# The Business Case for Long-term Contracting:

A key tool to leverage sustainability in the tuna supply chain

> Report prepared for WWF-US May 2019





# Marine Change

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# **ACRONYMS & ABBREVIATIONS**

AAFA	American Albacore Fishing Association
AP2HI	Indonesian Pole-and-line and Handline Fisheries Association
EU	European Union
FAD	Fish Aggregation Device
FAO	Food and Agriculture Organization of the United Nations
FIP	Fishery Improvement Project
HG&G	Headed, Gilled, and Gutted
HTS	Harmonized Tariff Schedule (code)
ISSF	International Seafood Sustainability Foundation
IUU	Illegal, Unregulated, and Unreported
LTC	Long-term Contract
MDPI	Masyarakat dan Perikanan Indonesia
MSC	Marine Stewardship Council
NGO	Non-Governmental Organization
NMFS	National Marine Fisheries Service (US)
NPL	Non-Performing Loan
NSPF	Non-Specifically Provided For (usually species not named)
OSMI	Ocean and Seafood Markets Initiative
PNG	Papua New Guinea
PRI	Program-Related Investments
QA	Quality Assurance
RFMO	Regional Fisheries Management Organization
RRF	Rabobank Rural Fund
SIMP	Seafood Import Monitoring Program (US)
US	United States
VCF	Value Chain Financing
VMS	Vessel Monitoring System
WCPO	Western and Central Pacific Ocean
WWF	World Wildlife Fund



# **EXECUTIVE SUMMARY**

This study outlines the business case for long-term contracting as a tool for catalyzing the transition to sustainable and resilient tuna fisheries in the Western Central Pacific Ocean (WCPO). It identifies two specific areas where long-term contracts (LTCs) can be leveraged to ensure security of supply for tuna buyers and suppliers whilst simultaneously improving sustainability at the fishery and fishing community level. The report forms part of a broader initiative under the Ocean and Seafood Markets Initiative (OSMI) funded by the Gordon and Betty Moore Foundation to identify the value proposition for sustainability in the seafood sector. The study is focused on the producing region of the Western and Central Pacific Ocean and the associated trade originating from South East Asian countries. The findings were informed by a mapping exercise to understand in depth the supply and value chains of the countries in question as well as the financing flows that support the sector.

Catch levels of skipjack and yellowfin in the WCPO are currently classified by official scientific studies as sustainable. However, there is excess harvesting and processing capacity across the region and generally open access to fisheries in territorial waters. In the high seas there is little check on overexploitation. The concern is that a business-as-usual approach will lead to diminishing stocks in the future, damaged ecosystems and potentially serious socio-economic ramifications for fishing communities as well as seafood businesses that rely on the region's tuna producing capacity.

Market demand for high quality and sustainable product is on the rise, and stakeholder concerns around the question of sustainability focus on the need to ensure continued, long-term access to raw material that meets their market requirements. It seems, therefore, that the immediate opportunity for increasing sustainability in South East Asian fisheries is to leverage commitments to sustainably certified tuna from key export markets to expand the amount of sustainable product available, whilst at the same time increasing environmental and socio-economic conditions in coastal communities.

## Long-term contracts

The tuna industry is facing a growing demand for traceable, high quality and sustainable product, with certification schemes such as MSC as the preferred assurance mechanism. The WCPO is one of the world's most important regions for tuna production and processing. However, much of the tuna available is currently not considered sustainable and there can be low-levels of quality due to a lack of infrastructure to ensure health and safety measures. There is a big gap between the level of supply of high quality and sustainable product and the current and future demand, and so there's a strong case to be made to sourcing companies to use long-term contracts to increase security of supply, reduce costs, increase long-term forecasting and, crucially, incentivize best practice and the transition to sustainability.

#### The business case for long-term contracting in artisanal fisheries: facilitating value chain financing

Fisheries at the small-scale often lack access to both international markets and to formal providers of credit, foregoing investments in basic equipment that could improve fish quality and social and environmental conditions and thereby increase their incomes and ensure long-term livelihoods. This perpetuates a cycle of financial insecurity for artisanal fishers, leading to increased pressure on fish stocks. Meanwhile, without lasting agreements with their suppliers, buyers of fish risk security of supply for product that meets market demand and increased quality assurance costs.

Value chain financing (VCF) entails a long-term contract between supplier (fisher) and off-taker (trader/retailer) in which the security of the off-taker agreement allows suppliers to borrow for assets related to production. The structure goes as follows: participating banks lend directly to affiliated supply companies, who then sell production inputs to suppliers, such as ice machines. At harvest, suppliers sell to the off-taker at a discount, effectively repaying the loan with interest. The loan is then repaid by the off-taker. This framework requires testing and refinement in the fisheries sector but has proven effective in expanding access to credit in the agricultural sector.

In one case study examined, through long term contract agreements fishers have been able to bank around \$100,000 in premiums which they are able to spend on community and environmental improvements. However, the difference in incomes between those fishers selling high quality fish compared to those selling lower quality was tenfold. Similarly, looking at overall production, 37% of fish is rejected due to quality concerns, equating to a loss in value of over US\$8,600, with an additional US\$2,000 in foregone premium income. As such, in this example, as elsewhere, VCF could be an excellent complement to a market-based sustainability mechanism, where artisanal fishers are given access to credit to increase the quality and sustainability of fish available for market and are incentivized to reinvest into improving fish quality and sustainability, perpetuating a cycle of higher incomes and environmental stewardship.



### The business case for strategic, long-term investment in FIPs and MSC certification

Numerous retailers and traders have invested in FIPs in an attempt to secure and increase the supply of sustainable seafood. However, these investments are often made without a review of the commercial viability of certification, leading to a significant proportion (approximately 20 percent) of fisheries dropping out after certification is achieved and donor funds are no longer available. In a resource-constrained environment, long-term financing for fisheries entering MSC assessment is essential to maintain and improve long-term outcomes and maximize the impact of initial investments in FIPs. Ultimately, the only way to mobilize long-term financing for sustainable fisheries is through rigorous financial analysis of the potential costs and returns on investment of the fishery entering certification and its supply chain actors. To highlight the importance of financial analysis for FIP planning and MSC certification, preliminary financial analysis for FIPs currently underway in Indonesia, the Philippines, and Vietnam, were undertaken. They assessed the potential funding needs over ten to fifteen years and return on investment for certification in each fishery. It was found that most fisheries were able to be self-sustaining financially over time, but would require upfront investment to cover the initial upfront investments. Costs of achieving, managing and maintaining certification could be met through a fee applied to those buying certified fish. The key variables determining viability were the amount of fish eligible for MSC/export, the market demand and the ability for the certificate holder to invoice participants in a timely manner. Digital traceability systems were identified as a key component of success in making the transition to certification in multi-stakeholder fisheries.

A compelling mechanism for long-term fisheries financing is a revolving certification fund for retailers and traders to invest their sustainability budgets into. This fund could also attract matching investments from NGOs and philanthropies. Professionally managed, the vehicle would consider fisheries investments in a long-term, systematic way, providing additional and more long-term sources of finance for achieving sustainability and certification.

### Conclusions

This study looked at the potential value-enhancing interventions that could be made in the tuna fisheries of Southeast Asia to increase sustainability and ecosystem health as well as decreasing risk and increasing security of supply for companies buying and selling tuna into the US market. In particular, it analyzed the benefits and risks of adopting long-term contracts between buyers and sellers to increase security of supply and enhance the potential for socially, environmentally, and economically beneficial outcomes in tuna fisheries. The analysis suggests that there are clear benefits to be had from adopting a more long-term and close relationship to suppliers of tuna, particularly for buyers who have committed to or are interested in sourcing high quality, sustainable fish. As demand begins to outpace supply for these premium products, buyers should adopt tools such as those outlined above in order to hedge supply risk and proactively invest in the future viability of their supply chains.





# **INTRODUCTION**

Making the business case for sustainable seafood is critical in order to catalyze a faster pace of change and make progress towards a fully sustainable seafood sector. If companies are going to undertake the types of transformational changes required then there needs to be a compelling value proposition. Given that tuna is one of the world's most valuable, highly traded and consumed seafood products in the world, with a significant environmental footprint, WWF sought to understand further the business case for the transition to ecological, social, and economic sustainability.

This report is a summary of findings from a study of the industry dynamics, financing flows and intervention points for the tuna (focused on skipjack and yellowfin) sector in South East Asia. It forms part of a broader project undertaken by WWF on the value proposition for sustainable seafood, with the generous funding of the Gordon and Betty Moore Foundation through the Ocean and Seafood Markets Initiative. Looking into the production and processing region associated with the Western Central Pacific, the goals of the project were to:

- 1) Understand the supply and value chains, including capital flows, of the target countries, and;
- **2)** Identify potential leverage points with a robust business case attached within the industry for improved fisheries management and traceability.

The study analyzed the valuable trade of two tuna products into the US market from Southeast Asia and the Western and Central Pacific Ocean (WCPO) – skipjack and yellowfin tuna. Countries examined for the study included four Southeast Asian countries - Indonesia, Vietnam, Philippines and Thailand – and one Pacific Island nation, Papua New Guinea.

The study drew on existing national and international trade (import/export) databases for 2014 through 2016 (the latest period for which data are available) and key interviews were then conducted in person and over the phone with various industry actors, government officials, and financial institutions in all countries. The information collected in these interviews related to supply chains, market conditions, availability of financing, and potential challenges and opportunities for the implementation of traceability and sustainability schemes. This information was the basis for defining specific business cases for action that aligned economic and financial incentives with sustainability in order to maintain and improve the ecological conditions of the tuna fisheries and their associated ecosystems.

## Sustainability and socio-economic considerations

Skipjack and yellowfin tunas are highly migratory and opportunistic species, making them productive and resilient to exploitation.<sup>1</sup> Skipjack in the WCPO are classified as *not fully exploited*, though catch is approaching maximum sustainable yield (MSY).<sup>2</sup> Yellowfin tuna do not mature as quickly as skipjack and are therefore not as resilient; there has been overexploitation in the past in the region but the stock is currently considered fully exploited.<sup>3</sup>

Despite this relatively positive prognosis in terms of the current biological sustainability of the stocks, in reality, the key challenge to sustainability cited in nearly all interviews was the problem of overcapacity, both in harvesting and processing. It is generally considered that there is excess capacity in the catching sector which is exacerbated by excess processing capacity and a need to continually secure high levels of raw material. There is limited political will to remedy the current situation within those countries studied and, with the notable exception of Papua New Guinea (who hosts a lucrative but imperfect vessel day scheme), the countries in this study do little to control access to and within their territorial waters.

This means that although tuna supply may be considered sustainable today, it is possible, and even probable, that without proper harvest control rules and limits to capacity, the stocks will decline over time potentially having a negative impact on social, economic and ecological conditions of the region.

There are approximately 6 million people employed in the region's tuna fishing industry and fish make up around a third of the animal protein in a typical diet.<sup>4</sup> While there has been increasing awareness of sustainability issues in Western markets, the priority at the production end of the value chain is undoubtedly economic security. And at the smaller end of the scale, for fishers in Southeast Asia the paramount concern is generating income and feeding their families.

## Financial flows and access to finance across the tuna supply chain

Commercial finance is generally only available to industry actors who have demonstrably stable cash flows and fixed assets that can be collateralized. Typically, the wild capture fishing industry is considered very high risk and, most banks are unwilling to accept vessels as collateral due to flight risk. As a result, finance is typically only available to companies further down the supply chain, e.g. processors, vertically integrated fishing companies, and diversified firms with assets and cash flows associated with other business lines.

Smaller-scale industry players often have no access to banking services and no social safety net, and when credit is available, it can often be at very high rates or via local traders who finance their fishing trips in return for exclusive rights to their catch. These terms can make it difficult for fishers to get out of debt, or to raise capital to grow their business or invest in required quality, safety or sustainability improvements. Increased catch effort is sometimes associated with these debt cycles or with the continual need to pay off traders or fulfil their orders. As a result, any effort to promote sustainability among the myriad fishing communities in Southeast Asia must also address their economic insecurity.



<sup>1</sup> Food and Agriculture Organization of the United Nations, FAO's Input to the UN Secretary-General's Comprehensive Report for the 2016 Resumed Review Conference on the UN Fish Stocks Agreement. <sup>2</sup> Western and Central Pacific Fisheries Commission Scientific Committee Twelfth Regular Session (2016), Stock assessment of skipjack tuna in the Western and Central Pacific Ocean. <sup>3</sup> Food and Agriculture Organization of the United Nations, FAO's Input to the UN Secretary-General's Comprehensive Report for the 2016 Resumed Review Conference on the UN Fish Stocks Agreement. <sup>4</sup> Asian Development Bank, 2013. https://www.adb.org/features/sustainable-tuna-fisheries-asia-and-pacific-numbers



# Aligning sustainability and financial incentives

It became clear through the stakeholder engagement process that there is a limited perception of urgency around the need to re-build key stocks, or put in place emergency measures to prevent stock collapse, as is the case in some fisheries around the world. For industry, the key points of focus around sustainability were maintaining access to high-quality raw material in a very competitive market and maintaining access to markets through sustainability certification schemes and Fisheries Improvement Projects. One of the key benefits of certification schemes such as MSC is the imposition of harvest control strategies that limit catch effort. With much of the tuna catch exported to Western markets, a market strategy that supports the transition to sustainability, improves economic conditions for the fishing community, and responds to market requirements currently holds more promise as a leverage point than does government advocacy.

It seems, therefore, that the near-term opportunity for improving the current and future health of tuna stocks and their associated ecosystems is to make the business and investment case for maintaining access to product, at a high quality and with the required market-driven sustainability credentials. The need to incentivize tools that have the ability to future-proof tuna supply chains in Southeast Asia is critical. Therefore, further investigation into the value proposition for **long-term contracting as a tool for security of supply** was undertaken. In addition to an overview of why long-term contracting can be good for business and good for fish stocks and communities, two detailed cases for leveraging the benefits of long-term contracts are also outlined. These are:

### a) Long-term contracting and value-chain finance

Fisheries at the small-scale often lack access to both international markets and to formal providers of credit, foregoing investments in basic equipment that could improve fish quality, meet market standards and thereby increase or sustain their incomes. This perpetuates a cycle of financial insecurity for artisanal fishers that can lead to increased pressure on fish stocks. Meanwhile, buyers of fish risk security of supply and increased quality assurance costs without lasting agreements with their suppliers. Long-term contracts can help create the conditions for finance that could turn these conditions around towards resilient tuna fishing communities, benefitting everyone along the way.

#### b) Long-term contracting, Fisheries Improvement Projects and certification

Numerous seafood companies have invested in FIPs in an attempt to secure and increase the supply of sustainable (and eventually certified) seafood. However, these investments are often made without a review of the economic and financial viability of achieving or maintaining certification, leading to a significant proportion (approximately 20 percent)<sup>5</sup> of small-scale fisheries dropping out after certification is achieved and grant funds are no longer available. Long-term contracts can play a role in creating sustainable financial conditions for certified and healthy fisheries into the future.

<sup>5</sup> Marine Change review of MSC internal database, April 2017.



# **OVERVIEW OF COUNTRY SUPPLY CHAINS**

The main features of the country-level analysis regarding supply chain dynamics in each of the producing and processing nations for skipjack and yellowfin tuna are outlined below. More details on each country are available in the full report.

### Indonesia

US tuna imports from Indonesia were valued at US\$140 million in 2016, dominated by frozen fillets/loins (half of exports by volume and 75 percent by value).<sup>6</sup> These are processed by a range of plants throughout Indonesia, with processed skipjack exports also significant. The US is the largest market by value for Indonesian tuna exports, which draw almost entirely on their large domestic tuna production.<sup>7</sup> Imports of tuna into Indonesia are small by comparison with local production, and mostly supplement local raw material supplies for canning.

### **Papua New Guinea**

The world's largest producer of skipjack tuna and a major producer of yellowfin, PNG is one of the main sources of tuna exported to processors in Thailand, the Philippines, Vietnam, and Indonesia. The domestic processing industry is small and disadvantaged relative to other countries by a high-cost environment, poor infrastructure, and regulatory uncertainty. PNG's tuna exports enter the EU, the main export market, duty free. No skipjack or yellowfin is exported directly from PNG to the US.

## **The Philippines**

With a major domestic fishery supplemented by large volumes of imports, the Philippines is a significant canned skipjack processor for export and domestic consumption. A domestic handline fishery supports significant fresh/frozen tuna production, much of which is exported to the US. US oceanic tuna imports from Philippines were valued at US\$93 million in 2016, about two-thirds of which was yellowfin, dominated by frozen fillets/ loins and fresh/chilled (70 percent, and 30 percent, respectively). WWF has been working with artisanal handline fishers there since 2014 on a fishery improvement project (FIP) for yellowfin.<sup>8</sup>

## Thailand

With insignificant domestic oceanic tuna production, Thailand imports almost all its raw material for processing and re-export and is the world's largest canned tuna processor. This has been up to 800,000 tons in some years of mostly purse seine-caught fish from the WCPO. Longline landings by foreign fleets in Phuket are processed in part for the small amount of fresh/frozen exports, possibly supplemented by some high-grade purse seine yellowfin. Total skipjack and yellowfin exports to the US were valued at US\$320 million in 2016, 90 percent of which was canned/pouch skipjack and 10 percent frozen fillets/loins.

## Vietnam

With a relatively small domestic catch of tuna suitable for processing and export, Vietnam imports large amounts of tuna (US\$220 million in 2015) for both canning and fresh/frozen processing. Vietnam skipjack and yellowfin exports to the US were valued at US\$125 million in 2016, two-thirds of which was yellowfin. This is approximately one-third of the total value of Vietnamese skipjack and yellowfin exports. WWF has been working with VinaTuna there since 2014 on a FIP for Vietnamese yellowfin.<sup>9</sup>

6,7 Ibid.

<sup>&</sup>lt;sup>8</sup>https://wwf.org.ph/what-we-do/food/pptst/

<sup>&</sup>lt;sup>9</sup>http://wwf.panda.org/knowledge\_hub/where\_we\_work/coraltriangle/solutions/fisheries/vietnam\_yellowfin\_tuna\_fip/



# THE VALUE OF LONG-TERM CONTRACTING IN THE TUNA SECTOR

## **OVERVIEW**

### Securing sustainable supply

The tuna industry is faced with growing quality, traceability, sustainability, and social requirements from customers, financiers, insurers, certifiers and governments from the point of capture through their supply chains. The largest markets for tuna (western Europe and the US, plus Australia) are increasingly focusing on sustainability and seeking assurances through market mechanisms (i.e. MSC, FAD-free, pole-and-line, and Fair Trade).<sup>10</sup> These factors have boosted overall demand for high quality, sustainably caught fish, and risk leaving those companies without off-taker contracts unable to fulfill their quality and sustainability commitments or capitalize on market opportunities when they arise.

#### **High-value products**

Consumers in the US are moving away from shelf-stable tuna (the consumption of which has decreased by over 40 percent per capita over the last 30 years)<sup>11</sup> to fresh/frozen products of higher quality and higher unit value. This is evident in the trade figures from Southeast Asia, where tonnage for fresh/frozen yellowfin is showing strong growth with a steady or slightly increasing price, while shelf-stable skipjack, a commodity product with a much lower unit value, is declining.<sup>12</sup> Higher quality fish is harder to source and therefore more competitive. Long-term contracts can help to access higher quality products and ensure supply.

<sup>12</sup> www.trademap.org

<sup>10</sup> https://www.ffa.int/system/files/FFA\_TIN-May-June\_2018.pdf

<sup>&</sup>lt;sup>11</sup>https://www.nytimes.com/2018/12/03/business/canned-tuna-millennials.html

Figure 1. Market trends for frozen yellowfin fillets to US market, 2014-2016



*Source:* International Trade Centre data

Figure 2. Market trends for canned skipjack to US market, 2014-2016



Source: International Trade Centre data

#### **Certified MSC products**

Despite the relatively low levels of brand recognition, a recent analysis of the consumer market for MSC-labeled products in Spain suggests that MSC labeling provides increased market access to retailers, though systematic price premiums for MSC products were not observed.<sup>13</sup> These findings are in line with evidence obtained from interviews with multiple industry sources.<sup>14</sup>

Numerous retailers and buyers of seafood across the world have made commitments to vastly increase their sourcing of MSC certified and FIP fish.<sup>15</sup> By way of examples, the companies listed in Figure 4 have made commitments.



Company	Type of business	Geographic footprint
Aeon	Retail	Japan
Ahold Delhaize	Retail	Europe, US
Albert Heijn	Retail	Belgium, Netherlands
Aldi	Retail	Europe, US
Alibaba	Online sales	China
Bolton Alimentary	Retail	Italy
Carrefour	Retail	Europe, International
Coles	Retail	Australia
Colruyt	Retail	Belgium
Danish Fishery Producer Organizations	Catch	Denmark
El Corte Ingles	Retail	Spain
Eroski	Retail	Spain
FishTales	Brand	Netherlands
Iceland Sustainable Fisheries	Catch, Supply Chain	Iceland
Ikea	Foodservice	International
Isidro 1952	Brand	Spain
Japanese Consumers' Cooperative Union	Retail	Japan
Jumbo	Retail	Netherlands
Kroger	Retail	US
Lidl	Retail	Germany
Mars Petcare	Petfood	International
McDonald's	Foodservice	International
Metro	Retail	Germany
Nomad Foods	Brand	Europe
ORKLA Foods	Brand	Sweden
Parlevliet & Van der Plas	Catch	International
Parties to the Nauru Agreement	Catch	International
Sainsbury's	Retail	UK
Thai Union	Brand	International
Western Australia Fishing Industry Council	Catch	Australia
Woolworths	Retail	Australia

#### Source: MSC

<sup>14</sup>Interviews with industry stakeholders, October 2018.

<sup>&</sup>lt;sup>13</sup>Is It Worth Getting Labeled? The Case of MSC-Certified Seafood, https://repositorio.comillas.edu/xmlui/handle/11531/18061

<sup>&</sup>lt;sup>15</sup> For full list see Marine Stewardship Council, "EU Our Ocean 2017 – Commitments", https://www.msc.org/2020-leaders and https://www.msc.org/media-centre/press-releases/msc-partners-commitment-2020-leaders-for-a-living-ocean-update.

Evidence suggests that as a result of these commitments, companies are scrambling to meet their targets, resulting in an increase in demand for MSC certified and FIP fish. A representative of a multinational seafood company with sustainable sourcing commitments noted that the vast majority of their commitment will be filled by fish from FIPs rather than MSC-certified fish due to lack of supply. An interviewee at another multinational seafood company also noted that demand for MSC outstrips supply and has concluded that MSC "is becoming mainstream" and "will become the market access norm" in western Europe, the US, and Australia. In other conversations with several US-based seafood importers, they indicated that many of their retail and foodservice customers will only buy fish sourced from a FIP or MSC fishery, and so they in turn are endeavoring to fulfill that demand.<sup>16</sup>

Additional evidence of increased demand for MSC-certified products is reflected in increased supply figures. While global demand for tuna is projected to grow at 3.2 percent annually over the next five years,<sup>17</sup> the average annual growth rate of certified sustainable seafood production (both aquaculture and wild catch) since 2003 was 35 percent, 10 times faster than the growth of overall conventional seafood production over the same period. According to MSC and presented in the figure below, the number of products sold with their label has greatly increased over the last 10 years.<sup>18</sup>

According to MSC and presented in the figure below<sup>19</sup>, the number of products sold with their label has greatly increased over the last 10 years.





#### Source: MSC

The public commitments made by companies typically only stipulate sourcing from MSC-certified or FIP-engaged fisheries, and do not specifically require the use of the MSC marque on final products. In the case of one European retailer, the company buys MSC-eligible product and decides at a later date the proportion to be labeled MSC (and therefore subject to an MSC labeling fee) based on consumer demand.<sup>20</sup> This confirms that demand for MSC is driven by retailers rather than consumers and implies that the growth in MSC-eligible products is perhaps even greater than the increase cited in the figure above.

<sup>&</sup>lt;sup>16</sup>Interviews with industry stakeholders, October 2018.

<sup>&</sup>lt;sup>17</sup> https://www.fooddive.com/press-release/20180827-global-tuna-market-overview-2018-demand-by-regions-share-and-forecast-to/

<sup>&</sup>lt;sup>18</sup> https://www.iisd.org/ssi/standards-and-the-blue-economy/

<sup>&</sup>lt;sup>19</sup> https://www.msc.org/docs/default-source/default-document-library/about-the-msc/msc-annual-report-2016-17-english.pdf

<sup>&</sup>lt;sup>20</sup> Interviews with industry stakeholders, October 2018.

#### Products sourced with sustainable gear

Outside of MSC, and according to a worldwide supplier of pole-and-line tuna, demand for non-certified but low-impact-gearassured (such as pole and line) is also robust. In some cases, there is a dual demand for MSC-certified pole-and-line products and growth in the US market is expected to be particularly strong. As with MSC, demand for tuna caught with sustainable gears is driven primarily by retailers' sustainability commitments rather than consumers themselves.<sup>21</sup> In the US market, retailers such as Whole Foods are seen as leading the way in sourcing tuna caught with low-impact gears.<sup>22</sup>

#### Socially sustainable products

Overall consumer demand in the US for products with labels that have environmental sustainability and social criteria (including Fair Trade) has increased by 5 percent per year over the past several years, with similar growth expected through 2020.<sup>23</sup> Younger people especially are more likely to demand Fair Trade certified products, which, coupled with high levels of brand recognition, is expected to drive future growth.<sup>24 25 26</sup>

However, compared to MSC, Fair Trade seafood is a much more niche product – interviews with various industry players confirms that there is high brand awareness of Fair Trade (mostly from coffee products) and demand for Fair Trade certified seafood products outstrips the modest existing supply. For Fair Trade certification especially, long-term relationships and/or contracts are considered very important: as there are relatively high costs and greater supply uncertainty associated with working directly with small-scale fishermen (in developing countries especially), trust between supplier and buyer is imperative. It was reported that additional Indonesian fishermen are willing and able to supply Fair Trade product but without an established relationship, overseas buyers are not willing to bear the risk of sourcing from artisanal fisheries.<sup>27</sup>

### **Higher costs**

In addition to supply risk, buyers that hedge risk by moving from one supplier to another can face increased costs of Quality Assurance (QA). One buyer estimated these increased QA costs could account for 2-5 percent or more of raw materials costs. In such a competitive industry, this additional overhead puts spot buyers at a disadvantage.

### **Price fluctuations**

Long-term contracts could also allow for the smoothing of price fluctuations for raw material. In some instances, traders sell their product to buyers at a contracted price that is fixed for up to 6 or 12 months and are forced to absorb changes in profitability as the pricing of raw material shifts. In these circumstances, they are at great risk of price increases from their suppliers.

Fixed-price contracts are rare in the seafood supply chain, but long-term contracting could enable agreements that set a price ceiling and price floor. In order for a trader to be able to enter into a ceiling/floor-price contract with a fish processor, the processor (which essentially takes a percentage for providing their service) would in turn require a ceiling/floor-price contract with the fishers providing raw material. Depending on the fishery, this can be the weak link: if a sale price is set for the season and spot prices rise above the ceiling price, fishers who are able sell into the spot market will do so. A potential solution is for fishers to enter a long-term contract to sell some portion of their catch (e.g. half) within the floor-to-ceiling range, thereby guaranteeing themselves a level of income and decreasing their risk of price fluctuations, while also allowing them to capitalize if the market price increases. In seasons when the spot price decreases below the floor price, the fishers gain. In seasons when the spot price exceeds the ceiling price, the threat of losing the stability of the contract provides a disincentive for fishers to renege. In the case of the American Albacore Fishing Association (AAFA), in what was previously a spot market, the association was able to secure agreements with fishers and offer them a price range consistently above the spot market by becoming the MSC certificate holder for the fishery and securing off-takers willing to pay a price premium.<sup>28</sup>

<sup>&</sup>lt;sup>21</sup>Interviews with industry stakeholders, October 2018.

<sup>&</sup>lt;sup>22</sup>https://www.usatoday.com/story/money/business/2017/03/22/more-stores-demand-eco-friendly-canned-tuna/99297966/

<sup>&</sup>lt;sup>23</sup> https://www.just-food.com/analysis/the-growing-consumer-pull-for-sustainable-food-in-the-us\_id138779.aspx

<sup>24</sup> https://www.ft.com/content/8b08bf4c-e5a0-11e7-8b99-0191e45377ec

<sup>&</sup>lt;sup>25</sup> https://www.inc.com/melanie-curtin/73-percent-of-millennials-are-willing-to-spend-more-money-on-this-1-type-of-product.html

<sup>26</sup> https://www.ft.com/content/a3f69e50-51c8-11e7-a1f2-db19572361bb

<sup>&</sup>lt;sup>27</sup> Interviews with industry stakeholders, October 2018.

<sup>&</sup>lt;sup>28</sup> https://www.msc.org/documents/fisheries-factsheets/net-benefits-report/American-Albacore-tuna.pdf

## Long-term forecasting

For all actors along the supply chain, long-term contracting also enables long-term forecasting, which in turn is likely to improve financial performance. From artisanal fishers and skippers of super purse seiners, all the way through to processors, traders, and retailers, these actors can't know the amount of raw material to source/catch, or finished goods to produce, if they don't know how much they can sell. Lacking long-term contracts with their off-takers, they risk an oversupply, whereby they're left scrambling to find a market and perhaps are forced to sell at a steep discount, or they face costs associated with storing inventory. By contrast, they could also undersupply and forego a market opportunity. Similarly, lacking long-term contracts with their suppliers, off-takers risk having too little or too much raw material and face the same risks. Alternatively, if an intermediary along the supply chain has a contract with an off-taker but lacks a contract with their supplier, they face breach of contract if they source insufficient raw material.

# Catalyzing the transition

From an industry perspective, given the benefits, long-term contracting could be justified purely as an instrument to secure supply, control costs, reduce price fluctuations, and enable market forecasting. But with the clear evidence of an increasing supply and demand crunch for high quality and sustainable product, long-term contracting could also be leveraged to more directly support fisheries through the transition and effectively increase the amount of supply of high quality and sustainable product available. For example, long-term contracts can be used to catalyze financing arrangements that help to give access to credit for fishers to improve their ability to produce quality and sustainability-assured product. They can also activate alternative, longer-term sustainable finance models for tuna buyers focused on securing MSC-certified product. The current model of multi-year commitments supporting FIPs and MSC certification with grant funds still falls short, as a significant proportion of fisheries fail to achieve certification or drop out at recertification. These ideas are explored further in the sections below.





# INDUSTRY PERSPECTIVES OF LONG-TERM CONTRACTING<sup>29</sup>

- Securing Raw Material: In an interview with an importer of pole-and-line tuna for specialty canned products, representatives of the company indicated their primary commercial challenge was securing raw material. The vast majority of their sourcing is from processors with whom long-term contracts are in place, and they avoid the spot markets due to quality concerns. Even so, difficulty of sourcing due to catch seasonality has driven the company to increase its inventory from 12 or 13 weeks of sales a few years ago, up to 20 weeks now.
- Quality Assurance: As branded pole-and-line products can be at the high end of the shelf-stable tuna market, the only way to ensure quality is establish contracts with long-term suppliers. Quality Assurance costs when sourcing from a new supplier can add 5 percent or more to the cost of goods sold, which is substantial in this fiercely competitive market. For a recent product launch, it took 9 months for the new product to meet quality specifications.
- **Pricing:** A pole-and-line tuna importer explained that pricing of raw materials is not a component of their contracting with processors; the processors do not have fixed pricing with the fishers they source from, and therefore insist on their sales following spot market prices. As a result of this, the company analyzes end-market pricing for their branded products on an ongoing basis, and face constant profitability fluctuations. Given the intensity of competition, they typically hesitate to change end-market pricing and absorb any changes in margins when raw material prices change. If profitability trigger points are reached and the decision is made to push through a price adjustment on their branded items, it can take up to 12 weeks for the change to come into effect. When supplying to private labels, the price is set every 6 to 12 months. This is a major challenge for them. Even more daunting, they indicated raw material prices have increased while retail prices have actually decreased in recent years, due in large part to aggressive pricing by competitors.
- Market Liquidity: A company representative of a tuna trader indicated that long-term relationships (rather than long-term contracts) are the norm in the purse seine tuna market. Long-term contracts are uncommon due to the high liquidity available in this market. As a result, suppliers and processors value flexibility and do not wish to be overly reliant on a single trader. In the event a contract for raw material is entered into, the purchase price is adjusted monthly (based on the Bangkok market price) and an indicative tonnage is set, though there is flexibility in case of supply shortfalls.
- Terms and Conditions: A trading company said that typically it buys (and sells) under short-term contracts that include various terms and conditions regarding quality and other requirements. As the company has no storage capacity, it only enters into "back-to-back" contracts whereby any purchased fish already has a committed buyer. When contracting with a fish processor, rather than simply paying a fee for service, the trader sells fish to the processor and buys back finished goods in order to incentivize a higher recovery rate of finished goods per unit of raw material.
- Fixed Pricing: In the more niche handline market, contracts are more common and are sometimes negotiated a year in advance. In these cases, the price may be fixed in advance to incentivize better handling of fish to achieve higher quality.
- Meeting Sustainability Commitments: When asked about the potential to establish longer-term contracts for purse seine tuna, one interviewee said the greatest opportunity was with retailers seeking to secure supply to meet their sustainability commitments. These commitments typically only stipulate sourcing from MSC-certified or FIP-engaged fisheries, and do not require the use of the MSC marque on the retailers' products. In one case, a retailer reportedly sources MSC-eligible product and decides at a later date the proportion to be labeled MSC based on market demand. On the other hand, this could put traders at a disadvantage as they pay a premium for MSC-eligible fish and are only able to recoup the investment when the retailer uses the MSC label and pays the associated fee to do so.

<sup>29</sup>Interviews with industry stakeholders, March 2018.

## Long-term contracts and value chain finance

As outlined above, long-term contracting has the ability to unlock other tools for the transition to sustainability. One of these is known as value chain financing (VCF) – this is a way of enabling fishers' access to credit using supply chain commitments as leverage. Fisheries at the small-scale often lack access to both international markets and to formal providers of affordable credit. This can mean foregoing investments in equipment such as vessels, outboard motors, communications technology, fish processing and ice manufacturing facilities, and even ice chests and knives as a result. Without proper handling, storage, and processing, fish loses quality and receives a lower price in the marketplace. In addition, informal credit providers can insist on onerous terms that perpetuate financial insecurity for fishers and can lead to increased pressure on fish stocks as fishers must catch a certain volume of fish to repay their creditors.

As demand for sustainable seafood continues to increase, buyers who are able to support fisheries in meeting quality and sustainability conditions of the international marketplace can gain a competitive advantage by creating a new source of supply. The key commercial challenge faced by these buyers is ensuring quality of product in fisheries that are often in remote areas and unaccustomed to international food standards. To meet these quality standards, supply chain investments are usually necessary. However, conventional bank lending is typically unavailable for these sorts of investments, though they are often simple and inexpensive, due to fishers' lack of collateral, credit history, and the relatively high costs of servicing small loans.

VCF is a framework that can potentially bridge that lending gap. It entails a long-term contract between suppliers and an off-taker in which the security of the off-taker agreement allows suppliers to borrow for assets related to production. Off-takers are thus guaranteed much-needed supply from fisheries, while fisheries are able to secure stable off-takers, market access, and access to credit. This framework has been successfully implemented in agriculture the world over but has only recently been introduced in fisheries.

There are multiple permutations of VCF frameworks, including the following example currently in use in Indonesia's agricultural sector: Under contract, farmers can borrow up to 50 percent of the purchase price of a key input, e.g. seeds. To mitigate risk and lower banking costs, a financial institution/lender disburses funds directly to a seed provider rather than to the farmers. The farmers then purchase from the seed provider, paying the balance for the seeds not already covered by the loan. At harvest, the farmers sell to the off-taker at a discount, effectively repaying the loan with interest. The loan is then repaid to the bank by the off-taker.



Figure 5. Example of Value Chain Financing Framework

This structure can include more traditional disbursal and repayment to a bank by farmers, but the framework illustrated above ensures the disbursed funds are used as intended. Equally important, it simplifies the lending process and lowers banking costs as funds are disbursed to a single entity (the seed provider) and repaid by another (the off-taker) rather than by hundreds of individual farmers. One NGO (that has designed and implemented multiple VCF frameworks in Indonesia) reports that the rate of

Source: SAFIRA and Marine Change

non-performing loans (NPL) in VCF frameworks in Indonesia is approximately 2 percent, and NPLs are primarily due to defaults by off-takers rather than by farmers.<sup>30</sup>

To protect their commercial interests, an off-taker can link any long-term agreement to various terms and conditions as they see fit. In the fisheries context, these can include operational requirements to ensure quality of fish, traceability provisions to monitor the supply chain and comply with international regulations, and sustainability requirements to protect the fishery resource. Longterm agreements that include these sorts of stipulations already exist and are an integral part of some existing platforms, such as Fair Trade (FT).

The case study below presents a small-scale fishery that has been successfully linked to global markets by long-term contracting with an international buyer. It shows how the terms of this particular agreement have led to increased premiums for fishers, as well as cash set aside for ancillary investments. However, the ability to fulfil agreements in terms of quality is still a challenge, and therefore introducing a VCF framework in this context could substantially increase production of high-quality fish without increasing catch and further the sustainability efforts taking place in this fishery.



#### Artisanal fishery in Buru, Indonesia: A case study

In 2014 the yellowfin handline fishers in Buru, North Maluku province, Indonesia entered into a long-term contract with a USbased importer to provide high-quality fish to the US market. In addition to the quality requirement (effective day 1), traceability and sustainability provisions were included in the off-taker agreement, set out as incremental milestones that must be met over a six-year period (Buru was the world's first wild-capture fishery under the Fair Trade program.)



### Figure 6. Location of Buru, Indonesia

The goal of the agreement is to secure access to high-quality supply while increasing fishers' incomes and acting as a steward of the local fishery ecosystem. The agreement also includes stipulations for getting the fishery on the path to sustainability. In addition, the contract provides a direct incentive for small-scale fishers to comply by immediately increasing their dockside earnings for high-grade fish. Low-grade fish are not eligible for export and are sold at lower prices locally.

<sup>30</sup> Based on Marine Change discussions with SAFIRA, November 2017.

Figure 7. Purchase price per kilogram of yellowfin paid by processor in Buru, Indonesia

Grade	FT price/kg (US \$)	Non-FT price/kg (US \$)
A/B	3.83	3.76
С	n/a	2.56
D-Rejects	n/a	0.90

#### Source: Marine Change

Along with earning a higher price per kilogram, fishers in Buru receive a premium of US\$0.30 per kilogram (or a 7 percent dockside premium) on harvest that is exported under the terms of the contract. The premium is paid into a fund collectively managed by the fishers and set aside for investments in the community, the fishery, and the environment. The premium fund is managed via fishers' committees (FTC) and associations (FAs).

Based on sustainability guidelines set out in the contract, 30 percent of the premium earned must be allocated to environmental activities. The remaining 70 percent can be allocated to community and fishery investments. As of July 2017, 170 fishers across 9 FAs in Buru had earned total premiums exceeding US\$100,000.<sup>31</sup>



FA #	Date formed	Fishers	Premium earned	Premium spent	Average premium per member	Annual average	LTM <sup>32</sup> premium fund - community	LTM premium fund - environment
1	Dec-13	21	19,677	61%	937	6,644	4,153	1,780
2	Dec-14	23	2,704	49%	118	1,068	183	79
3	Dec-14	15	15,631	65%	1,042	6,174	2,874	1,231
4	Dec-14	12	10,688	50%	891	4,222	3,259	1,397
5	Dec-14	19	10,111	52%	532	3,994	3,853	1,651
6	Feb-15	16	9,749	69%	609	4,172	2,163	927
7	Apr-15	19	8,889	63%	468	3,981	2,341	1,003
8	Mar-15	30	15,006	18%	500	6,528	9,078	3,891
9	Mar-15	15	9,609	53%	641	4,180	3,264	1,399
		170	102,063	53%	600		31,168	13,358

#### Source: MDPI, July 2017

Examples of investments made with premium funds include handheld GPS devices, improvements to the fish landing area, knives, and ice chests (see photo below), contributing to quality and traceability enhancements in the fishery. Community investments include mosque rehabilitation, donations to orphanages, school uniforms for children, and traditional clothes for fishers' wives. Environmental investments to date include the introduction of enumerators, and programs and awareness-raising campaigns related to the avoidance of illegal and unsustainable fishing practices, protection of turtle nesting sites, and improved management of plastic waste.<sup>33</sup>

<sup>&</sup>lt;sup>31</sup> Based on Marine Change research, 2017.

<sup>&</sup>lt;sup>32</sup>Latest twelve months.

<sup>&</sup>lt;sup>33</sup>Based on Marine Change research, 2017.

Figure 9. Cool boxes purchased with premium earnings, Buru, Indonesia



Source: Marine Change

However, a clear need for additional supply chain improvements remains, especially for ice and processing facilities. Premium earnings vary greatly across FAs: figure 28 above indicates the highest-earning FA (#3) earns nearly 10x more per fisher than does the lowest-earning FA (#2) due to the disparity in fish quality. While post-harvest handling by fishers is very likely a factor, the disparity between initial processing facilities in Buru is stark. The best facilities use modern equipment and meet international standards of sanitation, while the worst operate in open air with live animals in close proximity.

Figure 10. Unhygienic "processing facility" (left) juxtaposed with a modern, hygienic facility (right), Buru, Indonesia





Source: Marine Change

The need for additional investment is evident in the overall production figures as well. Based on figures provided by one of the main traders in Buru, a staggering 37 percent of fish are rejected due to poor quality.

Exported	Large yellowfin - clean loin (kg)	Large yellowfin - dirty loin (kg)	Total (kg)	% of total
No	1,834	4,947	6,781	37%
Yes	2,159	9,591	11,749	63%
Total	3,993	14,537	18,530	100%

Figure 11. Example of exports as a proportion of total landings, January through July 2017, Buru, Indonesia

#### Source: MDPI, July 2017

Based on the pricing differential described in figure 4, i.e. US\$3.83 for FT grade A/B and US\$2.56 for grade C, the 6,781 kilograms of low-grade fish (taken from figure 6 – not exported and not eligible for the premium) represents a loss in value of over US\$8,600, with an additional US\$2,000 in foregone premium income. This data is from a single trader, and all of this fish could be processed at a single facility. Considering a basic mini-plant for improved processing could be built for perhaps as little as US\$1,500, the return on investment for such a facility would be extremely high, with a payback period of less than one month.

Extrapolating to Buru as a whole, over the same period of January to July 2017, 75,238 kilograms of yellowfin were exported under the contract. Assuming a similar rejection rate, approximately 43,000 kilograms failed quality testing. Using the same pricing as above, this amounts to a loss in value to fishers of over US\$55,000 from grading and US\$13,000 in foregone premiums – equivalent to US\$400 in lost value for each of the 170 fishers over just a seven-month period. This represents a massive loss for the buyer as well.

### Linking VCF with artisanal fisheries

The introduction of VCF to fund processing improvements in a fishery such as Buru would benefit the off-taker, the fishers, and support sustainability. By increasing supply of high-quality fish (without increasing catch), the off-taker and fishers both increase their incomes. In addition, in the example above VCF would support sustainability in at least two ways: 1) increased incomes boost fishers' incentives to adhere to the contract's sustainability requirements, and 2) increased export volumes equate to additional premiums, 30 percent of which must be spent on environmental programs in the fishery. Not all frameworks will necessarily have this set up or an additional premium attached, but the case study shows clearly the value to all stakeholders of linking incentives for sustainability to markets and finance.

VCF frameworks require/incentivize the following:

- 1. Long-term contracts between fishing communities and off-takers
- 2. Improved post-harvest handling, as only high-grade fish is eligible for the premium
- 3. Governing bodies to manage the premium received for exported fish, allowing for collective decision-making and group purchasing of inputs

Each of these three factors is essential to enabling VCF in fisheries:

- contracts provide security for a loan;
- price premiums incentivize investment and provide funds for loan repayment;
- and group purchasing reduces lending costs.

In turn, VCF could facilitate lending for durable inputs such as communications technology, outboard motors, ice chests, knives, etc., as well as capital improvements/investments for ice manufacturing and fish processing facilities. Lending both for ice and processing facilities and for fishers to purchase equipment to better utilize these facilities' services could create a mutually reinforcing and interdependent value chain in which facilities and fishers conduct business with each other, thus reducing the overall risk of the loan. Put another way, lending to both fishers and facilities would reduce NPL risk compared to lending solely to one or the other. See the figure below for an illustration of this value chain.





Source: Marine Change

	( KARTI		1	Concession in which the
	DIREKTORATORA	LAYAN	ALC: NO	
N	IK : I	AL PERIKANAN		
Kan	amat : DUSUN MONT	IANGKAP	19	
© suarantb.com	SATU LAYAD			

#### Farmers' and fishers' cards as enablers of VCF

In the Indonesian context, the Ministry of Agriculture uses a kartu tani, or farmers' card, to disburse fertilizer subsidies in central Java. In order to receive the subsidy, farmers must use the card at authorized retailers to purchase qualified items, which are provided at a discount. To qualify for the card, farmers must be a member of a farmers' association and register with the government. Cards are issued by a bank and are linked to a personal account, so they are effectively standard debit/ATM cards with an additional component. Many, probably most, of farmers in Indonesia are unbanked, so this can be a relatively inexpensive and straightforward way of including them in the formal banking system. Some of Indonesia's largest banks (BNI, BRI, Mandiri) have partnered with the program as card issuers.

Once in a farmer's hands, the card can also be used to deposit harvest earnings from designated off-takers. The similarities with VCF are clear: funds are disbursed for a specific input from a designated input provider, and sales are to a designated off-taker. Indeed, banks in Indonesia have leveraged the farmers' cards as security for VCF loans and as conduits for disbursing loans.

In Indonesia's fisheries sector, the government has introduced a kartu nelayan, or fishers' card. This is essentially an identity card and a fishing license, but cardholders receive life/accident insurance and fuel subsidies as well. Similar to the farmers' card, a fishers' card could be utilized in a VCF framework and bring previously unbanked communities into the formal financial sector. Banks such as BNI are already considering such a mechanism.

#### Potential financing partners in a VCF Framework

In Indonesia's agricultural sector, national and regional banks have been lenders in VCF frameworks. As VCF in fisheries is a new concept, specialized institutions with a fisheries or community-lending focus, as well as regional expertise, are the likeliest candidates for partnership. While not an exhaustive list, such lenders could include Rabo Rural Fund (RRF) and Meloy Fund. RRF has already invested in a VCF framework in an Indonesian fishery, while Meloy Fund has engaged in talks to invest in VCF in Buru. With these funds acting as first movers, VCF has the potential to gain wider traction in fisheries and among investors.

**Rabo Rural Fund**, part of the Rabobank Group, supports producers in the food and agriculture sectors by providing finance to SMEs and cooperatives in emerging economies. The US\$20 million revolving fund focuses specifically on organizations too large for microcredit yet not served by commercial banks, with the aim of facilitating sustainable food production. RRF provides short-term trade finance and risk-sharing instruments (i.e. credit guarantees and co-financing) ranging from US\$200,000 to US\$2 million. During the first three to four years of the fund's existence it focused on agriculture but since has expanded its services to the fisheries sector. The fund is active in Africa, Asia, and Latin America. In several instances, RRF has invested in structures very similar to value chain financing.<sup>34</sup>

In 2016, RRF and Aavishkaar, an Indian impact investor, agreed to finance fish processing facilities to be managed by Bali Seafood International. The funding also supports auxiliary businesses that will sell gear and equipment and provide finance for purchases. When it was announced, the investment totalled US\$3.3 million for four processing facilities located on the island of Sumbawa.<sup>35</sup> At the time of writing, one facility has been constructed and reportedly became operational in late 2017.

This is VCF in practice: investment from an outside financial institution into an off-taker who then provides services and credit to fishers, driving quality improvements and ultimately increasing fishers' incomes. While this is an important example that could be replicated elsewhere, it is a special case in which the investee is a foreign-owned company with an explicit social goal, an exporting hub on Bali, and direct access to international markets via its parent company, North Atlantic, Inc. The vast majority of artisanal fisheries without the luxury of this sort of operator will require alternative solutions.

#### Potential off-takers in a VCF framework

In terms of off-takers, companies that have made public commitments to sustainable sourcing and that have a large supplier base are potential candidates for a VCF framework. Those that have engaged closely with particular fishing communities are more likely to want to deepen those relationships. Whilst a relatively new and emerging concept in Southeast Asian tuna fisheries, there are companies that have supply chains in the region and that are engaged and involved in fisheries improvements. Overall, this new VCF approach to fisheries will likely require further development and refinement as potential off-takers and financial institutions gain experience and insights into the sector.



#### <sup>34</sup>Rabo Rural Fund presentation, and 2016 Annual Report.

<sup>35</sup>Impact Alpha, "PT Bali Seafood: Netting Fresh Fish through Community Investment in Indonesia", accessed 1 February 2018 at http://impactalpha.com/investing-in-local-fish-and-local-communities-in-indonesias-coral-triangle/

# Long-term contracting, fisheries improvement projects and certification

As MSC certification is considered the gold standard for sustainable fisheries management and comprehensive FIPs are steppingstones to certification, sustainability-minded supply chain companies have invested in FIPs in an attempt to secure and increase the supply of sustainable seafood they can buy, including for tuna. However, these FIP investments (mainly in grant form), whether made by industry or civil society, are often made without a review of the financial viability of the eventual certification, i.e. whether there is a revenue stream being generated that is able to sustain the costs of certification, continual improvement and re-certification. This risks the return on initial investment being low to nothing if certified product never hits the shelves, or the fishery drops out after a few years. The result of this lack of planning is evident in the MSC assessment statistics:

**Dropout ratio.** Approximately 10 percent of fisheries that entered initial assessment did not receive certification, while 13 percent of fisheries that received certification no longer use the label.<sup>36</sup> That is, approximately one-fifth of the fisheries that undertook the effort and expense of certification eventually failed or dropped out.

**Re-assessment.** An estimated 20 percent of small-scale fisheries that receive MSC certification do not undergo recertification; approximately 67 percent of fisheries currently certified will require reassessment by 2020.

As of April 2017, when the dropout and re-assessment figures were calculated, there were 223 fisheries with active MSC certification worldwide, of which just 25 were in developing countries. On the basis of the above, three to four of these fisheries could be expected to drop out (i.e. forego reassessment) by 2020 based on the figures cited above. Total developing-country tonnage under certification as of the same date was 1.239 million tons, pointing to a potential loss of over 165,000 tons of certified fish.<sup>37</sup>

With 9.5 million total tons certified as of April 2017, the vast majority of which is sourced from developed countries, this potential loss represents less than 2 percent of current MSC product. However, as consumers, retailers, and civil society continue to drive demand of sustainably sourced fish, engagement with fisheries in developing countries will be essential to meeting sustainability targets going forward.

This is particularly true for tuna. For yellowfin and skipjack tuna fisheries in Indonesia, the Philippines, and Vietnam, the potential to increase FIP coverage is substantial. In Indonesia, the pole-and-line and handline FIP unit of assessment covers just 7 percent of total skipjack and yellowfin harvest. (A purse seine FIP in Indonesia is currently under consideration.) In the Philippines, the handline yellowfin FIP underway in Lagonoy and Mindoro, plus the proposed FIP in General Santos, accounts for approximately 9 percent of total skipjack and yellowfin catch. And in Vietnam, the FIP covers 18 percent of total skipjack and yellowfin production. See the figure below for detail.



Figure 13. FIP coverage versus total catch of skipjack and yellowfin tuna in Indonesia, the Philippines, and Vietnam

<sup>36</sup> Marine Change review of MSC internal database, April 2017.

<sup>37</sup> Ibid.

Longer-term support for FIPs, especially those in small-scale fisheries and/or in developing countries (where there is no single company champion), is likely necessary to improve the dropout figures cited above. The current grant-funding model mainly focuses on FIPs and the initial achievement of MSC certification – the missing piece is the ability of fisheries to pay for continued improvement after certification and for recertification every five years. In a resource-constrained environment, rather than expect or continue grant funding indefinitely after certification, debt financing for commercially viable fisheries entering MSC assessment can help fill financing gaps and therefore improve long-term outcomes and increase the impact of industry's sustainability budgets.

Ultimately the only way to mobilize long-term resources for sustainable fisheries is through rigorous financial analysis of the returns to MSC certification. When establishing and structuring a FIP, it is increasingly important to consider how certification (and recertification) will be funded as early in the process as possible. This analysis serves four key functions:

- 1. Identifies funding gaps (i.e. financing required) to achieve certification
- 2. Illustrates the expected rate of return on investment in MSC certification
- 3. Tests the viability of the certificate holder's business model
- 4. Demonstrates the ability (or not) to repay non-grant finance (e.g. loans), if required

To highlight the importance of financial analysis for FIP planning and eventual MSC certification, preliminary modeling for FIPs currently underway in Indonesia, the Philippines, and Vietnam (See Annex A for summary cash flows) was undertaken. The analysis makes clear that the central commercial challenges of MSC certification include the timing of cash flows and whether there is adequate certifiable tonnage in the fishery (i.e of export grade). Importantly, this last consideration is intrinsically tied to quality of catch, as product can only be exported and labeled as MSC if it meets the highest quality standards.

For the certificate holder, the duration of initial assessment, where costs are concentrated, is approximately one year. This can create a cash flow problem with an initial US\$ six-figure funding gap as MSC-certified fish can't be sold until the assessment is complete. However, once certified, if sufficiently large volumes of fish are sold as MSC and the certificate holder can charge companies an adequate fee for usage of the MSC certificate, the upfront compliance costs can be recouped within just a few years. The pay-back period increases, the smaller the volumes of fish are which are MSC/export eligible.

For industry supporters of these FIPs, the analysis clearly delineates the commercial and financial barriers to achieving and sustaining certification. It also outlines the steps required to ensure that the significant funding already committed achieves its desired impact of bringing more certified fish to market. Further, it demonstrates the long-term viability of certification once the necessary steps are taken.

To date, total industry investment in these FIPs has been significant. The funding already provided is not only what's at stake for industry here. It's the risk of not having access to quality product or being able to fulfill their sustainability commitments at the end. It's also the opportunity cost of the years spent supporting these fisheries. With so much time, energy, and funding having been devoted to these fisheries, this relatively straightforward analysis can be instrumental in ensuring all of the effort pays off. Below are three examples of this analytical approach being applied, with varying results.



#### Indonesia FIP: handline yellowfin and pole-and-line skipjack/yellowfin

This FIP was spearheaded by an industry group, the Indonesian Pole-and-line and Handline Fisheries Association (known by its Indonesian acronym, AP2HI). AP2HI consists of pole-and-line and handline tuna fishing, trading, and processing companies organized with the expressed purpose of promoting sustainability and achieving MSC certification. Its mission is to represent the various industry actors to government and market partners, coordinate business activities, and drive innovation in transparency and traceability of catch and chain of custody. Its funding sources include membership fees and grants from philanthropic and bilateral organizations.

Launched in 2014, AP2HI has 24 member companies in Indonesia, which together (as of 2017 when the analysis was completed) represent over 35,000 tons of tuna from almost 1,000 vessels throughout the country. These companies adhere to a code of conduct that has been developed to align with the Food and Agriculture Organization of the United Nations (FAO), RFMOs, and national guidance and regulations. The code of conduct covers improving record-keeping of fishing vessel, certifications and licenses; prevention from catching sharks, sea turtles, dolphins and sea birds; avoidance of threatened species such as bigeye tuna; and prohibition of fish from irresponsible fishing practices or IUU fishing.

Although pole-and-line and handline fishing has always been present in Indonesia's fisheries sector, the industry appears to have shifted toward increased use of these gear types. Both catch methods receive a 10 percent price premium in the market for sustainability. However, it is estimated that only 10 to 20 percent of Indonesian pole-and-line tuna reaches the market labeled and eligible to receive the price premium.

Working with AP2HI as the potential certificate holder, a cash flow model was developed to determine the financing required to achieve MSC certification and the ability to repay a loan to cover the ongoing costs. The table below summarizes the assumptions used in the model.



Assumption	Amount (US\$)	Timing
Total AP2HI operating cash flow	-90,000, 5% annual inflation	All years, based on actual figures
Tax rate	30%	All years
MSC expenses:		
Full assessment	200,000	Upfront and every 5 years for reassessment
MSC surveillance audit	50,000, 5% annual inflation	Annually after certification
Conditions contingency	20,000, 5% annual inflation	All years
MSC coordinator	16,000, 5% annual inflation	All years
Fisher insurance fund	20,000, 5% annual inflation	All years
Port monitoring and evaluation	62,000, 5% annual inflation	Annually after certification
Training and capacity building	20,000, 5% annual inflation	Annually after certification
Marketing and communications	40,000, 5% annual inflation	Annually after certification
MSC revenues:		
Total MSC entry fees paid by members	145,000	Upfront; to be conservative, no new future members assumed
Total member tonnage	35,100 tons	All years, based on 2015 landings
Usage fee per ton	1.5% of dockside price	All years
Dockside price per ton	SKJ 2,000, YFT 4,000	
YFT 4,000	All years	
Percentage of catch certified	25% (year 2), 50% (year 3), 75%	75% at year 4 and beyond
Loan terms (scenario 1 – immediate payl	back):	
Amount	550,000	
Term	5 years	
Rate	12% annually	
Loan terms (scenario 2 – one-year grace	period):	
Amount	395,000	
Term	5 yrs total, 1 yr grace period	
Rate	12% annually	

Source: AP2HI and Marine Change

Given these baseline assumptions, the model makes clear the commercial viability of MSC certification in this case. Without external financing, monthly cash flows are only consistently positive starting in month 14 – this is because, as noted above, MSC-certified fish can't be sold until a year after initial assessment begins. The maximum negative cash balance of the project reaches US\$257,000 in month 25, but cash balance turns positive by month 32 (i.e. in the middle of the third year). These numbers demonstrate the anticipated tonnage and usage fees per ton (paid by association members to the certificate holder) are more than adequate to justify the initial investment as well as the costs of reassessment.

Assuming an interest rate of 12 percent and a 5-year term with payback starting immediately, US\$550,000 would be required to finance the costs of certification. Given the project's extremely high return on investment, a loan could be repaid given current assumptions. Note, this loan amount is more than double the maximum negative cash balance cited above due to the mismatch in the timing of cash flows and immediate principal and interest payments. Assuming a one-year grace period, capitalized interest at 12 percent and a 4-year repayment period thereafter, the project would require US\$395,000 in loaned funds. A lower interest rate, longer grace period, or longer term would further reduce the financing required. See the figure below for a scenario analysis of financing requirements.

Interest rate	Total term	Grace period	Financing required (US\$)
12%	5 years	none	550,000
12%	5 years	1 year	395,000
12%	10 years	none	390,000
12%	10 years	1 year	325,000
8%	5 years	none	500,000
8%	5 years	1 year	375,000
8%	10 years	none	360,000
8%	10 years	1 year	310,000
4%	5 years	none	460,000
4%	5 years	1 year	355,000
4%	10 years	none	340,000
4%	10 years	1 year	300,000

Figure 15. Scenario analysis of financing required for MSC certification in Indonesia

This analysis shows the substantial impact of the terms of a loan on the required amount of financing. In these examples, allowing a one-year grace period reduces financing requirements by more than 20 percent when the payback period is 5 years, and by more than 10 percent when payback is 10 years. Extending the payback period from 5 years to 10 has a significant effect as well, reducing initial loan balance by more than 25 percent if no grace period, and more than 15 percent if a grace period is allowed. Taken together, both extending the term and allowing a one-year grace period reduces financing requirements by more than 35 percent.

### Philippines FIP: handline yellowfin in Mindoro Strait and Lagonoy Gulf, artisanal fisheries

WWF Philippines is working closely with two handline yellowfin FIPs in the Mindoro Strait and Lagonoy Gulf. Established in 2011, social empowerment of fishers is a critical component of the project; traceability (vessel monitoring systems – VMS), access to credit, market access, and quality improvements are also major goals. This fishery comprises approximately 3,000 vessels and annual catch of approximately 4,000 tons.

The FIPs are currently being sustained by grants from the German Investment and Development Company (DEG), and are nearing completion i.e. entering full assessment. A funding gap post-certification has been identified. This is exactly the type of situation financial planning and long-term FIP investments could prevent.

In support of the project, seven participating retailers and distributors, including Bell, Coop, Marks & Spencer, New England Seafood, Sainsbury's, Seafresh, and Waitrose, have contributed half of the FIPs' budgets.<sup>38</sup>

The fishers in each FIP are organized into a federation, which is the presumptive MSC certificate holder. Working with preliminary inputs provided by WWF Philippines, we have developed an MSC cash flow model for both fisheries. See below for assumptions used in the model.

Figure 10. Summary of assumptions for immippines misc mode	Figure 16.	Summary of	assumptions for	r Philippines	MSC model
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Assumption	Amount (US\$)	Timing	
MSC expenses:			
Full assessment	100,000	Upfront and every 5 years for reassessment	
MSC surveillance audit	15,000, 2% annual inflation	Annually after certification	
Staffing costs	56,000, 2% annual inflation	Annually after certification	
Office costs	33,000, 2% annual inflation	Annually after certification	
Other operational costs	36,000, 2% annual inflation	Annually after certification	
MSC revenues:			
Total tonnage	4,000 tons	All years, based on historical landings	
Usage fee per ton	3.0% of dockside price	All years	
Dockside price per ton	3,500	All years	
Percentage of catch certified	50% (year 2), 60% (year 3), 70% (year 4)	75% at year 5 and beyond	
Tax rate	30%	All years	
Loan terms:			
Amount	155,000		
Term	5 years		
Rate	12% annually		

#### Source: WWF Philippines and Marine Change

The characteristics of the Philippines FIPs are in stark contrast with the AP2HI FIP, which is nearly 10 times larger (35,000 tons versus 4,000) and driven by relatively large companies. With the comparatively low volumes in this fishery, a usage fee of 1.5 percent, as expected in Indonesia, is insufficient to sustain MSC certification. In addition, poor handling has reduced the quality and value of harvest. Less than 30 percent of catch in this fishery is currently graded as A or B, the only grades eligible for MSC. Given the price disparity between grades, this represents a loss in total value of at least 40 to 50 percent.

In this instance, our initial financial analysis demonstrates that volumes of certifiable fish must be increased (by improving quality) and a higher usage fee must be earned in order for certification to be commercially viable. If these criteria are not met, the project will be cash flow negative and require continued grant funding or drop out of certification.

### Vietnam FIP: handline and longline yellowfin, medium-scale vessels

WWF Coral Triangle launched this FIP in 2014 to improve traceability and sustainability in Vietnamese handline and longline yellowfin fisheries. Founded and managed alongside the Vietnam Tuna Association (VinaTuna), a local organisation, the FIP covers approximately 2,000 vessels and an estimated 18,000 tons of annual yellowfin catch.<sup>39</sup>

Industry engagement for this particular FIP is with foreign importers, known as FIP partners. Until the end of 2017, each FIP partner paid a fixed annual fee to participate in the project, after which a fee per kilogram for FIP-qualifying fish was introduced. These fees cover only about 20 percent of the operating budget of the FIP, with the balance supported by grant funding.<sup>40</sup>

Working with preliminary inputs from WWF Coral Triangle, we have developed a cash flow model. We expect the analysis to help the FIP partners systematically assess the viability of the program in its current state and inform their decisions regarding future investment. The table below summarizes the assumptions used in the model. For expediency, the MSC expenses were estimated to be equal to those in the Philippines.

### Figure 17. Summary of assumptions for Vietnam MSC model

Assumption	Amount (US\$)	Timing
MSC expenses:		
Full assessment	100,000	Upfront and every 5 years for reassessment
MSC surveillance audit	15,000, 2% annual inflation	Annually after certification
Staffing costs	56,000, 2% annual inflation	Annually after certification
Office costs	33,000, 2% annual inflation	Annually after certification
Other operational costs	36,000, 2% annual inflation	Annually after certification
MSC revenues:		
Total tonnage	18,000 tons	All years, based on 2015 landings
Usage fee per ton	40 per ton, or 0.7% of dockside price	All years
Dockside price per ton	5,500	All years
Percentage of catch certified	20% (year 2)	Increasing by 10% per year until plateauing at 75% in year 7
Tax rate	30%	All years
Loan terms:		
Amount	248,000	
Term	5 years	
Rate	12% annually	

Source: WWF Coral Triangle and Marine Change

By tonnage, the Vietnam yellowfin fishery is approximately half the size of the AP2HI FIP. The primary lesson learned from preliminary financial analysis is that the current usage fee per kilogram is insufficient to sustain the costs of MSC certification at current volumes covered by the FIP. WWF Coral Triangle estimates that roughly 30 percent of the fishery's 18,000 tons are processed and traded by FIP partners (and thus eligible for a fee per ton model), though it is unknown what proportion of that would be eligible or diverted to MSC once the fishery is certified. For the purposes of this preliminary analysis it is assumed that 20 percent of total volume would be certified initially (the actual figure could be lower), increasing by 10 percent per year as the market access gains associated with MSC attract more raw material.

Given these tonnage assumptions, a usage fee of US\$40 per ton (a 0.7 percent fee on dockside price) would be necessary to achieve commercial viability. Under this scenario, a loan of US\$248,000 would be required to finance certification and would be repaid. Maximum negative cash flow is in month 19 (year 2), equal to US\$116,000, and cash flows turn positive in month 44 (year 4).

The primary drivers of bankability are tonnage and usage fee: if certified tonnage increases faster than expected, the required fee can decrease; if tonnage is lower, the fee must be higher. As this is an industry-driven FIP, the tradeoffs should be emphasized to the partners, allowing them to plan accordingly.



### Mobilizing debt financing for MSC certification

As observed above, a fishery may not generate positive cash flows consistently until several years post-certification due to the substantial upfront and recurring costs of MSC certification and the mismatch in the timing of cash flows. Even in the case of the AP2HI FIP in Indonesia, which has a relatively strong investment profile, commercial banks are unwilling to finance a venture with no fixed assets for collateral. Thus, the development of a tailored financial mechanism to support MSC certification is likely necessary to reach sustainability goals.

In the near term, a financial mechanism could provide debt financing to fisheries to undergo MSC assessment and grant funding to provide long-term support for FIPs. In the longer term, it could serve as a platform to demonstrate the return on investment of certification, particularly in developing countries.

### **Revolving certification fund**

One potential financing structure is a revolving certification fund that sustainability-minded retailers and traders could individually or collectively invest some portion of their FIP/MSC budgets into. The fund would consider fisheries investments in a long-term, systematic way, considering both commercial returns of MSC certification and broader sustainability goals, while testing different investment hypotheses and supporting institutions at all levels to access certification.

Grant funds could be used for investments at the FIP stage that are unlikely to yield a commercial return but are necessary for the fisheries to obtain certification (e.g. research and general fisheries management), while the debt funds would be deployed to cover costs of MSC assessments. Lending terms could be concessionary (e.g. interest rate equal to rate of inflation, with a grace period of one year or more) to ensure both that fisheries are able to achieve certification and that invested capital is returned to the fund. Partner NGOs could take a first loss position to attract investors, while philanthropies (with PRI) could be recruited to fully capitalize the vehicle.

Ultimately, the development of this fund would send a strong signal to the market and could help prove the commercial viability of certification and the financial returns to certified fisheries both from market access and increased profitability.





# CONCLUSIONS

This study looked at the potential value-enhancing interventions that could be made in the tuna fisheries of Southeast Asia to increase sustainability and ecosystem health as well as decreasing risk and increasing security of supply for companies buying and selling tuna into the US market. In particular it analyzed the benefits and risks of adopting long-term contracts between buyers and sellers to increase security of supply and enhance the potential for socially, environmentally and economically beneficial outcomes in tuna fisheries. The analysis suggests that there are clear benefits to be had from adopting a longer-term and closer relationship to suppliers of tuna, particularly for buyers who have committed to or are interested in sourcing high quality, sustainable fish. As demand begins to outpace supply for these premium products, buyers should adopt tools such as those outlined above in order to hedge supply risk and proactively invest in the future viability of their supply chains.

Value chain financing, the first tool highlighted above, can provide credit access to small-scale fishers using supply chain commitments as leverage. Once implemented, this framework allows for investments in the supply chain that can increase quality of fish to export grade, raising incomes for fishers and securing a stable supply for buyers.

The second tool relates to mobilizing long-term support for sustainable fisheries and through financial analysis of the return on investment of MSC certification. As demonstrated by the dropout rate of small-scale and emerging-market fisheries once grant funding is withdrawn, pursuing MSC certification without a business plan jeopardizes the time, effort and resources expended, often by buyers, in improving these fisheries. Upfront financial planning and analysis, combined with committed offtakers, can identify funding gaps, test the viability of the certificate holder's business model, and potentially mobilize debt funding to cover cash shortfalls. As demonstrated in our analysis of tuna fisheries targeting MSC in Indonesia, the Philippines, and Vietnam, we can clarify focus areas for intervention as the fisheries approach certification.

# **ANNEX A: CASH FLOW OVERVIEW FOR MSC CERTIFICATION**

## **INDONESIA**

# Immediate payback

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
AP2HI Operating Revenues AP2HI Operating Expenses	67,962 (158,692)	70,885 (166,627)	73,808 (174,958)	76,731 (183,706)	79,654 (192,891)	80,654 (202,536)	81,654 (212,663)	82,654 (223,296)	83,654 (234,461)	83,654 (246,184)	83,654 (258,493)	83,654 (271,418)	83,654 (284,989)	83,654 (299,238)	83,654 (314,200)
AP2HI Net Operating Cash Flow	(90,731)	(95,742)	(101,151)	(106,975)	(113,238)	(121,882)	(131,009)	(140,642)	(150,807)	(162,530)	(174,839)	(187,764)	(201,335)	(215,584)	(230,546)
MSC-Related Revenues MSC-Related Expenses	145,000 (256,000)	315,578 (230,800)	631,155 (242,340)	946,733 (254,457)	946,733 (267,180)	946,733 (480,539)	946,733 (294,566)	946,733 (309,294)	946,733 (324,759)	946,733 (340,997)	946,733 (558,047)	946,733 (375,949)	946,733 (394,746)	946,733 (414,484)	946,733 (435,208)
Net MSC-Related Cash Flow	(111,000)	84,778	388,815	692,276	679,553	466,194	652,167	637,438	621,974	605,736	388,686	570,784	551,986	532,249	511,525
Tax expense	-	-	86,299	175,590	169,895	103,293	156,347	149,039	141,350	132,962	64,154	114,906	105,195	94,999	84,294
Total AP2HI Net Cash Flow After Tax	(201,731)	(10,965)	201,365	409,710	396,421	241,018	364,810	347,757	329,817	310,244	149,693	268,114	245,456	221,665	196,685
Net Borrowing Net Repayment	551,182 (134,868)	- (147,129)	- (147,129)	- (147,129)	- (147,129)	(12,261)	2	2	:	1	1	:	:		:
Total AP2HI Net Cash Flow After Financing	214,583	(158,094)	54,236	262,581	249,292	228,757	364,810	347,757	329,817	310,244	149,693	268,114	245,456	221,665	196,685
AP2HI Members	30	32	34	36	38	39	40	41	42	42	42	42	42	42	42
AP2HI Members Participating in MSC	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Annual MSC Tons: HL-YFT Annual MSC Tons: PL-YFT Annual MSC Tons: PL-SKJ	- - -	1,742 2,352 4,683	3,484 4,705 9,365	5,227 7,057 14,048											
IKK	79%														

# One-year grace period

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
AP2HI Operating Revenues AP2HI Operating Expenses	67,962 (158,692)	70,885 (166,627)	73,808 (174,958)	76,731 (183,706)	79,654 (192,891)	80,654 (202,536)	81,654 (212,663)	82,654 (223,296)	83,654 (234,461)	83,654 (246,184)	83,654 (258,493)	83,654 (271,418)	83,654 (284,989)	83,654 (299,238)	83,654 (314,200)
AP2HI Net Operating Cash Flow	(90,731)	(95,742)	(101,151)	(106,975)	(113,238)	(121,882)	(131,009)	(140,642)	(150,807)	(162,530)	(174,839)	(187,764)	(201,335)	(215,584)	(230,546)
MSC-Related Revenues MSC-Related Expenses	145,000 (256,000)	315,578 (230,800)	631,155 (242,340)	946,733 (254,457)	946,733 (267,180)	946,733 (480,539)	946,733 (294,566)	946,733 (309,294)	946,733 (324,759)	946,733 (340,997)	946,733 (558,047)	946,733 (375,949)	946,733 (394,746)	946,733 (414,484)	946,733 (435,208)
Net MSC-Related Cash Flow	(111,000)	84,778	388,815	692,276	679,553	466,194	652,167	637,438	621,974	605,736	388,686	570,784	551,986	532,249	511,525
Tax expense			86,299	175,590	169,895	103,293	156,347	149,039	141,350	132,962	64,154	114,906	105,195	94,999	84,294
Total AP2HI Net Cash Flow After Tax	(201,731)	(10,965)	201,365	409,710	396,421	241,018	364,810	347,757	329,817	310,244	149,693	268,114	245,456	221,665	196,685
Net Borrowing Net Repayment	395,514 -	- (127,041)	- (138,590)	- (138,590)	- (138,590)	- (11,549)	:	:	2	ž	-	:	:	÷	:
Total AP2HI Net Cash Flow After Financing	193,783	(138,005)	62,775	271,120	257,831	229,469	364,810	347,757	329,817	310,244	149,693	268,114	245,456	221,665	196,685
AP2HI Members	30	32	34	36	38	39	40	41	42	42	42	42	42	42	42
AP2HI Members Participating in MSC	18	18	18	18	18	18	18	18	18	18	18	18	18	18	18
Annual MSC Tons: HL-YFT Annual MSC Tons: PL-YFT Annual MSC Tons: PL-SKJ	:	1,742 2,352 4,683	3,484 4,705 9,365	5,227 7,057 14,048											
IRR	79%														

# **THE PHILIPPINES**

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
MSC-Related Revenues MSC-Related Expenses	(100,000)	210,000 (140,400)	252,000 (143,208)	294,000 (146,072)	315,000 (148,994)	315,000 (251,973)	315,000 (155,013)	315,000 (158,113)	315,000 (161,275)	315,000 (164,501)	315,000 (267,791)	315,000 (171,147)	315,000 (174,570)	315,000 (178,061)	315,000 (181,622)
Net MSC-Related Cash Flow	(100,000)	69,600	108,792	147,928	166,006	63,027	159,987	156,887	153,725	150,499	47,209	143,853	140,430	136,939	133,378
Tax expense		20,880	32,638	44,378	49,802	18,908	47,996	47,066	46,117	45,150	14,163	43,156	42,129	41,082	40,013
Total Net Cash Flow After Tax	(100,000)	48,720	76,154	103,549	116,204	44,119	111,991	109,821	107,607	105,349	33,046	100,697	98,301	95,857	93,364
Net Borrowing Net Repayment	154,962 (37,917)	- (41,364)	- (41,364)	- (41,364)	- (41,364)	- (3,447)	:			-	:	:			
Total FIP Net Cash Flow After Financing	17,044	7,356	34,790	62,185	74,840	40,672	111,991	109,821	107,607	105,349	33,046	100,697	98,301	95,857	93,364
Annual MSC Tons: HL-YFT		2,000	2,400	2,800	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000
IRR	72%														

## VIETNAM

Year	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
MSC-Related Revenues MSC-Related Expenses	(100,000)	144,000 (140,000)	216,000 (142,800)	288,000 (145,656)	360,000 (148,569)	432,000 (251,541)	540,000 (154,571)	540,000 (157,663)	540,000 (160,816)	540,000 (164,032)	540,000 (267,313)	540,000 (170,659)	540,000 (174,072)	540,000 (177,554)	540,000 (181,105)
Net MSC-Related Cash Flow	(100,000)	4,000	73,200	142,344	211,431	180,459	385,429	382,337	379,184	375,968	272,687	369,341	365,928	362,446	358,895
Tax expense		1,200	21,960	42,703	63,429	54,138	115,629	114,701	113,755	112,790	81,806	110,802	109,778	108,734	107,669
Total Net Cash Flow After Tax	(100,000)	2,800	51,240	99,641	148,002	126,322	269,800	267,636	265,429	263,177	190,881	258,539	256,149	253,712	251,227
Net Borrowing Net Repayment	207,547 (50,784)	- (55,401)	- (55,401)	- (55,401)	- (55,401)	- (4,617)			;		-	:			
Total FIP Net Cash Flow After Financing	56,762	(52,601)	(4,161)	44,240	92,601	121,705	269,800	267,636	265,429	263,177	190,881	258,539	256,149	253,712	251,227
Annual MSC Tons: HL&LL-YFT		3,600	5,400	7,200	9,000	10,800	13,500	13,500	13,500	13,500	13,500	13,500	13,500	13,500	13,500
IRR	67%														

Source: Marine Change