrypted	no	no	yes	yes	yes	yes	somewhat
Turbo Catch	Sodena	NA	satellite	yes(any format)	encrypted	no	no	yes	yes (add-on)	no	yes	somewhat
eLogbook	NMFS Alaska	no	internet only	yes(xml)	no	no	no	partial	on	yes	yes	somewhat
OLBAC DDL	Olrac SPS	yes	satellite	yes(any format)	encrypted	yes	partial	yes	yes	yes	yes	yes
Pole Star eform	Pole Star	yes	satellite	yes(xml)	encrypted	yes	yes	yes	yes	yes	yes	yes
Deckhand	Real Time Data	no	internet only	no (CVS and JSON)	encrypted	no	no	yes	yes	yes	yes	yes
eLog	Seatronics	no	internet only	yes(xml)	encrypted	no	no	yes	no	yes	yes	yes
eTUNALOG	SPC	no	internet only	yes(xml)	no	yes	no	yes	only on shore unit	yes	simple	no
Maritime	Trackwell	NA	satellite	yes(xml)	encrypted	yes(add-on)	product manager	yes	yes(add-on)	yes	yes	NA
Themis	Themis	yes	satellite	yes(any format)	yes	no	no	NA	yes	NA	yes	yes

5. FINDINGS, CONCLUSIONS AND ROADMAP FOR 2018-2022

This final brief section summarizes the findings and conclusions of this report on consumer preferences and the implications for developing a CDT system for tuna through GSFPC, and finishes with providing a ‘roadmap’ for development over the next five years (2018 – 2022). Although this extends beyond the life of the USAID Oceans Activity (ending in 2020), USAID Oceans aims to implement sustainable solutions that will enjoy continued progress beyond its end.

5.1 Main Findings and Conclusions

There is a global move, and one that the Western Central Pacific Ocean (WCPO) region is leading, towards developing a comprehensive catch documentation and product traceability system for tropical tuna fisheries. In the future, this is likely to lead to the integration of electronic harvest, process and trade data from different fisheries. However, it is also apparent that this will be a complex, long-term process and is likely to encounter considerable logistical and practical difficulties before it becomes a reality. However, the Philippines should be prepared to contribute to the development process and engage positively where possible.

It is also apparent that catch data (e.g. species, location, fishing method, legality of capture, etc.) is only one facet of the information needs demanded by seafood buyers and consumers. In particular, they want assurances of the quality of products, its environmental credentials and assurance of the welfare and fair treatment of individuals and groups involved in the supply chain. The information and indicators behind these very different elements are wide-ranging and diverse, demanding multiple layers of information transfer and content. This poses problems both in integrating CDT in its widest sense, as well as developing a cost-effective process to support this information provision.

This is also complicated by the nature of ‘customers’ of tuna from the Philippines. Whilst the end consumer in North America or Europe is no doubt much more sophisticated, informed and demanding than before, in most cases they simply demand a good quality product at a reasonable price. Given the complexity of supply chains and the diverse range of issues noted in the last paragraph, most consumers depend upon their supplier – in the main multiple retailers – to have done their due diligence on their behalf. As a result, there is considerable pressure on multiple retailers and large wholesale buyers – who are often under a critical NGO spotlight - to ensure that the products they sell meet the wider expectations of the general public.

In terms of quality, the main opportunities for issues occurs during the harvest and landing stages. Once landed, it tends to enter a more robust and better controlled chill / cold chain, with higher levels of monitoring. One aspect particular to quality assurance is that it is considered carefully each transfer step, as it has implications on product value and safety (this is not necessarily the case for environmental and ethical issues). Therefore, information on the timing of the product passing through the supply chain points, the processes involved and how much they have impacted on the quality of the product, and integration into a full traceability process are essential.

Ensuring the environmental sustainability consequences of a product is quite different. This is very much driven by the consumer end of the value chain, and may not necessarily be a concern of the catching or processing sector unless demanded by their buyers. It also operates at a much larger scale e.g. at the whole WCPO stock level, and thus (i) there may be implications of one fisheries activities

on another (e.g. excessive juvenile bycatch by the purse seine fleet might affect handline yields) and (ii) different parts of the value chain have less leverage on other parts of the system. That there are environmental issues in these fisheries – especially the domestic purse seine activities – is not in doubt. The current and persistent high dependence upon FAD-facilitated catches is a main contributor to this. This is exacerbated by both the unwillingness of the Philippines purse seine owners to recognize the long-term harm of this strategy as well as BFAR’s reluctance to effectively control fishing effort and FAD use as required by the WCPFC.

Third-party ecolabelling of environmentally responsible fisheries has changed the landscape for seafood buyers, especially in Europe and North America, and can even be argued to have had a substantial impact on the development of fisheries management systems generally. MSC has now gained considerable traction in the tuna market, with large fisheries such as the PNA skipjack purse seine fleets in the WCPO now certified. To date, this has been largely limited to troll, pole & line and free-school purse seine fisheries, but as demonstrated by the recent certification of the Solomon Islands fisheries, there are signs that well-managed FAD-based purse seine fisheries may also become eligible for certification. For instance, the failure of the Echebatar purse seine fleet to get certified in the Western Indian Ocean (WIO) has resulted in a major Fisheries Improvement Project that is aiming at getting all the suppliers to the major Seychelles and Mauritius canners MSC certified in the medium term. This has considerable implications for the Philippines - WIO canned tuna is a direct competitor of that from the Philippines and enjoys a similar GSP+ preferential tariff into the EU, the largest market for both Philippines and WIO canned tuna. A further consideration is the advantage that MSC certification can give in terms of the traceability systems in place for most of the US and EU tuna supply chains through the MSC Chain of Custody process.

MSC certification is expensive and not necessarily suitable for every fishery but, in our view, has the potential to provide a real market-driven approach to improving both environmental practices in Philippines fisheries, as well as encourage greater compliance and traceability through the value chain. It is recognized that this is not an immediate solution, but the path of processing through Fisheries Improvement Projects (FIPs), for both for the handline and the purse seine fisheries, is a real one.

For smaller, community-based fisheries that have products selling into the US, the FairTrade USA certification standard is a viable option. It guarantees a producer premium, is development in nature (e.g. demands improvements after certification and once the premium is flowing), and covers a wide range of ecological, welfare and social elements.

Probably the fastest emerging concern of CSR managers and seafood buyers in North America and Europe is the issue of slavery and other unethical practices in seafood value chains, especially the front-end catching segment. Whilst these concerns has been mainly associated with other Southeast Asian countries than the Philippines, as demonstrated by the Verité study in 2012, there may well be similar concerns closer at home that have yet to be identified.

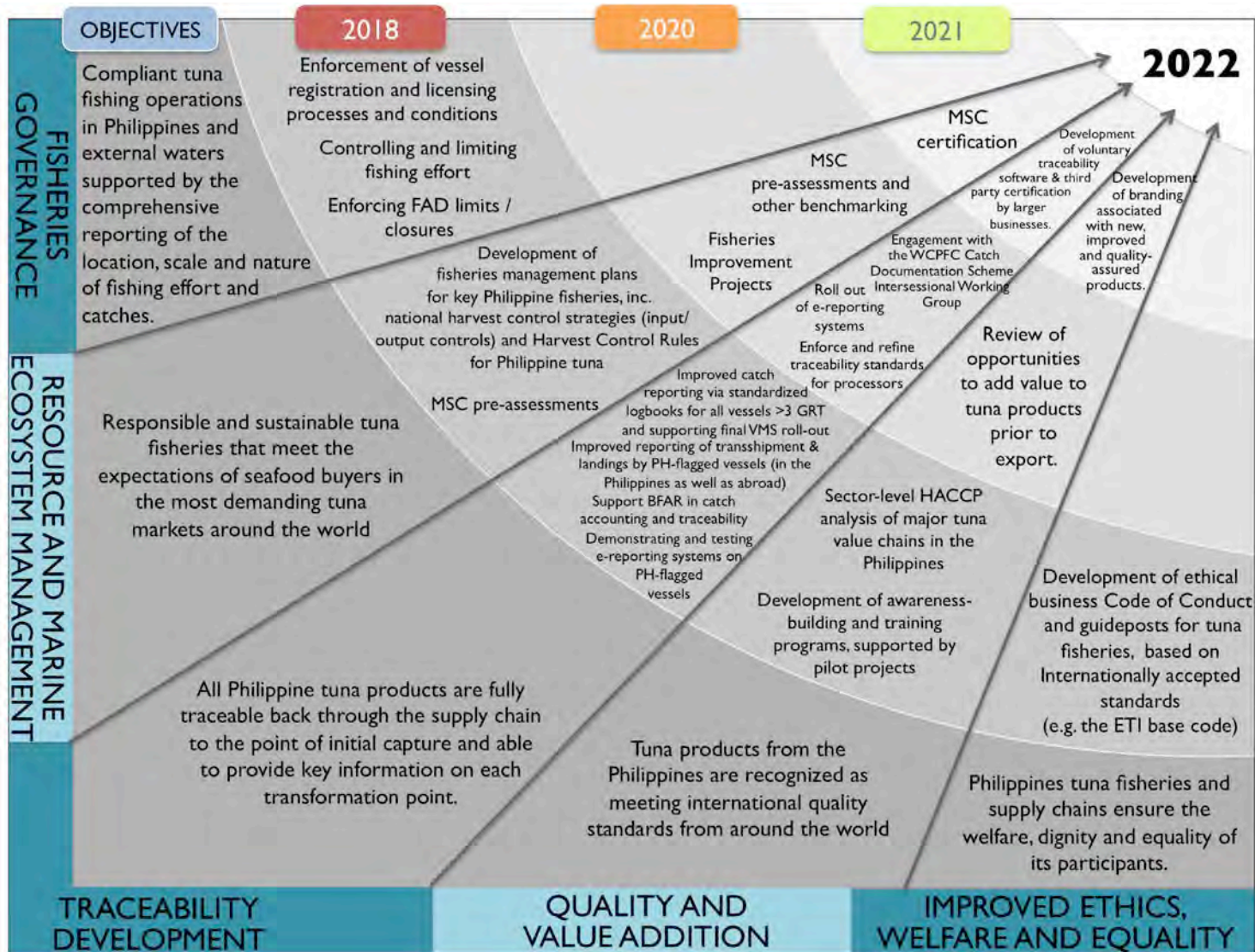
5.2 Implications for CDT for tuna flowing through GSFPC

We have summarized the implications of this report’s findings for tuna flowing through GSFPC as a series of prioritized actions that will go to make up a ‘short value chain improvement roadmap’ (see overleaf). These recommendations are made in recognition of existing mechanisms (e.g. FAO 283-1) and plans (e.g. the draft 2017 National Tuna Management Plan and the Comprehensive National Fisheries Industry Development Plan).

Table 21: Prioritized actions for a short value chain improvement roadmap for tuna fisheries in GSFPC

Element	Activity	Priority / Timing
Fisheries governance	Enforcement of vessel registration and licensing processes and conditions	High / Immediate
	Controlling and limiting fishing effort	High / Immediate
	Enforcing FAD limits / closures	High / Immediate
Resource and marine ecosystem management	Development of fisheries management plans for key Philippine fisheries, inc. national harvest control strategies (input / output controls) and Harvest Control Rules for Philippine tuna	High / coordinate with the National Tuna Management Plan development.
	MSC pre-assessments and other benchmarking	Medium / over 2017
	Fisheries Improvement Projects	Medium / After pre-assessments
	MSC certification	Low / After FIPs
Traceability development	Improved catch reporting via standardized logbooks for all vessels >3 GRT and supporting final VMS roll-out	High / Immediate
	Improved reporting of transshipment & landings by PH-flagged vessels (in the Philippines as well as abroad)	High / over 2017
	Support BFAR in catch accounting and traceability e.g. via developing e-reporting protocols for the catching sector and embedding this in the rest of the supply chain	High / over 2017 - 2018
	Engagement with the WCPFC Catch Documentation Scheme Intersessional Working Group	Medium / on-going
	Demonstrating and testing e-reporting systems on PH-flagged vessels	High / 2018 - 2019
	Roll out of e-reporting systems, initially for purse seine/ringnet fleet and then handline fisheries.	Medium / in line with WCPFC developments
	Enforce and refine traceability standards for processors, inc. compliance thresholds and audit processes	Medium / 2017 - 2018
	Development of voluntary traceability software & third party certification by larger businesses.	Low / 2018 onwards
Quality and Value Addition	Sector-level HACCP analysis of major tuna value chains in the Philippines	High / 2017 - 2018
	Development of awareness-building and training programs, supported by pilot projects	High / 2018 - 2020
	Review of opportunities to add value to tuna products prior to export.	Medium / 2018 - 2020
	Development of branding associated with new, improved and quality-assured products.	Medium / 2019 - 2022
Improved ethics, welfare & equality	Development of ethical business Code of Conduct and guideposts for tuna fisheries, based on internationally accepted standards (e.g. the ETI base code)	High / 2017 - 2018

5.3 Short Value Chain Improvement Roadmap (2018 – 2022)



Appendix A: References

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Appendix B: CDT Documents

Table 22: Data Requirements - Regular Catch Certification

Stage in the supply chain	Documentation	Data Required	Responsible Person/s
CATCHING	<p>Logsheet</p> <p>A. SPC-FPA logsheet (for PNG and HSPA caught fish)</p> <p>B. Philippine-prescribed logsheet (within EEZ and territorial areas)</p>	<ol style="list-style-type: none"> 1. Log sheet control/reference number(company code – vessel – year – sequence number) 2. Vessel Name 3. Flag State 4. Vessel registration number 5. CFVGL/IFP number 6. EU/BFAR Approval Number 7. Name of vessel captain 8. FAO zone area (fishing ground) 9. Date of fishing/harvest 10. FAO alpha-3 code of the species 11. Estimated Weight(+/-10% variance) 12. Date and Port of departure to fishing ground 13. Date and Port of unloading 	Vessel captain/ Fishing company
TRANSHIPMENT	Transshipment Certificate/Mates or Captain's Certificate	<ol style="list-style-type: none"> 1. Logsheet control/reference number/s 2. Transshipment coordinates 3. Transshipment date 4. Estimated weight of the catch to be transhipped (+/-10% variance) 5. Name of catcher vessel 6. Name of freezer vessel 7. Captain's signature 	Vessel captain of the catcher and carrier vessel
	Stowage Plan	<ol style="list-style-type: none"> 1. Logsheet control/reference number/s 2. Transshipment Certificate Number 3. Freezer vessel name 4. Lot per hatch layout 5. Catcher vessel name 6. Estimated weight to be transhipped 	Captain of carrier vessel
	Fish Origin Declaration Form (for Fishing Vessel operating in third countries)	<ol style="list-style-type: none"> 1. Catcher vessel name & License Number 2. Transfer Position (Lat/Long) 3. Estimated catch before transfer 4. Date, species and quantity transferred 5. Carrier vessel name & License Number 6. Hold number 7. Estimated Quantity (MT) 8. Port of Unloading 9. Cold Storage/Cannery 10. Catchers FODF Number 11. Name of catcher vessel captain 12. Name of NFA Officer Onboard 13. Name of carrier vessel captain 14. Name of NFA Officer at Port 	Third Country competent authority
UNLOADING/LANDING	Foreign Catch Certificate	Information contained in the Flag State Catch Certificate	

Stage in the supply chain	Documentation	Data Required	Responsible Person/s
	Catch Origin Landing Declaration	<ol style="list-style-type: none"> 1. Logsheet control/ reference number/s 2. Name of Unloading Vessel 3. Owner name 4. Registration & Fishing License Number 5. Fishing ground (FAO zone area) 6. FAO alpha-3 species code 7. Catch Description 8. Date Unloaded/Landed 9. Port Unloaded/Landed 10. Verified weight landed (per species) 11. Destination 	Catch Validator
TRANSPORT	Truck Trip Ticket/Truck Trip No.	<ol style="list-style-type: none"> 1. Logsheet control/reference number/s 2. Trip Ticket Number 3. License Plate Number 4. Trip Number 5. Driver name 6. Date and time of loading 7. Place/location of loading 8. Lot Number 9. Net weight 10. Supplier name 11. Destination and EU approval number of establishment 	Cannery representative (QA/QC)
BLAST FREEZING (FOR ICE/CHILLED FISH)	Blast freezing monitoring record	<ol style="list-style-type: none"> 1. Logsheet control/reference number/s 2. Name of Company that availed Blast Freezer 3. Quantity 4. Date and time of freezing 5. FAO alpha-3 species code 	
STORAGE (LANDED CATCH)	Cold Storage Stowage Plan/Cold Storage Report	<ol style="list-style-type: none"> 1. Log sheet control/reference number/s 2. Vessel name 3. Location in the stacking lay-out of fish bins 4. Date stored 5. Weight 6. Supplier name 7. Species 8. Name of Processing Establishment 	Cannery representative (QA/QC)
	Bin Tag	<ol style="list-style-type: none"> 1. Log sheet control/reference number/s 2. Bin number 3. Vessel name 4. Supplier name 5. Species 6. Name of Processing Establishment 	Cannery representative (QA/QC)
PROCESSING	Fish Receiving Report and Fish Sizing Summary Report	<ol style="list-style-type: none"> 1. Log sheet control/reference number/s 2. Cold Storage Origin 3. Supplier name 4. Time and date received 5. Total weight received 6. Lot number 	Cannery representative (QA/QC)

Stage in the supply chain	Documentation	Data Required	Responsible Person/s
		<ul style="list-style-type: none"> 7. Bin number 8. FAO alpha-3 species code 9. Number of samples and results of histamine analysis 10. Temperature of fish upon receipt 	
	Pre-Cooking Report	<ul style="list-style-type: none"> 1. Logsheets control/reference number 2. Supplier name 3. Time and date received 4. Fish size 5. Weight 6. Duration of pre-cooking 7. Temperature 8. Production date 9. Batch code/number 	Cannery representative (QA/QC)
	Pack-shaping/Filling Report	<ul style="list-style-type: none"> 1. Logsheets control/reference number 2. Weight of fish 3. Species 4. Production date 5. Batch code/number 6. Type of packaging materials and its supplier's name 	Cannery representative (QA/QC)
	Seaming Report	<ul style="list-style-type: none"> 1. Logsheets control/reference number/s 2. Batch code/number 3. Production Code 4. FAO alpha-3 species code 5. Food contact material supplier name 6. Number of cans/tins/pouch produced 	Cannery representative (QA/QC)
	Retorting Report	<ul style="list-style-type: none"> 1. Logsheets control/reference number/s 2. Batch code/number 3. Production code 4. Species 5. Type of packaging materials and its supplier's name 6. Production date 7. Temperature 8. Pressure 9. Number of cans/tins/pouch produced 10. Yield report 	Cannery representative (QA/QC)
STORAGE DRY WAREHOUSE	Labelling and Packing Report	<ul style="list-style-type: none"> 1. Logsheets control/reference number/s 2. Production code 3. Product description 4. FAO alpha-3 species code 5. Manufacturing date 6. Best before date 7. Establishment approval number 8. Brand 9. Country of origin 	Cannery representative (QA/QC); Fish Inspectors
TRANSPORT	Pre-trip Inspection Report	<ul style="list-style-type: none"> 1. Requested setting of the temperature 2. Container interchange 3. Container and seal number (for sea freight) / Airway bill number (for air 	Company representative


Stage in the supply chain	Documentation	Data Required	Responsible Person/s
		freight)	
	Van Loading Report	1. Logsheets control/reference number/s 2. Pre-trip Inspection Report 3. Country of destination 4. Establishment approval number 5. Production code 6. Quantity	Company representative
	Pre-shipment Inspection Report	1. Van loading report 2. Labelling requirement 3. Storage Requirement compliance with temperature requirement 4. Production Code 5. Container Number 6. Seal Number 7. Packing List 8. Proforma Invoice	Fish Inspectors
SHIPMENT	Health certificate	1. Pre-shipment Inspection Report 2. Application Letter for Fishery Products	Certifying Officer
	Export Commodity Clearance	1. Health certificate 2. Proforma Invoice 3. Export Declaration	Quarantine Officer
	Airway Bill/Bill of Lading	1. AW/BL Number 2. Date issued/shipment date 3. Shipper 4. Consignee 5. Name of vessel 6. Voyage No. 7. Port of Loading 8. Port of Destination 9. Product Net weight	Shipping Line
	Catch Certificate	1. Airway Bill/Bill of Lading Number	Certifying Officer

Table 23: Data Requirements - Simplified Catch Certification

Stage in the Supply chain	Documentation	Data Required	Responsible Person/s
CATCHING	Fish Catch Report (for boats <3.0 GT) or Logsheets (for boats >3.0 GT)	<ol style="list-style-type: none"> 1. Name of vessel 2. Registration number/permit Number (LGU) 3. Owner/pumpboatoperator 4. Fishing ground 5. Home port 6. Fishing gear 7. Place of departure 8. Buying Station/Auction market 9. Landing Area 10. Date of Return 11. No. of FADs used (if applicable) 12. Fish catch landing 13. Number of individual landed 14. Target species 15. Weight 16. Retained by-catch(species) 17. Net weight 	Pumpboat operator
UNLOADING/ BUYING STATION	Catch Origin Landing Declaration (COLD) – (for boats >3.0 GT)	<ol style="list-style-type: none"> 1. Logsheets control/ reference number/s 2. Name of Unloading Vessel 3. Owner name 4. Registration & Fishing License Number 5. Fishing ground (FAO zone area) 6. FAO alpha-3 species code 7. Catch Description 8. Date Unloaded/Landed 9. Port Unloaded/Landed 10. Verified weight landed (per species) 11. Destination 	Catch Validator
	Raw material receiving report (for boats <3.0 GT)	<ol style="list-style-type: none"> 1. Landing Area 2. Date landed 3. Fishing vessel name 4. Fishing ground 5. No. of fish landed 6. Total weight landed (per fishing boat) 	Buying Station owner
LOCAL TRANSPORT	Local transport permit (BFAR) Auxiliary invoice (LGU)	<ol style="list-style-type: none"> 1. Volume/Quantity 2. Species commodity 3. Date and place the clearance/permit was issued 4. Shipper 	BFAR Quarantine Officer; Fish Inspector; Municipal

	Airway Bill/Bill of Lading (Domestic)	<ol style="list-style-type: none"> 5. Consignee 6. Destination 7. Vessel carrier 8. Value 9. Origin of catch 10. Name of Reefer Van or Fish Car 11. License Plate of Reefer Van or Vehicle 	Agriculture Office; Buyer procurement officer; Airline company
PROCESSING	Incoming raw material inspection report	<ol style="list-style-type: none"> 1. Weight/Volume 2. Supplier 3. Date and time raw material was received 	Quality Control Supervisor
	Production record	<ol style="list-style-type: none"> 1. Date and time begins 2. Supplier/ Vessel name 3. Volume 4. Time of production ends 5. Production code 6. Date and time packed 	
COLD STORAGE	Cold storage record	<ol style="list-style-type: none"> 1. Date received 2. Stowage Plan (as attachment) 3. Volume to be stored 4. Temperature requirement (Data logger and manual of recording) 	Cold Storage Personnel
TRANSPORT	Pre-trip Inspection Report	<ol style="list-style-type: none"> 1. Requested setting of the temperature 2. Container interchange 3. Container and seal number (for sea freight) / Airway bill number (for air freight) 	Shipping Line
	Van Loading Report	<ol style="list-style-type: none"> 1. Logsheet or Fish Catch Report control/reference number 2. Pre-trip Inspection Report (as attachment) 3. Country of destination 4. Establishment approval number 5. Production code 6. Quantity 	Shipper
	Pre-shipment Inspection Report	<ol style="list-style-type: none"> 1. Van loading report 2. Labelling requirement 3. Storage Requirement compliance with temperature requirement 4. Packing List 5. Proforma Invoice 6. Production Code 7. Container Number 8. Seal Number 	Fish Inspectors
SHIPMENT	Health Certificate	Pre-shipment Inspection Report	Certifying Officer
	Airway Bill/Bill of	1. AW/BL Number	Shipping Line

	Lading	2. Date issued/shipment date 3. Shipper 4. Consignee 5. Name of vessel 6. Port of Loading 7. Port of Destination 8. Product 9. Net weight	
	Catch Certificate	Airway Bill/Bill of Lading	Certifying Officer
	Export Commodity Clearance	1. Health Certificate Number 2. Catch Certificate Number 3. Export Declaration	Certifying Officer

NOAA Form 370 OMB# 0968-0336 APPROVAL EXPIRES: July 31, 2018 U.S. DEPARTMENT OF COMMERCE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION NATIONAL MARINE FISHERIES SERVICE (NMFS)	Fisheries Certificate of Origin 	1. Customs Entry Identification Customs Entry Number (11 digits) _____ Date of Entry _____																																							
2. Exporter (Name and Address) Telephone Number: _____	3. Importer (Name and Address) Telephone Number: _____																																								
4. DESCRIPTION OF FISH																																									
<table border="1"> <thead> <tr> <th>U.S. Tariff Schedule Number, Species Description, and Product Form</th> <th>Weight (kg.)</th> <th>Ocean Area</th> <th>Fishing Gear</th> <th>Vessel Flag</th> <th>Trip Dates Begin-End</th> <th>Vessel Name</th> </tr> </thead> <tbody> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> <tr><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td><td> </td></tr> </tbody> </table>	U.S. Tariff Schedule Number, Species Description, and Product Form	Weight (kg.)	Ocean Area	Fishing Gear	Vessel Flag	Trip Dates Begin-End	Vessel Name																																		
U.S. Tariff Schedule Number, Species Description, and Product Form	Weight (kg.)	Ocean Area	Fishing Gear	Vessel Flag	Trip Dates Begin-End	Vessel Name																																			
5. DOLPHIN SAFE STATUS - check the statement that applies.																																									
A. The tuna or tuna products described herein are not certified to be dolphin safe and contain no marks or labels that indicate otherwise.																																									
B. The tuna or tuna products described herein are certified to be dolphin safe:																																									
(1) Tuna not harvested with a purse seine net, and not harvested in any fishery that has been identified by the Assistant Administrator as causing a regular and significant mortality or serious injury of dolphins and/or a regular and significant association between dolphins and tuna, with valid documentation by: (1) the captain of the vessel and, where applicable, by either a qualified and authorized observer or by an authorized representative of a nation participating in the observer program, certifying that no purse seine net or other fishing gear was intentionally deployed on or used to encircle dolphins during the fishing trip and that no dolphins were killed or seriously injured in the sets or other gear deployments in which the tuna were caught and; (2) by the captain of the vessel certifying completion of the NMFS dolphin-safe captain's training course. See instructions. Certification(s) attached.																																									
(2) Tuna harvested using a purse seine net outside the Eastern Tropical Pacific Ocean (ETP), in any fishery for which the Assistant Administrator has not determined that there is a regular and significant mortality or serious injury to dolphins and/or a regular and significant association occurring between dolphins and tuna, with valid documentation by: (1) the captain of the vessel, and where applicable, documentation by either a qualified and authorized observer or by an authorized representative of a nation participating in the observer program, certifying that no purse seine net or other fishing gear was intentionally deployed on or used to encircle dolphins during the fishing trip and that no dolphins were killed or seriously injured in the sets in which the tuna were caught and; (2) the captain of the vessel certifying completion of the NMFS dolphin-safe captain's training course. See instructions. Certification(s) attached.																																									
(3) Tuna harvested in a fishery in which the Assistant Administrator has determined there is a regular and significant mortality or serious injury to dolphins and/or a regular and significant association occurring between dolphins and tuna, with valid documentation by: (1) the captain of the vessel, and where applicable, by an authorized observer certifying that no purse seine net or other fishing gear was intentionally deployed on or used to encircle dolphins during the fishing trip and that no dolphins were killed or seriously injured in the sets or other gear deployments in which the tuna were caught and; (2) the captain of the vessel certifying completion of the NMFS dolphin-safe captain's training course. See instructions. Certification(s) attached.																																									
(4) Tuna harvested in the ETP by a purse seine vessel having a carrying capacity of 400 short tons (362.8 mt) or less, with valid documentation by: (1) the captain of the vessel and, where applicable, by either a qualified and authorized observer or by an authorized representative of a nation participating in the observer program, certifying that no purse seine net or other fishing gear was intentionally deployed on or used to encircle dolphins during the fishing trip and that no dolphins were killed or seriously injured in the sets in which the tuna were caught and; (2) the captain of the vessel certifying completion of the NMFS dolphin-safe captain's training course. See instructions. Certification(s) attached.																																									
(5) Tuna harvested in the ETP by a purse seine vessel of more than 400 short tons (362.8 mt) carrying capacity, with valid documentation signed by a representative of the appropriate IDCP-member nation certifying that: (1) there was an IDCP-approved observer on board the vessel during the entire trip; (2) no purse seine net was intentionally deployed on or to encircle dolphins during the fishing trip and no dolphins were killed or seriously injured in the sets in which the tuna were caught; and (3) listing the numbers for the associated Tuna Tracking Forms which contain the captain's and observer's certifications. IDCP Member Nation Certification attached.																																									
6. EXPORTER CERTIFICATION - I certify that the above information is complete, true, and correct to the best of my knowledge and belief.																																									
Exporter Name (Print or Type) _____	Signature and Date: _____																																								
7. IMPORTER/PROCESSOR ENDORSEMENT																																									
(Name and Address) _____	Signature and Date _____																																								
(Name and Address) _____	Signature and Date _____																																								

Document 2: Catch Certificate

EUROPEAN COMMUNITY CATCH CERTIFICATE

Document number			Validating Authority		
1. Name		Address		Tel. No.	
				Fax No.	
2. Fishing Vessel Name		Flag – Homeport and Registration Number		Call Sign	
				IMO/Lloyd’s no. (if issued)	
Fishing License No. – Valid to		Inmarsat No. Fax No., Tel. No., E-mail address (if issued)			
3. Description of Product		Type of processing authorized on board:		4. References of applicable conservation and management measures	
Species	Product Code	Catch area(s) and dates	Estimated live weight (kg)	Estimated weight to be landed (kg)	Verified weight landed (kg) where appropriate
5. Name of master of fishing vessel – Signature – Seal:					

6. Declaration of Transshipment at Sea (Name of master of fishing vessel)	Signature and date	Transshipment Date/Area/Position	Estimated weight (kg)
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Master of Receiving Vessel	Signature	Vessel Name	Call sign	IMO/Lloyd's number (if issued)
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7. Transshipment authorization within a port area

Name	Authority	Signature	Address	Tel.	Port of Landing	Date of Landing	Seal (stamp)
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8. Name and address of Exporter	Signature	Date	Seal (Stamp)
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9. Flag State Authority Validation:

Name/Title	Signature	Date	Seal (stamp)
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10 Transport details : (see Appendix I)					
11. Importer Declaration					
Name and address of Importer	Signature	Date	Seal	Product Code	CN
Document under Article 14(1), (2) of Regulation (EC) No.../2008	References				
12. Import control – Authority	Place	Importation authorized (*)	Importation suspended (*)	Verification requested – date	
Customs Declaration (if issued)	Number		Date	Place	

Appendix C: RASSF Listings for PHILIPPINES

Table 24: RASFF Portal listings for 'fish and fish products' from Philippines

Classification	Date of case	Notifying country	Subject
1. information for attention	03/09/2015	Switzerland	mercury (1.18 mg/kg - ppm) in chilled tuna fillets (Thunnus albacares) from the Philippines
2. border rejection	26/06/2015	United Kingdom	poor temperature control (+ 7.2; 5.2; 12.8; 10.2; 12.2; 13.2 °C) of chilled tuna (Thunnus albacares) from the Philippines
3. border rejection	14/01/2014	Spain	poor temperature control (> -12 °C) of frozen tuna loins (Thunnus albacares) from the Philippines
4. border rejection	19/02/2013	Spain	poor temperature control (-3.6 to 0 °C) of frozen pre-cooked skipjack tuna loins from the Philippines
5. border rejection	04/05/2012	United Kingdom	too high content of E 210 - benzoic acid (710 mg/kg - ppm) and of E 200 - sorbic acid (490 mg/kg - ppm) in anchovy sauce from the Philippines
6. border rejection	14/07/2011	Spain	poor temperature control - rupture of the cold chain - of frozen yellowfin tuna from the Philippines
7. border rejection	03/02/2010	Spain	bad temperature control - rupture of the cold chain - of fish from the Philippines
8. alert	20/11/2009	Netherlands	histamine (4 out of 9 above 200 mg/kg - ppm) in yellowfin tuna loins (Thunnus albacares) from the Philippines
9. information	30/10/2008	Sweden	histamine (500 mg/kg - ppm) in canned tuna chunks in brine from the Philippines
10. border rejection	10/07/2008	Cyprus	absence of health certificate(s) for canned tuna from the Philippines
11. border rejection	09/07/2008	Cyprus	absence of health certificate(s) for tuna spread from the Philippines
12. border rejection	12/03/2008	United Kingdom	damaged packaging of canned bright tuna chunks in brine from the Philippines

13.	border rejection	29/01/2008	Norway	cadmium (between 0.11 and 0.18 mg/kg - ppm) in sardines in tomato sauce from the Philippines
14.	information	14/11/2007	Italy	histamine (2187 mg/kg - ppm) in yellowfin tuna (<i>Thunnus albacares</i>) from the Philippines
15.	information	05/11/2007	Poland	histamine (141.8; 132.1; 150.6; 143.5; 152.4; 119.8; 103.9; 126.8; 124.2 mg/kg - ppm) in canned tuna in oil from the Philippines
16.	information	08/10/2007	Italy	histamine (<2.5<=>825 mg/kg - ppm) in fresh chilled slices of tuna (<i>Thunnus albacares</i>) from the Philippines
17.	alert	05/10/2007	Greece	cadmium (0.14 mg/kg - ppm) in sardines in tomato sauce from the Philippines, via Italy
18.	information	22/08/2007	Spain	cadmium (130; 195 - counter analysis 208; 195 µg/kg - ppb) in canned sardines with sauce from the Philippines
19.	information	09/11/2006	Greece	cadmium (0.26 mg/kg - ppm) in canned sardines from the Philippines
20.	information	06/11/2006	Greece	cadmium (0.22 mg/kg - ppm) in canned sardines in tomato sauce from the Philippines
21.	information	23/03/2006	Finland	histamine (260 in 1 out of 9 samples mg/kg - ppm) in canned tuna in brine from the Philippines
22.	alert	11/10/2005	Germany	carbon monoxide treatment (800 µg/kg - ppb) of frozen yellowfin tuna (<i>Thunnus albacares</i>) from the Philippines
23.	alert	10/05/2005	Italy	carbon monoxide treatment (presence) of frozen yellowfin tuna loin (<i>Thunnus albacares</i>) from the Philippines, via the Netherlands
24.	alert	02/05/2005	Italy	carbon monoxide treatment of frozen yellowfin tuna loin (<i>Thunnus albacares</i>) from the Philippines via the Netherlands
25.	information	17/09/2004	Spain	histamine (>200 in 3 of 9 samples mg/kg - ppm) in sardines (<i>Sardinella spp.</i>)

Appendix D: The Ethical Trading Initiative (ETI) Base Code

Source: [http://s3-eu-west-](http://s3-eu-west-1.amazonaws.com/www.ethicaltrade.org/files/shared_resources/eti_base_code_english.pdf?ppXz9ivoyynr1uTTo5e.Z5n.ZHaQvQfN)

[1.amazonaws.com/www.ethicaltrade.org/files/shared_resources/eti_base_code_english.pdf?ppXz9ivoyynr1uTTo5e.Z5n.ZHaQvQfN](http://s3-eu-west-1.amazonaws.com/www.ethicaltrade.org/files/shared_resources/eti_base_code_english.pdf?ppXz9ivoyynr1uTTo5e.Z5n.ZHaQvQfN)

1. Employment is freely chosen

1.1 There is no forced, bonded or involuntary prison labor.

1.2 Workers are not required to lodge "deposits" or their identity papers with their employer and are free to leave their employer after reasonable notice.

2. Freedom of association and the right to collective bargaining are respected

2.1 Workers, without distinction, have the right to join or form trade unions of their own choosing and to bargain collectively.

2.2 The employer adopts an open attitude towards the activities of trade unions and their organizational activities.

2.3 Workers representatives are not discriminated against and have access to carry out their representative functions in the workplace.

2.4 Where the right to freedom of association and collective bargaining is restricted under law, the employer facilitates, and does not hinder, the development of parallel means for independent and free association and bargaining.

3. Working conditions are safe and hygienic

3.1 A safe and hygienic working environment shall be provided, bearing in mind the prevailing knowledge of the industry and of any specific hazards. Adequate steps shall be taken to prevent accidents and injury to health arising out of, associated with, or occurring in the course of work, by minimizing, so far as is reasonably practicable, the causes of hazards inherent in the working environment.

3.2 Workers shall receive regular and recorded health and safety training, and such training shall be repeated for new or reassigned workers.

3.3 Access to clean toilet facilities and to potable water, and, if appropriate, sanitary facilities for food storage shall be provided.

3.4 Accommodation, where provided, shall be clean, safe, and meet the basic needs of the workers.

3.5 The company observing the code shall assign responsibility for health and safety to a senior management representative.

4. Child labor shall not be used

4.1 There shall be no new recruitment of child labor.

4.2 Companies shall develop or participate in and contribute to policies and programs which provide for the transition of any child found to be performing child labor to enable her or him to attend and remain in quality education until no longer a child; “child” and “child labor” being defined in the appendices.

4.3 Children and young persons under 18 shall not be employed at night or in hazardous conditions.

4.4 These policies and procedures shall conform to the provisions of the relevant ILO standards.

5. Living wages are paid

5.1 Wages and benefits paid for a standard working week meet, at a minimum, national legal standards or industry benchmark standards, whichever is higher. In any event wages should always be enough to meet basic needs and to provide some discretionary income.

5.2 All workers shall be provided with written and understandable Information about their employment conditions in respect to wages before they enter employment and about the particulars of their wages for the pay period concerned each time that they are paid.

5.3 Deductions from wages as a disciplinary measure shall not be permitted nor shall any deductions from wages not provided for by national law be permitted without the expressed permission of the worker concerned. All disciplinary measures should be recorded.

6. Working hours are not excessive

6.1 Working hours must comply with national laws, collective agreements, and the provisions of 6.2 to 6.6 below, whichever affords the greater protection for workers. Sub-clauses 6.2 to 6.6 are based on international labor standards.

6.2 Working hours, excluding overtime, shall be defined by contract, and shall not exceed 48 hours per week^{34,*}

6.3 All overtime shall be voluntary. Overtime shall be used responsibly, taking into account all the following: the extent, frequency and hours worked by individual workers and the workforce as a whole. It shall not be used to replace regular employment. Overtime shall always be compensated at a premium rate, which is recommended to be not less than 125% of the regular rate of pay.

6.4 The total hours worked in any seven day period shall not exceed 60 hours, except where covered by clause 6.5 below.

6.5 Working hours may exceed 60 hours in any seven day period only in exceptional circumstances where all of the following are met:

- this is allowed by national law;
- this is allowed by a collective agreement freely negotiated with a workers' organization representing a significant portion of the workforce;
- appropriate safeguards are taken to protect the workers' health and safety; and

³⁴ International standards recommend the progressive reduction of normal hours of work, when appropriate, to 40 hours per week, without any reduction in workers' wages as hours are reduced.

- the employer can demonstrate that exceptional circumstances apply such as unexpected production peaks, accidents or emergencies.

6.6 Workers shall be provided with at least one day off in every seven day period or, where allowed by national law, two days off in every 14 day period.

7. No discrimination is practiced

7.1 There is no discrimination in hiring, compensation, access to training, promotion, termination or retirement based on race, caste, national origin, religion, age, disability, gender, marital status, sexual orientation, union membership or political affiliation.

8. Regular employment is provided

8.1 To every extent possible work performed must be on the basis of recognized employment relationship established through national law and practice.

8.2 Obligations to employees under labor or social security laws and regulations arising from the regular employment relationship shall not be avoided through the use of labor-only contracting, sub- contracting, or home-working arrangements, or through apprenticeship schemes where there is no real intent to impart skills or provide regular employment, nor shall any such obligations be avoided through the excessive use of fixed-term contracts of employment.

9. No harsh or inhumane treatment is allowed

9.1 Physical abuse or discipline, the threat of physical abuse, sexual or other harassment and verbal abuse or other forms of intimidation shall be prohibited.