



INVESTING
FOR
**SUSTAINABLE
GLOBAL FISHERIES**

With support from:
Bloomberg Philanthropies'
Vibrant Oceans Initiative
The Rockefeller Foundation



Executive Summary

Introduction

**Small-Scale Fisheries
Investment Blueprints**

The Mariscos Strategy

The Mangué Strategy

The Isda Strategy

**Industrial-Scale Fisheries
Investment Blueprints**

The Merluza Strategy

The Sapo Strategy

**National-Scale Fisheries
Investment Blueprint**

The Nexus Blue Strategy

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THE SAPO STRATEGY

**AN INVESTMENT BLUEPRINT
FOR INDUSTRIAL-SCALE
FISHERIES IN BRAZIL**

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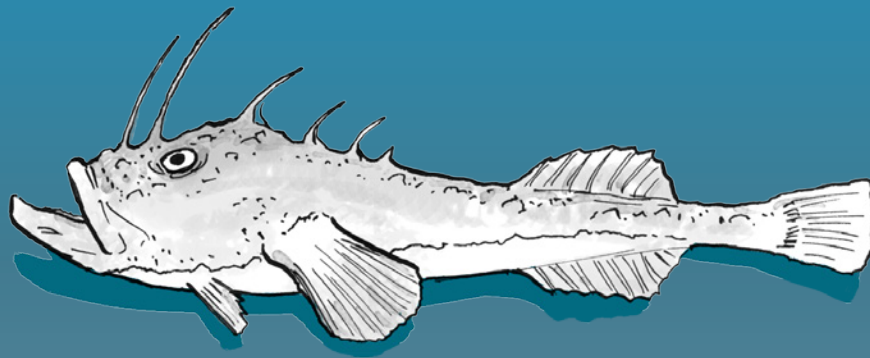
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INTRODUCTION

Encourage Capital has worked with support from Bloomberg Philanthropies and The Rockefeller Foundation to develop and evaluate an impact investing strategy supporting the implementation of sustainable fishing improvements in the distressed monkfish (*Lophius gastrophysus*) fishery in Brazil. The Sapo Strategy (Sapo) is a hypothetical \$11.5 million greenfield impact investment to create Brazil's first sustainability-focused, vertically integrated seafood company, with the objective of restoring the stocks of both the monkfish and related fisheries to full productive potential. In a fishery that does not have quota or other forms of formal tenure over the resource, this approach suggests how fisheries management investments in Brazil can support the needs of a cash-constrained public sector, and yield attractive returns to investors while restoring marine ecosystems and benefiting local economies.



Monkfish (Lophius gastrophysus)

The \$11.5 million investment would be predicated on working with authorities to reform fisheries policy to ensure access limitations, establish secure, stable resource tenure in the form of a “catch share” system¹, and strong enforcement and monitoring. The strategy would enable the design and implementation of comprehensive fishery management improvements, purchase and retire up to 15 double-rigged trawl vessels and licenses, control at least 85% of licenses/quota and associated gillnet vessels in the monkfish fishery, and create a new monkfish processing and distribution business to manage sales and export to international buyers. Given the current challenging policy environment in Brazil, certain enabling considerations must be met in order for the strategy to be viable. Sapó is targeting an 17.5% base case levered (equity) IRR, with upside potential of over 30%, while simultaneously restoring the monkfish stock biomass, generating \$7.9 million in additional revenues to fund gillnet fishers’ incomes and offer social benefits, and increasing meals-to-market by 7.5 million portions annually over the eleven-year investment period.

While the Sapó Strategy is based on analysis of actual fishing communities, fishing conditions, and commercial business operations to incorporate realistic assumptions of costs, returns, and risks affecting the potential outcomes of the strategy, Encourage Capital has synthesized its findings into a general case study that we hope can be used as a roadmap for fishery stakeholders interested in impact investing opportunities more broadly in the sustainable fisheries space. As such, most of the Company and programmatic references herein use pseudonyms in place of the actual names of the organizations on which the analysis was based. Where used, such pseudonyms will be identified clearly throughout the remainder of this text.

¹ Catch shares are a type of management system that dedicates a secure share of fish or fishing area, to individual fishermen, communities or fishery associations. Each year, the Total Allowable Catch (TAC) also known as a “catch limit” is set with portions of the limit divided among fishery participants.



THE SAPO STRATEGY

The Sapo Strategy outlines an opportunity for private impact capital to help make the Brazilian monkfish gillnet fishery sustainable, while developing a profitable business and creating a range of positive environmental and social impacts throughout the region.

Given the history of management challenges in the Brazilian deep-water fisheries in the southern and southeastern regions of the country (of which the monkfish fisheries are a part), Sapo is positioned as an opportunity to drive positive change and offer an example to other industrial fisheries that sustainability and profit need not be in conflict.

Brazilian monkfish are caught using two primary gear types: gillnet and trawl. While the domestic monkfish gillnet fishery has a formal management plan on paper, monitoring and enforcement is weak, and there have been no efforts to collect data or evaluate the stock status and bycatch numbers since 2007. The domestic trawl fleet has very little formal regulation, with no defined access limitations on the number of vessels, vessel quotas, minimum catch size, or allowed landings. Lacking a formal monitoring and catch accounting program, statistics are generally self-reported (if at all), and there is no reliable way to verify consistent compliance.²

While this situation is not uncommon for fisheries in many parts of the world, the current policy challenges in Brazil are such that fundamental policy and management changes would be needed in order to create a viable investment environment. This strategy illustrates how the right enabling policies can mobilize and leverage private investment to restore marine resources and meet the goals of multiple stakeholders.

Before an overall management plan can be fully developed, high-quality, third-party scientific assessments must be completed to ensure that there is sufficient potential for sustainability improvements to justify these interventions. The resulting management improvements may include establishing a total allowable catch (TAC) across both gear types (reducing the portion allocated to trawl vessels), vessel quotas, access limits, gear modifications, closed seasons, and no-take zones. What is certain, however, is the need for strong resource tenure for investors, effective implementation, monitoring, and enforcement, and a firm commitment to catch accounting, on-board data collection and verification, and ongoing scientific assessments of stock, bycatch, and habitat impacts.

² The Brazilian Institute of the Environment (IBAMA).

Fundamentally, Sapo's innovative approach is to provide capital and assets to an association of fishing operators committed to sustainability, while developing and funding ongoing fisheries management efforts.

Upon completing the scientific assessments, developing a management plan, and securing commitments from the government and industry, Sapo proposes to invest a total of \$11.5 million in equity and program related investments under a phased strategy to:

- 1) Finance and implement a strict and comprehensive management plan and related fisheries management improvements that address both the trawl and gillnet fleets
- 2) Fund the buyout and retirement of approximately half of the current double-rigged trawl vessels harvesting monkfish, and, upon securing access and TAC limitations on the trawl fishery, retire the licenses and implied share of TAC/quota associated with the vessels
- 3) Launch an export-oriented, vertically integrated processing and distribution business delivering sustainably certified monkfish products to high-value export markets
- 4) Secure the remaining available gillnet licenses and rights to acquire a pro-rata share of any new quota and/or licenses issued under the management plan as the stock recovers, in order to ensure control and monitoring of on-the-water fishing activities
- 5) Upgrade the gillnet fleet and enter into an agreement with an association of fishers, (who are contractually committed to sustainable management practices), to operate the vessels under a profit sharing and/or lease arrangement

- 6) Increase the catch volumes of the improved gillnet fleet operations (within the constraints of the management plan), while reducing the trawl harvest through the vessel buyout and TAC/quota restrictions
- 7) Continue to explore and test more selective harvest and gear alternatives over the long-term

Additional investments in the enterprise over time under this graduated strategy would be funded organically, through project cash flows, and with follow-on commercial loans. Revolving credit facilities would help finance working capital needs.

Fundamentally, Sapo's innovative approach provides capital and assets to an association of fishing operators committed to sustainability, while developing and funding ongoing fisheries management efforts. These changes must be built on commitments from policymakers, enforcement authorities, and the industry to take concrete steps to permanently reform resource stewardship. Without such reforms, management improvements may be undermined by new entrants or illegal, unreported, and unregulated (IUU) fishing activity. Bundling government reforms with private investment across the supply chain aims to ensure compliance with sustainable practices by stamping out destructive or illegal activities, controlling key assets and leverage points to push sustainable practices down the supply chain, and creating positive economic incentives.

Sapo would seek to collaborate with four primary stakeholder groups to execute the strategy. First, Sapo would work with NGOs, researchers, and government authorities to build on recent efforts to reform the demersal trawl fishery as a core

tenet of Sapo's value proposition to this segment. Second, Sapo would establish a joint-venture with a best-in-class seafood processing, distribution, and marketing team, under a newly formed holding company hereafter referred to as the "MarketCo". This part of MarketCo's business would be responsible for implementing and managing local processing and distribution operations, and for developing the marketing and sales channels for both export and niche domestic markets. Also falling under MarketCo would be an asset holding company (AssetCo), which would invest in licenses, vessels and infrastructure assets.

Third, Sapo would engage with a mission-aligned gillnet fishing operator to jointly establish an independent association of fishers (CatchCo), led by the operator and committed to strong, sustainable management reforms. CatchCo would operate the vessels owned by AssetCo under a long-term concession agreement, benefitting from offtake guarantees by MarketCo at premium prices, in exchange for a "right-of-first-offer" for CatchCo's product. CatchCo would also receive a minority equity stake in MarketCo, vesting over the 11 year investment horizon, as well as a purchase option on any vessels held by AssetCo at the end of Year 11.

Fourth, Sapo would partner with NGOs, regulators, and the fishery management committee to help finance and implement an MSC Fisheries Improvement Program, with the ultimate goal of MSC certification of the gillnet monkfish fishery. If successful, the Brazilian monkfish fishery would not only be the first MSC-certified monkfish fishery in the world,³ but would also be the first MSC certified fishery of any kind in Brazil.

In sum, the Sapo strategy seeks to restore the monkfish fishery biomass over an 11-year period, driving a 100% to 200% increase in regulated, sustainable TAC and landings (assumed at a 100% increase, or 3,800 mt, in the base case), and generate 7.5 million additional seafood meals to market each year.⁴ Sapo's base case financial returns assume a conservatively-valued exit sale of its commercial operations after Year 11 to either management, which will be granted a right of first offer, or an international strategic buyer. This exit strategy is supported by current industry consolidation and vertical integration trends and the demand for consistent access to critical sources of supply. Sapo targets an 17.5% levered IRR over the investment period, with significant upside potential should stocks show greater recovery and harvest potential.

Impact and Financial Returns

- Reduction of overall bycatch by 50%, of threatened species bycatch by 75%, and of total discards by 60%
- Reduction in the share of trawl catch from 60%-70% of total landings currently to less than 15% of total landings by Year 11, with an absolute trawl harvest reduction of between 40%-60% from current levels
- Increase monkfish stock biomass through better science and management, with an associated sustainable TAC growth of 100% in the base case, and 200% in the upside case
- Grow annual meals-to-market by nearly 375% by Year 11, representing a 7.5 million meal increase
- Increase aggregate fisher incomes by \$7.9 million over 11 years while expanding employment in the gillnet fishery from 18 to 90 people, and creating over 100 new jobs in the business operations
- Offer professional benefits through CatchCo, including insurance, profit sharing, back office support, education, improvement in on-board living conditions (including internet access for all crewmembers), and professional training opportunities
- Targets a base case equity IRR of 17.5% over an 11-year period

³ Marine Stewardship Council, 2014.

⁴ Base case TAC is based on the limited studies that have been undertaken on the stock and could be revised as stock assessments provide additional information on the biomass of the species. Wahrlich et al. "Structure and Dynamics of the Monkfish *Lophius gastrophysus* Fishery of Southern and Southeastern Brazil," Boletim do Instituto do Pesca, Sao Paulo, 2002.

KEY VALUE DRIVERS

Sapo offers financial incentives for CatchCo fishers to support regulatory reform and aligns financial incentives with stock management performance, as increases to monkfish stock biomass and landings resulting from the fishery

management improvements drive cash flow and value generation. Sapo presents an intriguing impact investing opportunity due to the following key value drivers:

VALUE DRIVERS	DESCRIPTION
Catalyzes positive regulatory momentum	Creates meaningful financial and stakeholder incentive to push fisheries authorities, NGOs, academics, and industry to execute on plans to install a management committee for Brazil's southern and southeastern (S-SE) demersal fisheries (which include monkfish) in order to reform policies and re-initiate stock assessments, monitoring, and enforcement activities.
Implements effective fishery management improvements	Reduces the active DR trawl fleet by up to 50%, ⁵ while limiting new entrants, placing catch limits in the form of Individual Transferable Quotas (ITQs) on remaining vessels, lowering fishing mortality from trawl gear by 40%-60% of current values (on top of a 2.0x to 2.5x monkfish catch volume increase), reducing juvenile landings, and supporting a faster, permanent stock recovery.
Creates an investment position that appreciates in value as the stock recovers	Acquisition of fishing permits and vessels in combination with the launch of a monkfish processing and distribution business increases profits and asset values as monkfish sustainable yield grows by between 1,800 mt and 2,300 mt over the investment period (under the base case).
Uses innovations to increase fisher compliance	The use of on-board data capture technologies, dockside catch accounting, and other data systems, in combination with higher aggregate and per unit prices to reward fishers for sustainable practices can increase compliance with management improvements.
Engages best-in-class partnerships	Sapo would create a network of stakeholder partnerships comprised of leading international and local marine conservation NGOs, CatchCo, MarketCo, industry fishing associations, and local research universities to offer the strongest possible leadership and execution of the overall strategy and resource management.
Capitalizes on margin expansion opportunities	Vertical consolidation of the supply chain is expected to create operating efficiencies and improve EBITDA margins relative to current conditions. In addition, the conversion of existing sales from frozen to fresh products yields a 20-30% price premium in European markets, while MSC certification is believed to command a premium of between 5-10% in elite markets since no such product is available today. ⁶ Sale of livers and waste products for fishmeal, currently not exploited, will increase overall value of raw material by an estimated 10-20%.

⁵ Depending on specific assumptions made regarding the number of DR trawl vessels actively harvesting monkfish at present.

⁶ Because there are no current MSC analogues to this fishery, and due to its unique demand characteristics, a "sustainability premium" remains speculative, and would offer potential investment upside. However, the Sapo model does not rely on this factor in order to be profitable.

VALUE DRIVERS**DESCRIPTION****Leverages strong market position and product differentiation**

Ownership of strategic productive assets (fishing licenses, vessels, and processing) would secure access to high-quality raw materials, pose a strong barrier to entry, ensure compliance with sustainability standards, and enable quality control and chain-of-custody across the supply chain.

The Marine Stewardship Council Certification (MSC) would offer a unique value proposition and differentiation as the only MSC-certified monkfish in the world. This would create the first vertically integrated seafood producer in Brazil with full product chain-of-custody (enabled by vertical integration), focused on quality, sustainability, and product differentiation. As a result, the Sapó operations promise to be an attractive supplier to European and U.S. markets seeking sustainable seafood supply sources.

Finally, unlike other groundfish/whitefish, there are no close substitutes for monkfish tails due to their unique flavor and texture, (with lobster tails or scallops being the closest comparable product), and no substitutes for monkfish liver.

Is supported by strong underlying market fundamentals

Strong demand growth in the EU, U.S., and Asia over the past 30 years has surpassed production, while the U.S. market remains relatively immature and continues to grow. With top-quality product retailing for up to \$50/kg in some target markets, monkfish is among the world's highest-value seafood products. Monkfish stomachs and livers are a delicacy in Asia, where seafood demand fundamentals are especially strong.

Limited global supply could be further pressured by a potential EU deepwater trawl ban, creating additional pressure on many monkfish fisheries and benefitting sustainably harvested product.

EXECUTION CHALLENGES

It is important to acknowledge upfront the anticipated difficulties involved in executing the investments outlined here. These difficulties include: the possibility that this stock simply cannot be harvested sustainably at commercially viable scale; its coexistence with several highly threatened species which have in the past been captured as bycatch; and the potential for weak political will or lack of commitment on the part of authorities to reform and enforce management plans for all gear-types that catch monkfish.⁷

Because of the limitations to the existing management framework and enforcement, (particularly in the trawl fishery), the Sapó Strategy investment is strictly conditional upon securing specific regulatory reforms in advance of any significant capital investment. This will ensure

regular monitoring, enforcement of regulations, and binding resource tenure for investors in the fishery.⁸ To do otherwise would be akin to making a real estate investment in a country that doesn't enforce property rights. The first requirement of any investment, therefore, must be to secure binding, enforceable commitments from Brazilian fisheries authorities.

Because the Sapó Strategy is a complex, multi-phased, greenfield project, that depends entirely on effective policy reforms and ongoing enforcement, executing the strategy would be a challenge (the PRS Political Risk Index ranks Brazil #50 of 140 countries, and the World Bank ranks it #116 of 189 countries for ease of doing business).^{9,10} While Sapó partially mitigates this risk by pursuing a phased investment strategy, and protects investor

⁷ Recognizing that improvements in only the gillnet fishery will not address stock management concerns if this only accounts for 30% to 40% of total harvest volumes.

⁸ The conditional nature of this strategy, due to the fact that the investment thesis is wholly dependent upon external, regulatory changes to the status-quo, is a key difference between the Sapó Strategy and other Investment Blueprints prepared as part of the Investing In Sustainable Global Fisheries report.

⁹ The PRS Group, 2014. "Political Risk Index".

¹⁰ World Bank Group, 2015. "Ease of Doing Business Rankings, June 2015".



capital by limiting investments until demonstrated reform is achieved, the overall strategy risk is much higher due to the uncertainty of the policy environment in Brazil. While a fishery with a history of consistent, strong management policies would enable a simpler approach, Sapo's implementation necessarily requires additional complexity and a longer timeframe to engage multiple stakeholders and secure the required reforms.

The Brazilian Ministry of Fisheries and Aquaculture, which was the central fisheries authority in Brazil when Sapo was first conceived and developed, was formally disbanded in October 2015 as

part of a broader federal restructuring, and its functions were consolidated under the Ministry of Agriculture. As of this writing, questions remain as to how this may influence the direction of fisheries policy in the country, and this uncertainty is currently a significant risk for any industrial scale sustainable fisheries investment strategy in Brazil. However, our hope is that the recommendations put forth by this case study build support for partnerships and commitments with impact-oriented investment strategies among authorities and other critical fishery stakeholders such as NGOs and the fishers themselves.



PROFILE OF THE SAPO STRATEGY FISHERY

Despite featuring the world's 15th longest coastline (8,400 km), 5th largest population (205 million), and 3rd largest agriculture exports (by value), Brazil remains a relatively small player in the marine wild capture fishing industry, ranking 26th in the world and comprising just 0.86% of global production. The Brazilian seafood industry produces approximately 575,000 mt of wild capture marine seafood each year, employs 550,000 people and exports approximately 7%, with the remainder consumed domestically.^{11, 12, 13} Though the landings of Brazilian monkfish (*Lophius gastrophysus*) (1,500–2,000 mt) currently represent only a small portion of Brazil's total annual landed volume (0.3%), virtually all of it is sold to high-value export markets in Europe and Asia, comprising 2.5% of total Brazilian seafood exports by value. Being a bottom-dwelling species, monkfish is currently only harvested using gillnet and trawl gears — both of which generate bycatch-with trawl capable of significant habitat damage. Finished product yield is only about 25% of the live monkfish weight, and the product is sold as processed tails, cheeks, liver, or whole gutted fish to European, Asian, and North American markets.¹⁴

SPECIES LIFE HISTORY

Globally, the seven commercially harvested monkfish species of genus *Lophius* are poorly understood by the scientific community due to their inaccessible habitat, (being buried in mud at great depths) and the relatively short period of time that they have been commercially harvested. Of these, the Brazilian monkfish, *L. gastrophysus*, is perhaps the least studied, with most assumptions about this species' population dynamics, life history, and behavior based on closely-related species such as *Lophius piscatorius*, found in Europe and the North Sea. What is known is that *L. gastrophysus* is a bottom dwelling fish, which appears to spawn in relatively dense aggregations in the shallower range of its habitat, from 100 m to 200 m, with a prolonged spawning season that runs from August to January, corresponding with the Southern Hemisphere spring and early summer.¹⁵ Juvenile fish settle in the shallow continental shelf waters from ~30 m to 150 m, move to deeper sections of the continental shelf as they grow, and finally live the remainder of their life cycle as mature adults in the deep waters of the continental slope, some 250 km offshore,

¹¹ <http://www.fao.org/fishery/facp/BRA/en>

¹² Ibid.

¹³ <http://www.seafish.org/media/765540/brazil.pdf>

¹⁴ Irish Sea Fisheries Board, "Monkfish Quality Guide," www.bim.ie, 2006.

¹⁵ Valentim et al. "Length Structure of Monkfish, *Lophius gastrophysus*, Landed in Rio de Janeiro," *Brazil Journal of Aquatic Science and Technology* 11(1), 2007.

seasonally returning to shallower waters to spawn. The Brazilian *L. gastrophysus* is among the midsized monkfish species, reaching lengths of up to 100 cm and weighing up to 20 kg. Its maximum

life span is about 25 years for females and 12 years for males, with a reproductive age of 5-7 years and at a length of approximately 50 cm.¹⁶

STOCK PROFILE AND CURRENT STATUS

The Brazilian monkfish is currently landed by either a small gillnet fishing fleet (consisting of two vessels), or a double-rigged trawl fleet with an estimated 20 to 30 vessels actively catching monkfish as bycatch while targeting other species. Overfishing during the first half of the past decade is believed to have driven the monkfish nearly to a point of collapse; however, despite the absence of formal stock and landings data, some fisheries stakeholders believe that the stock has stabilized and perhaps even recovered somewhat in recent years.

Until the late 1990's, the monkfish was considered by Brazilian fishers to be a "trash" fish, caught as bycatch and usually discarded by demersal trawlers targeting snapper, shrimp, and squid.

Starting in 1999, the government initiated its "REVIZEE" program as part of an effort to exploit new deep-water fishery resources within the Brazilian EEZ, unleashing a commercial expansion

down Brazil's continental slope. Sophisticated European vessels equipped with deep-water trawl and gillnet technologies, the latter coming primarily from Spain and capable of fishing to depths of 900 m, were introduced to the Brazilian industry for the first time and represented the first directed monkfish fishery. The national fleet followed the foreign vessels, which occupied the waters beyond the shelf break using long line and trawl gear, which domestic vessels had previously only employed in waters less than 200 m deep.

The Brazilian monkfish fishery experienced declining catch volumes, falling from a peak of nearly 10,000 mt in 2001 to current estimated landings of approximately 20% peak volumes. The core challenges to the fishery are poor governance, inadequate management, historically persistent bycatch, and suboptimal commercialization, which are summarized below:

- Lack of effective governance, together with a foreign charter vessel technology transfer program, led to fleet overcapitalization and overfishing between 2001 and 2005.
- Significant unmanaged and potentially illegal fishing by the industrial double-rigged trawl fleet, which currently lands 1.5x to 2.3x more product than the relatively better-managed gillnet vessels, and for which most catch consists of lower-value juvenile fish accompanied by substantial bycatch.
- Absence of data on current stock biomass and lack of catch accounting hampers the ability of fisheries authorities to establish appropriate catch limits and identify adaptive management interventions.
- History of bycatch by the foreign charter gillnet fleet operating in the early 2000s, for which up to 60% of catch¹⁷ was composed of incidental species, several of them threatened.
- Inefficient supply chain and quality management, which undervalues the product in global markets.

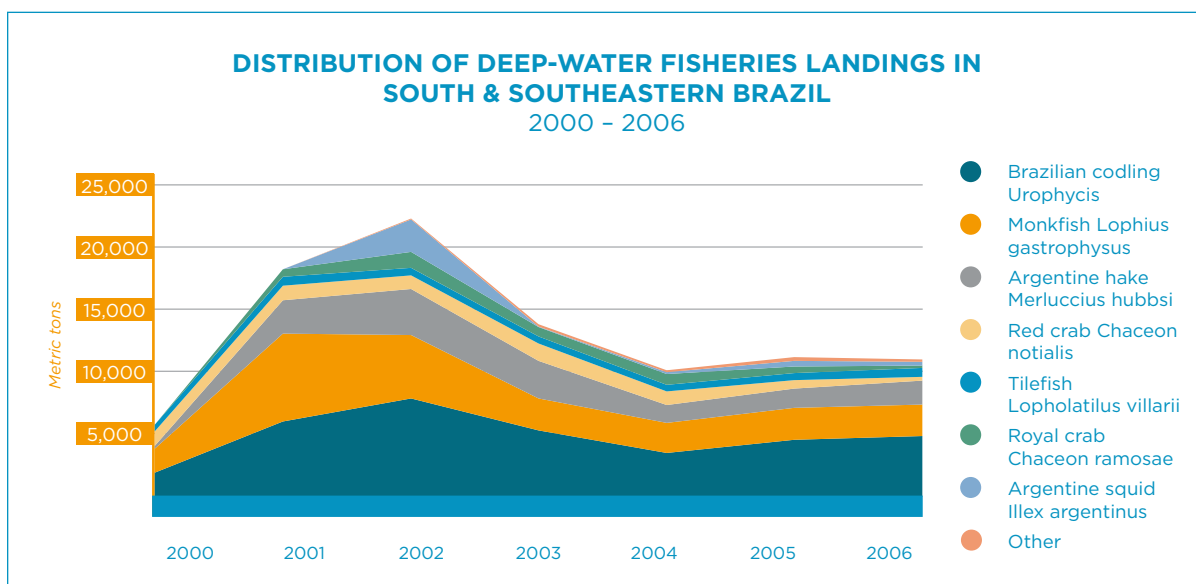
¹⁶ Valentim et al. "Length Structure of Monkfish, *Lophius gastrophysus*, Landed in Rio de Janeiro," Brazil Journal of Aquatic Science and Technology 11(1), 2007.

¹⁷ By number of individual organisms caught.

Following the arrival of gillnet vessels in 2001, monkfish landings increased dramatically. In a pattern typical of the “Gold Rush” effect seen in other high-value Brazilian fisheries, catch volumes increased nearly tenfold in just two years, reaching nearly 10,000 mt (including discards), with a total export value of \$21 million. Despite attempts to reduce fishing effort, the 2002 landings of over

5,000 mt far exceeded the 2,500 mt precautionary TAC recommended by scientists. After 2003, with the departure of the foreign vessels, and landings fell sharply, stabilizing at close to 2,500 mt until 2007, when data collection ceased (see Figure 1).¹⁸ In recent years, an estimated 1,500 mt to 2,000 mt of monkfish have been harvested annually by the gillnet and trawl fleets combined.¹⁹

FIGURE 1: Deepwater Landings in S-SE Brazil Between 2000 and 2006



HISTORICAL CONTEXT

Following the opening of the monkfish fishery in 1999 under REVIZEE, detailed biological, technical, and operational data was collected, and several detailed studies were undertaken in 2001 at the height of the foreign charter program. A complete stock assessment, with fisheries management recommendations, was presented to government and industry in April 2002. The study estimated a biomass of nearly 63,000 mt, with a spawning biomass of 32,000 mt.²⁰ The 2001 harvest, at 16% of total biomass (up to 60% in localized, highly-fished zones), overexploited the fishery and put it at serious risk of collapse. Observing this, the study recommended an immediate catch reduction of 70%, to a limit of 2,500 mt (4% of total biomass).

This would allow the monkfish population to stabilize, while giving scientists the opportunity to collect better data. The study noted that upon stock recovery, the TAC could likely be sustainably increased to 6% of total biomass (approximately 3,800 mt).²¹

The Consultant Committee for the Management of Deepwater Resources (CPG), including representatives from the fishing industry (vessel-owners, fishers, and industry workers), government, and academia, was created in 2002 to govern deepwater fisheries in S – SE Brazilian waters. Among the CPG’s first actions was to propose a monkfish management plan for the gillnet fleet and

¹⁸ Perez et al., “Deep Water Fisheries in Brazil: History, Status, and Perspectives,” *Latin American Journal of Aquatic Research* 37(3), 2009.

¹⁹ Personal communication, 6/2015.

²⁰ Spawning biomass is a population metric used to account for the biomass that is able to reproduce.

²¹ Perez et al. “Biomass Assessment of the Monkfish *Lophius gastrophysus* Stock Exploited by a new Deep-water Fishery in southern Brazil,” *Fisheries Research* 72, 2005.

restrict foreign chartered gillnet operations during the second half of 2002.²² After a promising start, however, internal disagreements led to the CPG disbanding in late 2007. Efforts at monitoring, data collection and enforcement effectively disappeared, and the management plan was sidelined. Although the foreign gillnetters had left, the remaining trawlers and a new five-vessel domestic gillnet fleet continued to operate using the technology and international market access introduced by REVIZEE. As a result, the overfishing and associated stock declines continued. The management plan was finally implemented in 2008, but by then the damage had been done, as the stock was already declared overexploited and headed towards collapse as early as 2004.²³

In July of 2008, Brazilian President Lula da Silva created a dedicated Ministry of Fisheries charged with increasing national seafood consumption and boosting fish production by 40%, largely via aquaculture expansion. The new ministry wielded an increased budget and hired many new employees during the following years, yet management and enforcement of wild-catch fisheries regulation continued to suffer.

In October of 2015, the Ministry of Fisheries and Aquaculture was dissolved and incorporated into the national Ministry of Agriculture, under a spending reduction plan. As of this writing, management of Brazil's fisheries falls under the jurisdiction of the Ministry of Agriculture, though significant uncertainty regarding the future of Brazilian fisheries policy and management remains.

GEAR AND ENVIRONMENTAL IMPACTS

DOUBLE-RIGGED TRAWL FLEET

Trawling intensified on the continental slope areas off of Brazil starting in 1999, as a consequence of both the national fleet moving beyond traditional fishing areas due to stock depletion, and the REVIZEE program of chartered foreign trawlers exploring deep-water fishing grounds within the Brazilian EEZ.

While these vessels targeted several species, monkfish was an important retained product. Most of the chartered trawlers exited Brazilian waters after 2002, but were quickly replaced by a national fleet of over 35 vessels, including the double-rigged trawlers for the shallower shelf and slope breakwaters, and the deeper water stern trawlers.

Currently, only the domestic double-rigged trawl fleet is actively fishing in depths from 100 m to 250 m, and is legally permitted to land monkfish as incidental catch. Although at least 50 vessels are licensed to fish, financial distress due to the

collapse of whitefish prices and the strong local currency²⁴ between 2008 and 2013 sidelined many operators. According to local fishers, there are only between 20 and 30 trawl vessels currently catching monkfish. Despite the reduced vessel number, this fleet catches between 900 mt and 1,400 mt annually, representing between 60% and 70% of current total monkfish landings in Brazil.²⁵

Because the trawl fleet is confined to shallower waters, its monkfish catch is significantly smaller than that of gillnet vessels, and primarily consists of juveniles. This key sustainability risk factor is compounded by the open access nature of the fishery, lack of absolute catch limits and quota restrictions, and ineffective monitoring. Economically, the smaller product is of lower commercial value, with degraded quality due to the harvest method and poor onboard handling.

²² Perez et al. "Deep-water Fisheries in Brazil: History, Status, and Perspectives," *Latin American Journal of Aquatic Research* 37(3), 2009.

²³ Perez et al. "Deep-water Fisheries in Brazil: History, Status, and Perspectives," *Latin American Journal of Aquatic Research* 37(3), 2009.

²⁴ The real is the national currency of Brazil (BRL).

²⁵ The largest local processor of monkfish from this fishery estimates that it buys between 1,500 and 2,000mt of raw material from the trawl fleet, and there are at least two other processors that have been known to process this product.

Although at least 50 vessels are licensed to fish, financial distress due to the collapse of whitefish prices and the strong local currency between 2008 and 2013 sidelined many operators.

GILLNET FLEET

Starting in 2001 with the arrival of the Spanish vessels, the gillnet fleet targeted the upper continental slope between 200 m and 500 m deep along the southeastern and southern Brazilian coast (within the designated fishery boundary between 21° S and the border with Uruguay). This fishery was the first in Brazil directed specifically at monkfish, which had previously only been caught as trawl bycatch prior to 2001.

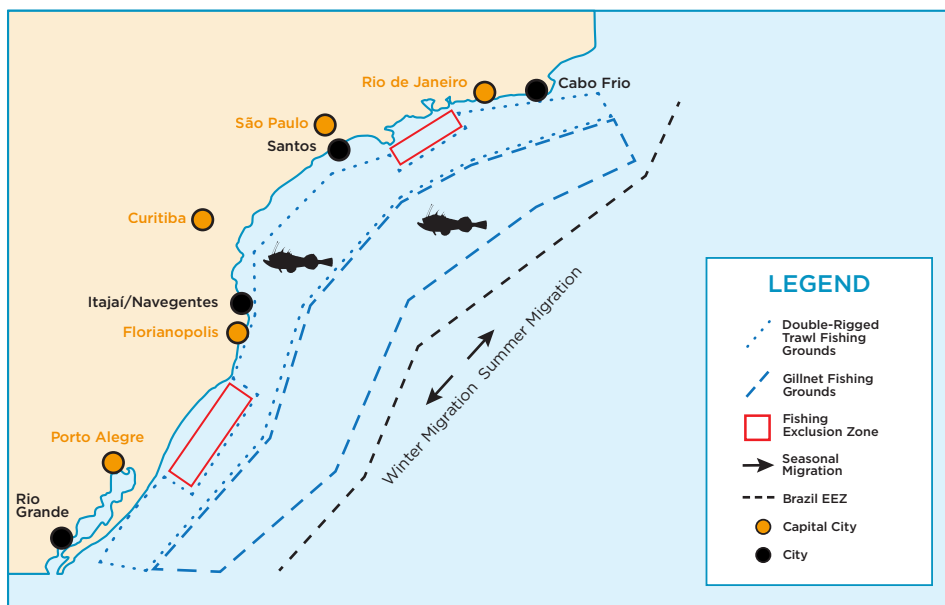
To reach the gillnet fishing grounds along the continental slope, at depths of greater than 250 m, these vessels must travel 250 km out to sea, a trip that takes between 12 and 14 hours. The gillnets in this fishery are not set vertically using floating buoys to stretch the net, as in other gillnet fisheries, but are rather weighted and allowed to fall slack across the bottom where the monkfish are entangled in the mesh as they “crawl” across the seabed. The soak time of the nets is between 2 and 3 days (weather dependent), and each

vessel carries four sets of 1,000 nets, with each set stretching for 10 km.

Fishing trips last between 5 and 15 days, depending on the season and weather, with shorter trips during the stormy winter months. The fish are harvested, gutted onboard, and frozen. Product landed in Rio Grande is taken directly to the central processing and packing facility, while product landed in Itajaí is collected by freezer truck and transported approximately 12 hours south to Rio Grande for packing and export (refer to Figure 2).

Today, there are only two active gillnet vessels, with one operating out of the port of Itajaí, in the state of Santa Catarina, and the other in Rio Grande, in Rio Grande do Sul. Harvest volumes have averaged just 600 mt during the past few years, which is 900 mt short of the already highly precautionary total allowable catch (TAC) of 1,500 mt currently set for the gillnet fishery.²⁶

FIGURE 2: Map of the Monkfish Fisheries in Brazil, Including the Shallower-Water Trawl Fishery and Deep-Water Gillnet Fishing Grounds



²⁶ This based on the conservative recommendation made in Perez et al 2005 to establish a TAC of 6% of 63,000mt, the estimated B_{MSY} .

While the reduction in fleet size from ten vessels to two is the result of a range of factors, and commonly cited reasons include over-leverage and financial distress, overcapacity given the low TAC, declining catch volumes, prices softening in other fisheries (forcing companies out of business), the challenging nature of operating this gear type, lower catch per unit of effort, and the “aging-out” of experienced vessel operators without adequate succession.

Although no in-depth research has been conducted since the gillnet management plan was put into practice, a bycatch assessment conducted on the foreign charter gillnet fleet in

2001 found high incidental catch and discards. Of the total biomass caught, just 40.7% was monkfish. Especially concerning was that several of the slow-growing bycatch species were highly threatened or collapsed, notably the angel shark (*Squatina argentina*) and wreckfish (*Polypriion americanus*). While the relative amount of bycatch of these two particular species was low (1.2% and 1.0%, respectively, of monkfish landed, by number of organisms) compared to others such as beardfish (*Polymixia loweyi*, 14.5%), silver john dory (*Zenopsis conchiffer*, 10.2%), and royal crab (*Chaceon ramosae*, 55.7%), these already stressed populations could not afford additional pressure.²⁷

REGULATORY CONTEXT AND CHALLENGES

DOUBLE-RIGGED TRAWL FISHERY MANAGEMENT

The double-rigged trawl fleet currently lacks a robust management plan for either monkfish, or for the “target” species of this multispecies fishery, which are primarily hake (*Merluccius hubbsi*) and codling (*Urophycis mystacea*).²⁸ There is a rule against retaining monkfish at levels greater than 5% of the total landed volume, but anecdotal evidence suggests that faced with declining prices for the target species, some in the trawl fleet are retaining the higher-value monkfish at levels exceeding this 5% limit without adequately reporting these landings.

While catch and effort limits are almost entirely lacking in this fishery, with open access, no TAC, and unlimited effort allowed, this fishery does have a limited season, which extends for only three months between March and May. However, this leads to a “race-to-fish” during the open season, and with inadequate surveillance, monitoring, and catch accounting along most of the coastline, extensive year-round fishing occurs throughout a sizable portion of the fleet.²⁹

Allowed depth ranges do not overlap with the gillnet fishery, as the double-rigged trawl vessels may only fish at depths between 100 and 250 m. Vessel operators are required to keep logbooks, maintain

VMS (vessel monitoring systems), and use observers on 20% of trips covered, but this latter requirement has not been met since fisheries authorities suspended the observer program in 2010.³⁰

There has been no formal assessment of bycatch issues on the trawl fleet, though trawlers are well known to be problematic in this regard by virtue of the gear type used, as large nets are dragged along the bottom, scooping up whatever lies in their path. In fact, the double-rigged trawl fishery is by definition non-selective, as even the landings requirements for this fishery state that no single retained species may make up more than 15% of the total catch volume.^{31, 32}

The paucity of monitoring data, the inaccurate catch accounting, and the lack of market transparency make it impossible to know for certain what the negative economic and environmental implications of the trawl fleet are for Brazil’s monkfish resource. However, this is a critical challenge to the long-term sustainability and economic viability of the fishery, and is an essential component to any long-term impact investment strategy in the monkfish fishery.

²⁷ Wahrlich et al. “A Bycatch Assessment of the Gillnet Monkfish *Lophius Gastrophysus* Fishery Off Southern Brazil,” *Fisheries Research* 72, 2005.

²⁸ Perez et al. “Deep-sea Fishery off Southern Brazil: Recent Trends of the Brazilian Fishing Industry,” *North Atlantic Fishery Science* 31, 2003.

²⁹ Source: Personal interviews with local researchers, processors and fishermen, June 2015.

³⁰ Perez et al. “Biomass Assessment of the Monkfish *Lophius gastrophysus* Stock Exploited by a new Deep-water Fishery in southern Brazil,” *Fisheries Research* 72, 2005.

³¹ Perez et al. “Deep-water Fisheries in Brazil: History, Status, and Perspectives,” *Latin American Journal of Aquatic Research* 37(3), 2009.

³² Unlike these other species, monkfish may only comprise 5% of landings volume.

GILLNET FISHERY MANAGEMENT

Unlike the trawl fleet, the gillnet fishery has a somewhat robust management plan by Brazilian standards, being among the most comprehensive of any national fishery that is not part of an international management structure.³³ Each vessel must have a license to target monkfish, with a current limit of nine licenses which are restricted from fishing in waters shallower than 250 m, and must collectively harvest below a highly-precautionary, “stock recovery” TAC set at 1,500 mt.

Nets must be tagged with a vessel register so that owners can be traced to and held responsible for any abandoned “ghost fishing” nets, a development that has led operators to outfit the gear with tracking beacons for easy recovery. In contrast to the trawl fishery, there is currently no closed season for monkfish.³⁴ Logbooks, VMS, and observers are technically required with 100% coverage; however, the on-board observer program was suspended in 2010 for this fleet as well.

Legally retained bycatch is allowed for just two products under the gillnet management plan: the deep water commercial crab species (*Chaceon* spp.), and the tilefish (*Lopholatilus villari*), each of which must each be limited to 5% or less of the total commercial landings by volume. Otherwise, bycatch must be discarded or donated to the crew or local communities.^{35, 36} While there is no minimum legal size, juvenile fish are virtually absent from these deep waters. The management plan established a minimum net mesh size of 280 mm to select for larger individuals and reduce bycatch, though tests performed with mesh sizes of up to 320 mm have shown significantly higher performance in this regard.³⁷

Harvest exclusion areas in the south and southeast shelf waters were established to reduce bycatch and to protect spawning grounds, particularly for the highly threatened wreckfish (*Polyprion americanus*), and angel shark (*Squatina argentina*), following lessons learned from the REVIZEE program. Nevertheless, the use of exclusion areas could be further expanded to reduce bycatch while protecting vulnerable populations and spawning aggregations. Voluntary efforts undertaken by existing operators offer promising anecdotal evidence of bycatch reduction potential, particularly of threatened species, though further study is required. Unlike traditional, stretched net gillnet fisheries in shallower waters, which have been known to catch marine mammals, turtles, birds, and a range of incidentally entangled fish species, at depths of over 250 m there are far fewer such interactions. Practitioners claim that the use of the slack entangling net lying anchored on the bottom targets only benthic species crawling or swimming along the seabed. Unlike some gillnet fisheries, the nets are not baited, and catch efficiency apparently does not fall off significantly when soak times are reduced to less than 48 hours (compared to soak times of nearly five days when the last formal bycatch assessment was undertaken on the foreign fleet), which further reduces bycatch volumes.

Deep-water fishing activities have concentrated on the slope at depths between 250 m and 1,000 m, where the seabed is primarily mud and sand. As such, the habitat is generally resilient and, despite some limited deep-water stern-trawl³⁸ activity between 2000 and 2007, this habitat is not believed to have sustained long-term damage. Double-rigged trawl vessels are restricted from operating at these depths.³⁹

³³ Jose Perez and Paulo Pezzuto, “Análise da Dinâmica da Pesca de Arrasto do Sudeste e Sul do Brasil,” Universidade do Vale do Itajaí, 2005.

³⁴ Wahrlich et al. “A Bycatch Assessment of the Gillnet Monkfish *Lophius Gastrophysus* Fishery Off Southern Brazil,” *Fisheries Research* 72, 2005.

³⁵ Perez et al. “Deep-water Fisheries in Brazil: History, Status, and Perspectives,” *Latin American Journal of Aquatic Research* 37(3), 2009.

³⁶ Du Mont, personal communication, 2015.

³⁷ Wahrlich et al. “Deep-sea Fishery Off of Southern Brazil: Recent Trends of the Brazilian Fishing Industry,” *Journal of Northwest Atlantic Fishery Science* 31, 2003.

³⁸ Unlike double-rigged trawlers, stern-trawlers are designed for the requirements of deep-water trawling; however, this fleet has not been active in recent years as the limited catch volumes for such large, fuel-hungry vessels have generally deemed this to be cost prohibitive.

³⁹ Perez et al. “O Ordenamento De Uma Nova Pescaria Direcionada Ao Peixe-Sapo No Sudeste E Sul Do Brasil,” 2002.

CURRENT SUPPLY CHAIN

DOUBLE-RIGGED TRAWL FISHERY SUPPLY CHAIN

The trawl vessel operators tend to be large -scale, horizontally integrated industrial multi-species producers, with home ports in Rio Grande (Rio Grande do Sul state), Itajaí (Santa Catarina), Santos (São Paulo), Niterói (Rio de Janeiro), and Cabo Frio (Rio de Janeiro). Such producers handle the pre- and post-processing distribution and

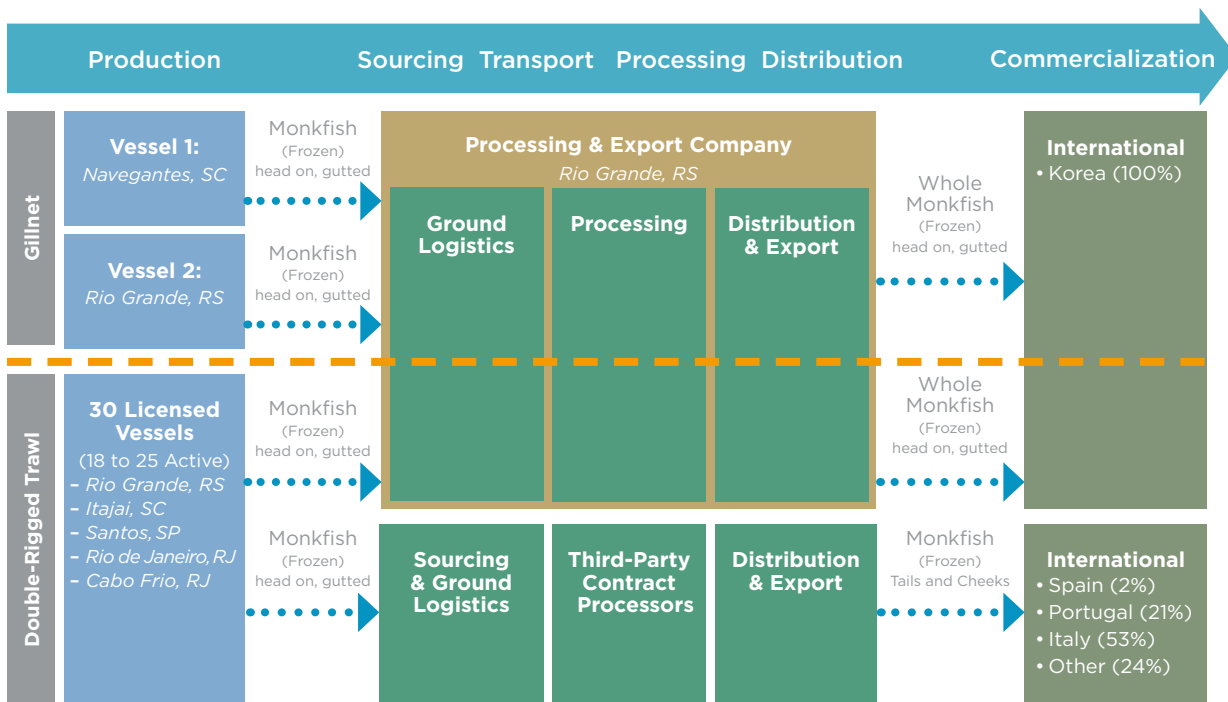
export (or contract with partners who do this). The processor role in this supply chain is almost entirely contracted, meaning that processors do not take ownership of the product, and a large portion of the final product is exported to Europe, primarily to Portugal, Spain, and France.

GILLNET FISHERY SUPPLY CHAIN

The gillnet fleet has two vessels, each dedicated entirely to monkfish production with no interests in other species. One of the vessels is owned and operated by a vertically integrated Asian export company, and the other is independently owned but sells exclusively to the same Asian exporter. This export company also owns a post-harvest processing facility in the port of Rio Grande.⁴⁰ Though it currently sources all of the gillnet monkfish product from both vessels, it does not appear to have a sustainability orientation.

The second vessel lands a portion of its harvest in Rio Grande during the winter months, but the majority is landed in the port of Itajaí/Navegantes, Santa Catarina, where the buyer collects the whole (head-on) frozen, gutted fish off of the boat and transports it 775 km (about 10 hours driving time) south to the post-harvest facility in Rio Grande, from where it is exported. An illustration of the current monkfish supply chain is included in Figure 3.

FIGURE 3: Current Structure of the Monkfish Supply Chain in Brazil



⁴⁰ Located in the state of Rio Grande do Sul, close to Brazil's border with Uruguay.

SOCIO-ECONOMIC PROFILE

Unlike small-scale artisanal fishers, industrial fishers are not among the poorest in society, though most come from disadvantaged backgrounds, and nearly half of all crew members lack a primary education.

Despite their relatively comfortable income (by Brazilian standards), crewmembers endure extreme danger and grueling conditions working at sea for weeks at a time, hundreds of kilometers from shore. Death at sea is not uncommon, and career-ending injuries risk pushing individuals back into financial hardship. The work is physically and emotionally challenging, and fishers are only able to spend a few days a month with family and friends on shore. Because fishers are paid a portion of the total landings value, they share risk in the overall enterprise and their livelihoods are constantly under threat from stock declines, landings variability, bad weather, equipment failures, and fisheries policy.

Because fewer vessels are needed to harvest up to allowed harvest levels, landings per crew member per year are much higher in industrial fisheries. In the monkfish gillnet fleet, this landings number is nearly 50 mt per crew member per year — significantly more than the 1 to 3 mt that near-shore, small scale fishers land per year in Brazil's artisanal fisheries.⁴¹

The larger commercial vessels have several crewmembers, averaging between 5 and 15 people per vessel in the domestic fleet. There is also a hierarchy of command, with corresponding income stratification. The captain, who may or may not be the vessel owner, is in charge, often with a trusted, experienced first mate managing fishing operations on deck while the captain maneuvers the boat. Because these vessels go to sea for weeks at a time, commercial vessels will often have a full-time chef onboard.

Unlike small-scale fisheries, there is a strict division of labor, and deckhands will generally be assigned different tasks based on experience and skill. The deckhands may be further stratified by their job or experience level, though this is not always the case.

Crew members, particularly deckhands, are often migrants from poorer rural areas, sometimes only for a specific season, and may work in multiple fisheries depending on seasonal activity and restrictions. As a result, there is very little data on where the crew members come from, and the level of community impact that fisheries improvements might achieve. What is clear, however, is that fishers in general, especially deckhands, come from among the least privileged sectors of society in Brazil.

The state of Santa Catarina, home to the port of Itajaí, ranks first among Brazilian states in terms of median income, education, and public health, and its literacy rate of 95% ranks it among the top three states in the country.⁴² Yet in a recent survey by the regional fishing association, 49% of fishermen in the state had not completed primary school, and only 14% had graduated from high school.⁴³ While hard to quantify, illiteracy is a problem, with levels much higher than the regional average, according to vessel owners.⁴⁴ The average age of commercial fishermen in southern Brazil is between 40 and 42 years of age, and nearly all are male.

Despite the low education levels and disadvantaged upbringings of many crewmembers, commercial fishing is relatively lucrative, in large part to compensate for the hardships of the job. Income levels in the São Paulo based trawl and gillnet fleet range from \$2,100 to \$8,500, (\$5,300 average), close to the average annual incomes of \$5,600 in the southern region of the country, and higher than average incomes for workers without a primary school education (\$3,000) and with a primary but not a high school education (\$3,500).⁴⁵

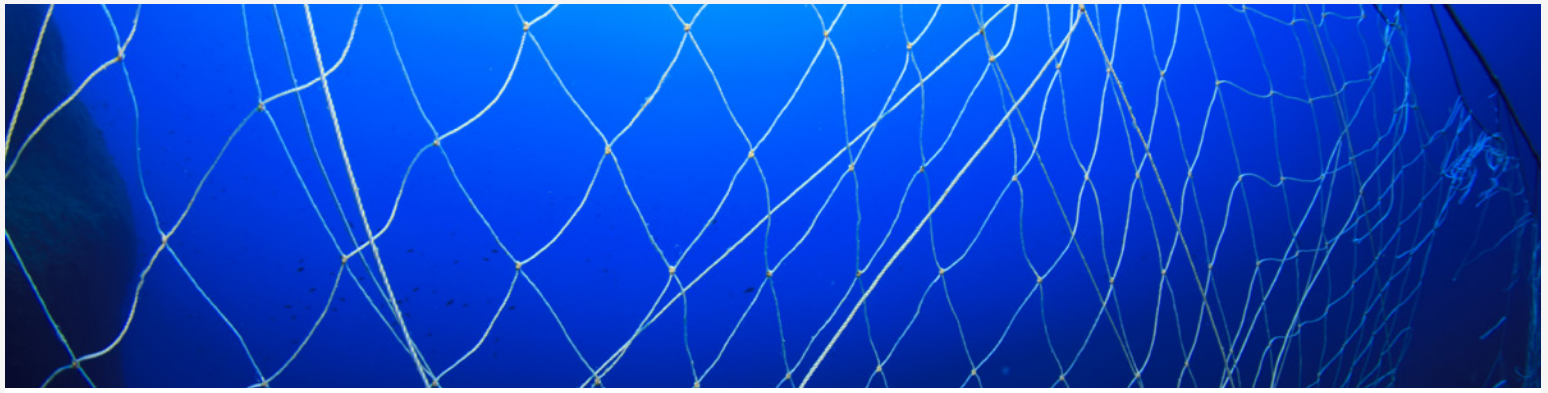
⁴¹ This number is representative of harvest levels in other small scale fisheries in Brazil based on conversations with fishers and other fisheries we've evaluated; however, it will ultimately depend on factors such as the species harvested, relative species abundance, and gear type used.

⁴² "Ideb: Santa Catarina supera metas e lidera entre os Estados - Terra Brasil". Noticias.terra.com.br. Retrieved 2014-08-03.

⁴³ SINDIPI, 2008. "Diagnóstico da Cadeia Produtiva da Pesca nos Municípios do litoral centro-norte catarinense."

⁴⁴ Personal communication.

⁴⁵ Brazil's Institute of Geography and Statistics (IBGE), 2010. "2010 National Demographic Census."



THE SAPO IMPACT STRATEGY

IMPACT INVESTMENT THESIS

The Sapo Strategy proposes a \$11.5 million investment to stabilize and restore the Brazilian monkfish stock biomass to 100% of its estimated stock biomass at maximum sustainable yield (B_{MSY})⁴⁶ (estimated at 63,000 mt) over an 11-year period, reduce the bycatch of unwanted and threatened species by 75% annually, and feed more people by increasing monkfish landings by nearly 5.0x. This would also deliver an estimated 7.5 million additional, sustainable meals to market over the 11-year investment horizon.

The impact investment thesis underpinning Sapo is supported by the following four impact drivers:

1. A 40%–60% reduction in both legal and IUU (illegal, unreported, and unregulated) monkfish landings by trawl vessels, resulting from vessel buybacks, catch limits, and management improvements to the trawl fishery.
2. A 75% reduction of juvenile monkfish catch, further enabling stock recovery and stabilization.
3. The implementation of science-based bycatch mitigation strategies in order to reduce total bycatch by 50%, reduce threatened-species bycatch by 75%, and decrease total discards by 60%.
4. The use of financial incentives to reward fishers for compliance with fisheries management improvements, including a 25% ex/vessel price premium and a vessel licensing concession arrangement in which participating CatchCo fishers will be able to use the vessels and infrastructure, while CatchCo would retain 60% of the total value of the catch to pay out to fishers and fund social benefits.

Upon the investor commitment of \$11.5 million to establish MarketCo, the capital would be deployed in stages over an assumed 7-year period, as follows:

Step 1: Invest \$750,000 out of the opening FMI reserve fund to pay for robust monkfish stock and bycatch assessments across both gear types; this will enable researchers to collect baseline data, establish sustainability targets, determine the feasibility of achieving these targets, collaborate with stakeholders, and define the scope of management improvements.

Step 2: Secure binding regulatory commitments from fisheries authorities and stakeholders in partnership with leading NGO policy advocates prior to committing to commercial investment; this will ensure that authorities implement and enforce strict, science-based access limits and vessel quotas for the double-rigged trawl fleet.⁴⁷

Step 3: Fund a \$2.8 million voluntary trawl vessel buyback program to retire up to 15 trawl vessels currently fishing monkfish during the first two years, reducing overall trawl fishing effort⁴⁸ and eliminating juvenile monkfish catch by up to 75% with the transition to deep-water gillnets.

⁴⁶ Level of stock biomass at Maximum Sustainable Yield (MSY), which is the theoretically largest yield (or catch) that can be taken from a species' stock over an indefinite period without impairing the fishery or driving it to collapse.

⁴⁷ Step 2 is a critical lynchpin for this strategy to be in a position to succeed.

⁴⁸ Dependent upon Step 2 to limit catch/vessel and establish overall TACs.

- a. Negotiate with the government to obtain either purchase options or right of first offer on any new licenses/quota issued for the gillnet fishery due to TAC increases resulting from better management.
- b. Study the socio-economic profile of both the trawl and gillnet fleets' crews, evaluate opportunities to bring former trawl crews into CatchCo and better address their needs.

Step 4: MarketCo would deploy the remaining \$750,000 in FMI reserve funds to implement a comprehensive fishery management improvement program in the monkfish gillnet fishery, which would be administered by CatchCo and funded over the long-term by MarketCo's commercial revenues. The management improvements would target:

- a. Significant reduction of bycatch – Particularly threatened species, by means of Step 1's recommended actions
- b. Monkfish stock recovery and stabilization at near B_{MSY} – Based on initial stock assessment data, develop and fund a plan to sustainably optimize yields over time, managed with strict TAC and vessel quota,
- c. International market-recognized sustainability designation(s) such as Marine Stewardship

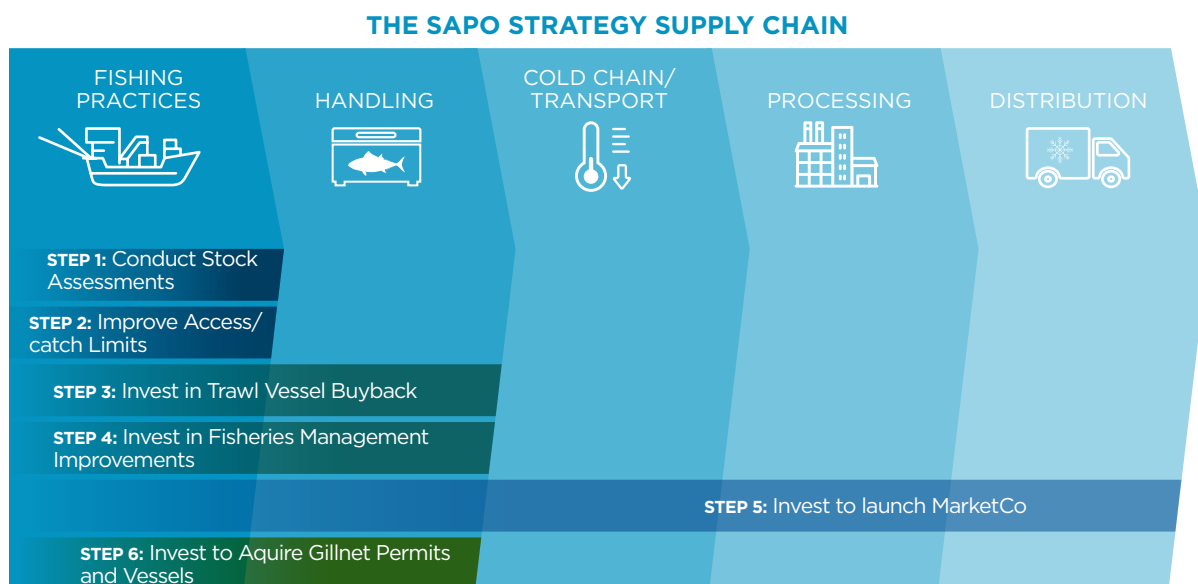
Council ('MSC') certification and SeafoodWatch "best alternative" labels

Step 5: In parallel with Step 4, invest \$2.0 million to launch MarketCo's asset light processing, distribution, and marketing business, and partner with leading gillnet operators to establish "CatchCo", an independent NGO serving as a sustainable monkfish fishers association to recruit, train, and employ fishers, provide social benefits, administer a Sustainable Fishing Rewards Program (SFRP) and implement fisheries management improvements (FMIs).

- a. Establish two subsidiaries under MarketCo, an operating company (OpCo) and an fisheries infrastructure asset company (AssetCo)

Step 6: Invest up to \$5.0 million in staged investments to exercise purchase options⁴⁹ on quota and licenses and expand the gillnet fleet under AssetCo⁵⁰ ownership as the stock recovers and TAC increases. The AssetCo investments would also include construction of two different landing facilities and in-house processing facilities as product volume scales up and project risks fall. These capital expenditures are assumed to be partially funded by commercial mortgage loans and cash flow from ongoing MarketCo business operations.

FIGURE 4: The Sapo Strategy's Supply Chain Interventions



⁴⁹ Obtained through the retirement of the double rigged trawl vessels.

⁵⁰ AssetCo is a subsidiary under MarketCo that holds all of the hard infrastructure assets, while the other subsidiary, MarketCo's Operating Company, would seek an asset light strategy.

Steps 1 through 4 are described in the Impact Strategy section of this report, while Steps 5 and 6 are described in the Commercial Strategy section of the report, but are highlighted herein as they serve as the cornerstone to the financial incentives that can be utilized to ensure durable sustainable

fisheries practices over time. If successful, The Sapo Strategy would catalyze government reform and implement significant management improvements, the combination of which would constitute a sustainable management regime for the directed gillnet monkfish fishery.

STEP 1: EVALUATE FEASIBILITY THROUGH INVESTMENT IN ROBUST FISHERIES RESEARCH

Because there have been no formal stock assessments of the fishery for nearly fifteen years, The Sapo Strategy recommendations are preliminary in nature. As a first step, investors must therefore invest \$750,000 to undertake an updated assessment of the monkfish stock in S – SE Brazil, as well as updated bycatch and habitat impact

assessments for both the double-rigged trawl and the gillnet fisheries. The assessments would allow investors to refine and solidify their plans before making significant investments. If found to be unfeasible at this stage, the Sapo thesis should either be modified or abandoned.

STEP 2: ESTABLISH AND ENFORCE ACCESS LIMITATIONS AND OTHER REGULATORY COMMITMENTS

To achieve a restoration and stabilization of the monkfish biomass, there must be an effective vessel and catch limitation in place in the fishery. The financial distress faced by trawlers currently discourages new entrants, but as the fishery recovers management efforts may be threatened by the same “tragedy of the commons” dynamic that created the problem initially.

The Brazilian Ministry of Fisheries was disbanded in October 2015 and its functions rolled into the powerful Ministry of Agriculture. Since most of the management reform elements outlined herein require stable, science-based policies and effective enforcement, this structural change may pose a short-term challenge while the new management framework is established. Sustainable fisheries impact investors, hoping to capture landings value and stock recovery upside, would likely find this proposition to be prohibitively risky without the assurance that the resource will be protected from overfishing and illegal harvesting.

Equally important is that fishing licenses and landings are protected from “dilution” caused

by unanticipated fleet expansion. This should be ensured by implementating a program of catch shares that allow the investor to hold a pro-rata quota in the fishery as a de facto property right. This quota would then increase in value as fisheries management investments lead to stock recovery and increased TAC.

Sapo proposes a collaboration with conservation partners to request that the management authorities implement the following elements into a new monkfish fishery management plan:

1. Establish a science-based TAC for the entire monkfish stock, with total limits for each gear type and vessel quotas.
2. Implement regulations to enable the effective conversion of trawl quota and/or licenses to gillnet.
 - a. Secure purchase options, or a right of first offer, on any new gillnet licenses/quota that are issued during the 11-year investment period in exchange for MarketCo’s funding of FMI efforts.

3. Cap double-rigged trawl vessel licenses at the number of vessels currently fishing, up to a maximum of 25 (before the vessel buybacks/retirements described in Step 3), and set individual vessel quotas based on the TAC.⁵¹
 - a. Enforce catch limits, minimum catch size, no-take zones, and seasonal closures based on assessment results.
4. Clarify procedures and tenure of vessel license and quota allocations, and provide strong legal guarantees against arbitrary seizure and/or dilution of licenses and quota.
5. Limit new gillnet licenses/quota to sustainable, science-based TAC levels, to be reviewed every two years.
 - a. Issue no new licenses/quota to the double-rigged trawl fleet as the TAC increases.
6. Secure a government commitment to assume all costs of biannual stock and bycatch assessments after the Sapó Strategy investment period ends.⁵²
7. Secure commitments to equip fisheries authorities with the resources to enforce against and prosecute IUU fishing activity.
8. Establish a minimum catch size of 50 cm to minimize the capture and sale of juvenile individuals.
9. Implement and enforce no-take zones, closed seasons, and rotating fishing grounds based on recommendations gleaned from the stock and bycatch assessments, to be reviewed every two years.

STEP 3: TRAWL VESSEL BUYBACK PROGRAM

Upon securing government management commitments, Sapó proposes implementing a double-rigged trawl vessel buyback program to reduce fishing effort.⁵³ The result would be a decrease in the juvenile monkfish catch, and other bycatch, while protecting seabed habitat. Shifting monkfish catch volumes from the trawl to the gillnet fishery should strengthen the business model and operations of MarketCo and CatchCo, while helping to fund critical management improvements. Specific elements of the vessel buyback program would include:

1. Invest \$2.8 million to acquire up to 15 of the remaining trawl vessels and licenses (assuming a cap is established as described in Step 2).
2. Permanently retire the associated trawl vessel licenses in order to lower the cap on licenses, and in return for the \$2.8 million buy-back investment, receive a guaranteed, enforceable purchase option on any additional gillnet licenses and quota that may result from TAC increases as the stock recovers in the future.
3. Study the socio-economic profile of both the trawl and gillnet fleets' crews, understand what their needs are and how these should be addressed, and evaluate opportunities to transition the former trawl crews into CatchCo and better address their needs.
4. Transition willing trawl vessel captains and crew to the gillnet fishery as a livelihood alternative.
5. Scrap the trawl vessels, thereby ensuring that they are not redeployed at a future date or into other fisheries.

⁵¹ There are currently an estimated 8 to 12 such vessels actively fishing in the region.

⁵² Sapó will assume all scientific assessment costs during the first 11 years.

⁵³ Remaining trawlers would be subject to TAC limitations both for that gear-type and on a per vessel basis.

STEP 4: FISHERIES MANAGEMENT IMPROVEMENTS

In parallel to the trawl vessel buyback program and associated regulatory reform, Sapo would implement comprehensive fisheries management improvements (FMIs) for the gillnet fishery, with the goal of Marine Stewardship Council (MSC)

certification. The FMIs would be designed to dovetail with the Brazilian fisheries authorities' regulatory commitments, and would include the components of the MSC Fisheries Improvement Project, including the following key elements:

CORE FISHERIES MANAGEMENT COMPONENTS	ACTIVITIES	PROPOSED MANAGEMENT IMPROVEMENTS
Stakeholder Engagement	Government Engagement	<ul style="list-style-type: none"> In addition to the regulatory reforms sought in Step 1, assist the government to create and implement a regional fisheries management committee <ul style="list-style-type: none"> Ensure regular meetings and processes Convene committee representatives from industry, NGOs, government, and academia
	Community Engagement	<ul style="list-style-type: none"> Create a committee to lead and manage the FMIs, centralize reporting, assign tasks, update indicators of Fisheries Management Improvements progress and monitor milestones and deadlines Prepare and publically disseminate annual report on FMI progress against target benchmarks, with external audits every three years
Policy Rules and Tools	Fishery Management	<ul style="list-style-type: none"> Based on the updated information gleaned from the bycatch studies, the FMIs must develop and implement a plan for reducing bycatch in the monkfish gillnet fishery <ul style="list-style-type: none"> Actions would likely include increasing gillnet mesh size from 280mm to 320mm, identifying and expanding no-take zones with seasonal restrictions, capping maximum soak times for nets,⁵⁴ and requiring net tracking beacons Implement minimum monkfish size restriction of 50cm As dictated by feasibility study and scientific assessments in Step 1, develop a robust management plan for the remaining trawl vessels
Reduce Fishing Effort	Improve Access Limitations	<ul style="list-style-type: none"> See Step 2
	Trawl Vessel Buyback	<ul style="list-style-type: none"> See Step 3
Compliance	Catch Accounting	<ul style="list-style-type: none"> Design, implement and operate an electronic Catch Documentation System (CDS) Reestablish an onboard observers program for the gillnet fleet, with data collected using eLogs Structure and implement a program to monitor the landings of the gillnet and trawl fleets that harvest monkfish
	Product Traceability	<ul style="list-style-type: none"> Design and implement full traceability system from point of capture to final sale

⁵⁴ Precedent studies on foreign charter vessels leaving nets in the water for 4.5 to 5 days have indicated serious bycatch concerns with lower quality product and significant discards, while local fishers experimenting with soak times of less than 48 hrs. have indicated successful reduction of bycatch, product degradation, and discards without financially punitive commercial implications such as lower catch volumes or higher operating costs.

CORE FISHERIES MANAGEMENT COMPONENTS	ACTIVITIES	PROPOSED MANAGEMENT IMPROVEMENTS
	Biological Monitoring and Assessment	<ul style="list-style-type: none"> • Fund and publish scientific reports based on primary and secondary research on bycatch impacts and proposed mitigation strategies • Fund ongoing bycatch assessments and research to quantify the impacts of mitigation strategies, course-correcting as needed • Fund research to map out sensitive ecosystems, bycatch “hotspots”, and spawning grounds • Undertake a new stock assessment including the last data available in order to update information regarding the current status of the resource • Update the MSY derived TAC benchmarks for management
	Local Enforcement Systems	<ul style="list-style-type: none"> • Install Vessel Monitoring Systems (VMS) on all vessels in the gillnet and trawl fisheries • Implement strict sustainable management covenants with CatchCo, as the operator of the gillnet fleet, with appropriate rewards and penalties to ensure compliance • Stipulate to CatchCo fishers under a long-term supply agreement that in exchange for access to the fishery and productive assets, operators must implement the fishery management plan, meet product quality control standards, ensure proper maintenance and care of assets and meet supply commitments over the investment period • Any CatchCo member found to be in violation of the agreement is subject to forfeiture of access to the fishery and any benefits derived through the CatchCo membership/consortium structure • This structure is legally enforceable and would create a self-policing mechanism in which the CatchCo leadership could impose a wide variety of punitive measures upon those members who violate the terms of the agreement
	Fisher Financial Incentives	<ul style="list-style-type: none"> • Flat 25% ex/vessel premium in price paid to CatchCo, and guaranteed offtake by MarketCo • CatchCo equity stake (10%) in MarketCo • Additional premiums for the harvest and sale of high-quality fresh product and MSC certification • A Fishery Benefit Trust would offer social support in the form of insurance, training, risk sharing, and microlending services through the CatchCo structure, funded by a portion of CatchCo’s 60% share of net landings value⁵⁵; the specific products and benefits offered would be determined as part of the socio-economic needs assessment and stakeholder collaboration mentioned under Step 3

MANAGEMENT AND IMPLEMENTATION

Sapo would first partner with and fund leading university researchers, local consultants and conservation NGOs to undertake scientific assessments of stock status and bycatch, and formulate a comprehensive, long-term fisheries management plan to address deficiencies. CatchCo would serve as the implementing partner of the

FMI outlined in Step 4, while serving as a partner in managing the trawl vessel buyback program.

In addition, Sapo would try to establish partnerships with international marine conservation NGOs to advocate for policy reforms and management improvements for the deep-water fleets of southern Brazil. The NGO’s role would be to help define critical elements of the fishery management improvements,

⁵⁵ CatchCo will receive 60% of the landings value per trip after trip expenses have been paid out, less a CatchCo concession administrative fee of 2.75% paid to MarketCo.

and would lead the Sapo Strategy's engagement with Brazilian fisheries authorities. Finally, Sapo would formalize partnerships with key stakeholders involved in the fisheries management improvements, including NGOs, research institutions, government, the Marine Stewardship Council, and a newly-formed demersal fishery management committee.

To ensure proper implementation and ongoing compliance, Sapo plans to use third-party verification and auditing of the fisheries management improvements to create additional discipline and accountability. The auditors will be asked to review monthly reports provided by CatchCo and the implementing partners, and to conduct formal annual reviews and surprise audits of fishing practices and management systems.

SUSTAINABLE FISHING REWARDS PROGRAM

The primary justification for establishing CatchCo as an independent, non-profit association for fishers and vessel operators is to have a vehicle through which to administer the Sustainable Fishing Rewards Program (SFRP). The SFRP encompasses the raw material premiums, the share of net landings value

paid to CatchCo, and 10% equity in MarketCo. The CatchCo SFRP structure serves as a strong incentive for members to implement and manage sustainable fishing practices, ensure improved handling and high quality product delivery, and guarantee that MarketCo's infrastructure assets are well-maintained.

RAW MATERIAL PREMIUM

Under the Sapo base case, MarketCo pays a flat 25% premium to prevailing monkfish ex/vessel prices when fishers meet the sourcing criteria and fisheries management requirements. These activities can be closely monitored by MarketCo, as the vessel owner, through investments in onboard cameras, VMS, eLogging capabilities, temperature sensors for the hold, and onboard observer

coverage, among others. All payments made to fishers for their 60% of the product value would be paid to CatchCo, which would equitably and transparently distribute the majority of the funds to the captain and crew. The remaining portion would be withheld by CatchCo to be applied to a Fishery Benefit Trust (FBT).

THE CATCHCO FISHERY BENEFIT TRUST

The FBT would pay for additional benefits for fishers such as health insurance, disability, family support services, health and wellness benefits and ongoing training and educational opportunities. In addition, it would serve as a risk pooling component, and a small part would be paid out to all members as a quarterly bonus to support those fishers who suffer bad luck and are affected by idiosyncratic volatility in weather, prices or harvest. Depending upon its ultimate structure (to be co-created with the CatchCo fishers themselves), the FBT could also be designed to help buffer fisher earnings over multiple years as well, aggregating savings during the good years which are invested in the fund and paid out to fishers during the lean years. As it grows, a portion of this fund could serve as a micro-lending facility

for qualifying members who are in need of financing and are shut out by traditional banking channels. The exact budgets and priorities of the FBT would be determined through the socio-economic needs assessment and stakeholder collaboration process mentioned under Step 3. The base case assumes that 70% of the premiums paid out go to fund the FBT, which is 16.9% of total CatchCo landings revenues.

The FBT would also hold the 10% in MarketCo equity assigned to CatchCo, which would be paid out to the FBT following the successful exit of the investment (assumed to occur in Year 11 under the base case model). This would endow the FBT going forward, and support CatchCo members after the end of the investment period.

FISHERIES MANAGEMENT IMPROVEMENTS BUDGET

The fisheries management improvements are estimated to require \$1.5 million in up-front investments to cover up to the first 4 years of the program, after which point the ongoing management expenses would be funded out of MarketCo's commercial operations. The total cost in constant 2015 dollars would be \$5.2 million over the ten years, averaging \$476,000 per year, which would pay for stock assessments, data

collection, bycatch studies, mitigation plans, the reestablishment of a fisheries management committee, and project implementation/administration (Figure 5). Over time Sapó's costs would diminish dramatically as a share of the projected monkfish revenue, illustrating the power of long-term stock improvements and raw material availability (Figure 6).

FIGURE 5: Cost Structure of Fisheries Management Improvements Budget

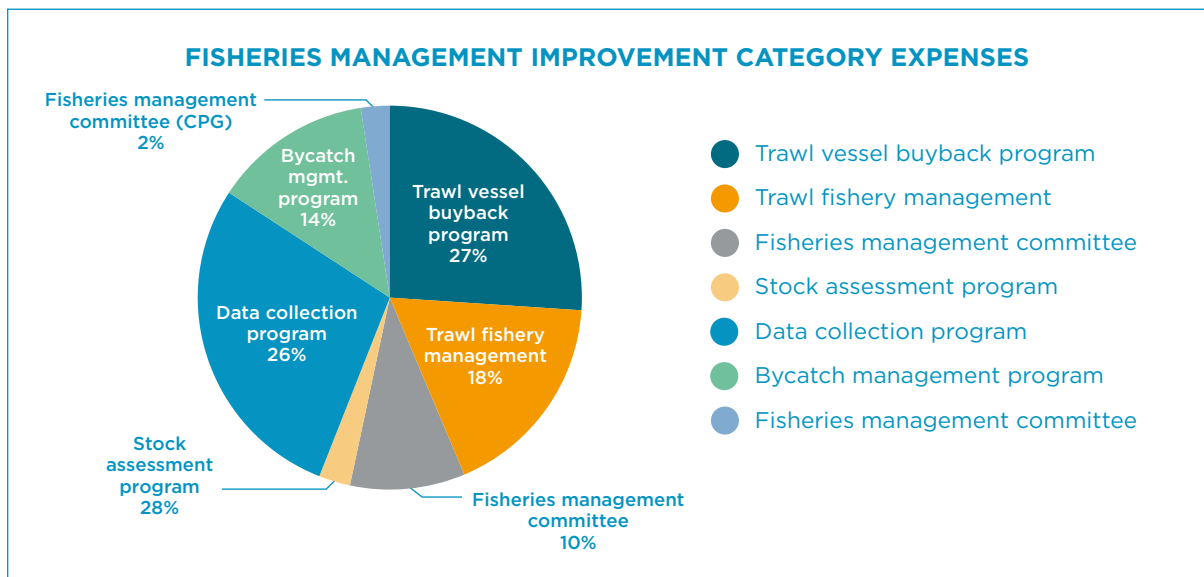


FIGURE 6: FMI Expenses as a Percentage of MarketCo Revenue Over Time

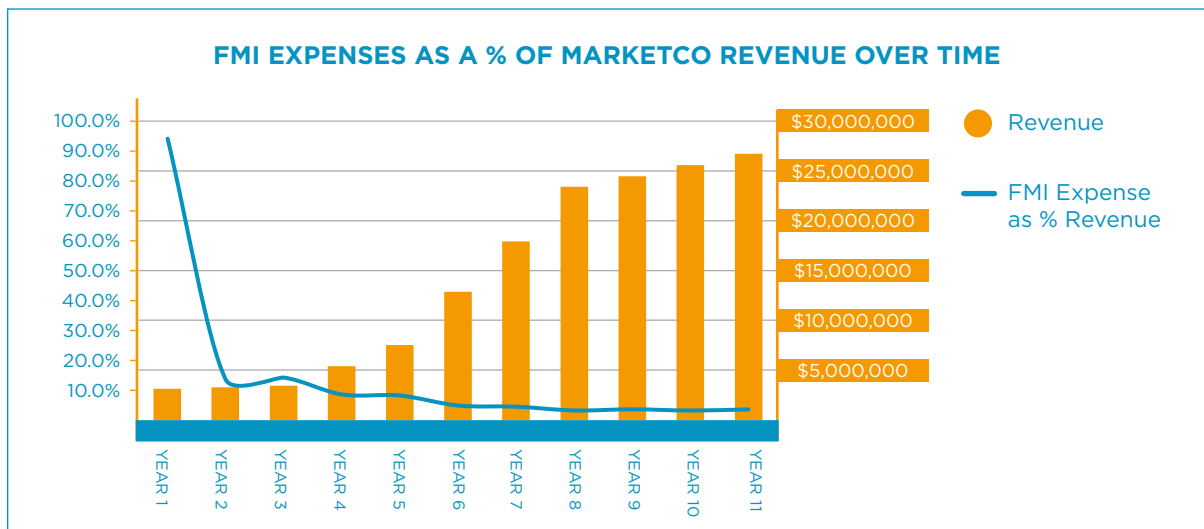
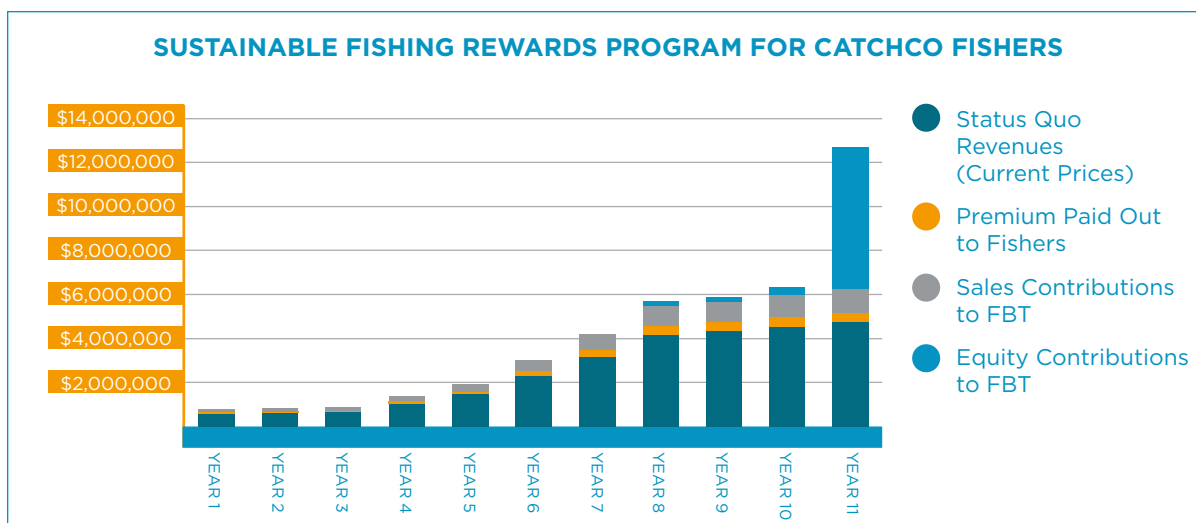


FIGURE 7: Sustainable Fishing Rewards Program for CatchCo



TARGETED ENVIRONMENTAL IMPACTS

Sapo targets a range of social and environmental impact returns, as follows:

ENVIRONMENTAL IMPACTS	
Biomass Restoration	<ul style="list-style-type: none"> Stock increases of between 25-100%, in order to reach 63,000 mt B_{MSY} (current biomass is unknown, but believed to still be significantly below B_{MSY})
Bycatch Reduction	<ul style="list-style-type: none"> Reduction of monkfish juvenile catch by 75%. Reduction of wreckfish catch by 80%, angel shark catch by 80%, and royal crab catch by 50%
Time Horizon	11 years
SOCIAL IMPACTS	
Increase in Meals	<ul style="list-style-type: none"> Estimated at 7.5 million additional meals per year at the end of Year 11⁵⁶
Employment growth	<ul style="list-style-type: none"> Growth in gillnet vessel crew employment from 18 to 90 people as the fleet scales up under the sustainable management regime; while many of these crewmembers are anticipated to transition from the unsustainable trawl fleet, that fishery is already facing severe financial distress and layoffs, as well as regulatory threats, and may not be a viable long-term option in any case for most of these fishers MarketCo business operations will create approximately 100 new jobs
CatchCo Security and Income Benefits	<ul style="list-style-type: none"> Fishers who join CatchCo will be paid 25% above prevailing first-sale prices for following sustainability guidelines, in addition to 10% premium for fresh product (reflecting higher market prices of fresh vs. frozen) Access to insurance products, healthcare, working capital, emergency reserve funds and risk pooling options will be evaluated and formulated together with members of CatchCo during Year 1 Under CatchCo, vessel crew would be provided with education and job training opportunities to expand skills in other areas as demanded
Social Impacts of Trawl Fleet Management	<ul style="list-style-type: none"> Closely study the implications of trawl improvements as part of the buyback program, and determine how best to transition trawl crew to either the CatchCo structure or other opportunities – given the economic challenges faced by the trawl fleet during the past several years, many people have already left this fishery and current vessel owners are eager to sell their aging, inefficient, costly vessels Due to these circumstances, and the desire of so many to “escape” this fishery and transition to something more lucrative, we anticipate minimal, if any, net negative social impacts; however, this will be closely monitored
Time Horizon	11 years

⁵⁶ Based on total landings increase by the gillnet fleet over the life of the project, calculated assuming a 200g portion size.



THE SAPO COMMERCIAL STRATEGY

STEP 5: LAUNCH AND OPERATE MARKETCO

A VALUE PROPOSITION

Sapo's value proposition is premised on five key drivers: (1) implementation of fisheries management improvements that restore and stabilize the stock biomass, allowing for total gillnet monkfish landings to increase by over 400% by Year 11, from the current 600 mt to 3,250 mt (85.5% of the assumed 3,800 mt sustainable TAC in place by Year 11, with the trawl fleet assigned the remaining 14.5%); (2) operating efficiencies gained through vertical integration of the supply chain; (3) accessing new, higher-value markets with increased product differentiation accompanying MSC certification and/or SeafoodWatch yellow or green designations; (4) higher-value product mix (including a higher percentage of fresh product); and (5) increased product utilization through sales of livers to high value markets and waste products for fish meal. Sapo estimates that these five factors can generate revenue growth for the CatchCo fishers of 7.9x, or \$3.3 million, and increasing MarketCo's export driven revenues by over 8.4x, or \$23.7 million over the 11-year investment period.⁵⁷

SUMMARY OF BUSINESS STRATEGY AND CONCEPT

Sapo proposes to launch MarketCo as a holding company of a set of vertically integrated operations that contribute to harvesting, processing, and distributing monkfish products to primarily European, Asian, and North American buyers. However, operations would initially be structured under an "asset light" OpCo subsidiary, a marketing, distribution, and export company with minimal hard assets, relying on a contract processing partner and third party infrastructure for logistics and other business needs.

However, through a process of phased, debt-financed expansion, MarketCo would ultimately own the hard infrastructure under its AssetCo subsidiary to run a state of the art processing operation, provide vessels to CatchCo, own license and quota (should it be adopted), and develop landing and docking facilities, all of which will meet GlobalGAP, HACCP, U.S. FDA, and EU export requirements and provide full traceability across the supply chain.

⁵⁷ As measured by Freight on Board (FOB) values, a commonly used metric which takes assumes revenues received before consideration of any import taxes, tariffs, or shipping costs.

Over a period of 5 years, AssetCo proposes to invest up to \$5 million in equity funded by the MarketCo’s (holding company) Capex reserve cash balance to acquire 8 gillnet fishing vessels, monkfish fishing licenses and quota.

Sapo would install an experienced, mission-aligned management team to lead MarketCo in fulfilling its core functions across the supply chain. In addition, under the “CatchCo” construct, Sapo would partner with an experienced fishing monkfish vessel operator to establish a non-profit association which would manage all on-water gillnet operations through a concession arrangement with AssetCo, provide new crew training to build capacity, offer organizational benefits and risk mitigation products (specifics to

be determined through socioeconomic evaluation and stakeholder engagement). For MarketCo, this arrangement guarantees a stable supply of responsibly harvested monkfish as it funds fishery management improvements across the gillnet fleet. The chart below summarizes the core commercial investments and activities that Sapo would invest in and coordinate (in addition to the fisheries management improvements described above) across the monkfish supply chain:





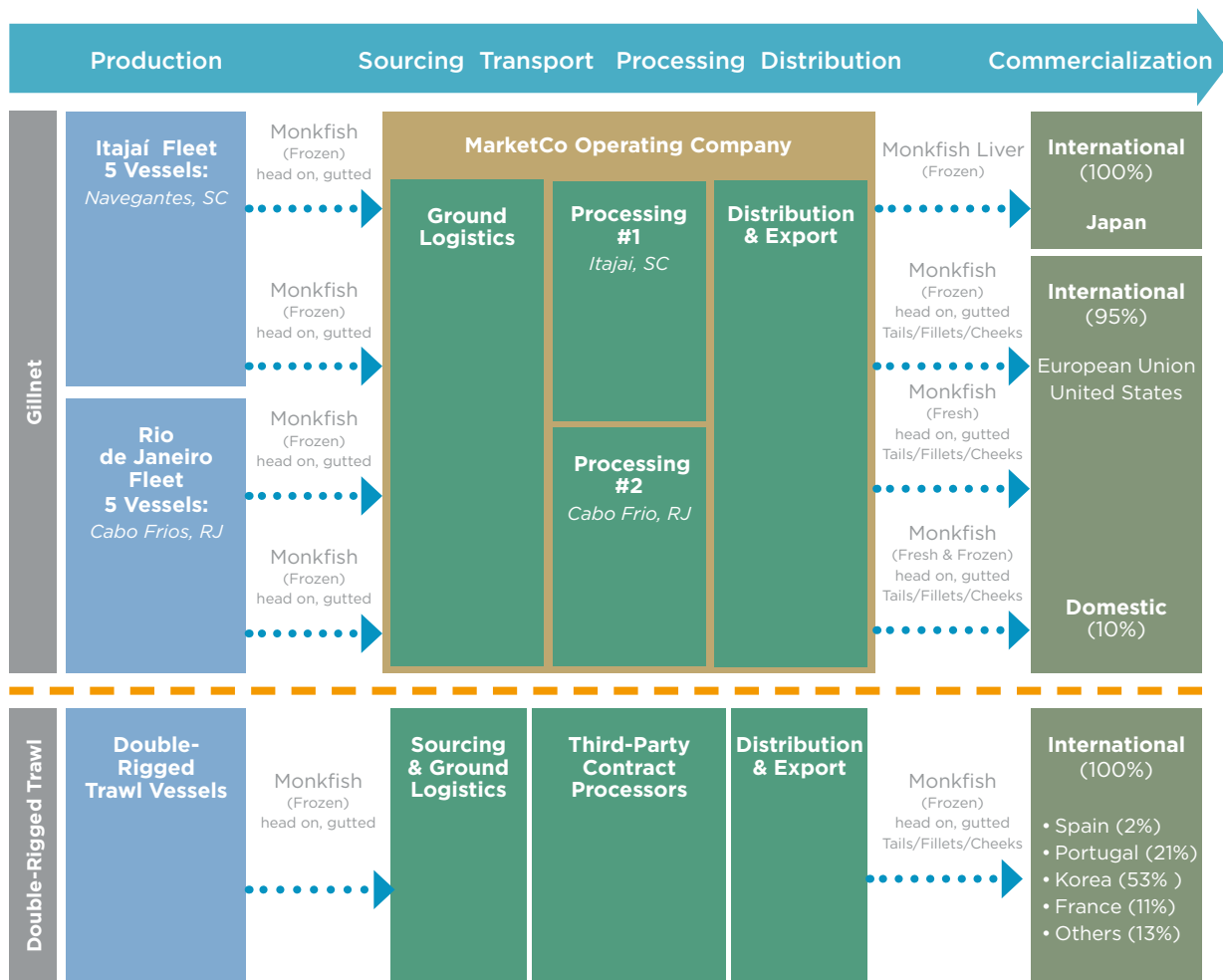
CATCHCO (PARTNER)	MARKETCO		
<p style="text-align: center;"></p> <p style="text-align: center;">Sustainable Monkfish Production</p> <ul style="list-style-type: none"> • Execute vessel leasing agreements with MarketCo • Organize a collective of Fishers to captain and crew the gillnet fishing fleet • Provide exclusive access to gillnet vessels and monkfish licenses • Harvest and deliver monkfish landings 	<p style="text-align: center;"></p> <p style="text-align: center;">Fishing Vessel and License Concessions</p> <ul style="list-style-type: none"> • Acquire up to 15 existing trawl vessels and convert linked fishing licenses to gillnet fleet; retire trawl vessels • Acquire up to 9 existing monkfish fishing licenses • Lease vessels and licenses to CatchCo in exchange for long term supply contracts 	<p style="text-align: center;"></p> <p style="text-align: center;">Processing and Packaging</p> <ul style="list-style-type: none"> • Construct modern, efficient, and hygienic landing facilities • Construct ice and cold storage system • Lease processing capacity • Construct or acquire new processing facility as landed volumes increase • Ensure product quality for export, including HACCP, Global GAP and country specific qualifications 	<p style="text-align: center;"></p> <p style="text-align: center;">Branding and Marketing</p> <ul style="list-style-type: none"> • Cultivate branding strategy to feature MSC certification • Develop marketing strategy and channel to reach higher-value market segments in Europe, Asia and North America

FIGURE 8: Envisioned Supply Chain Under the Sapo Strategy



STEP 6: STAGED INVESTMENT IN HARVEST, PROCESSING AND LANDING INFRASTRUCTURE, INCLUDING FLEET EXPANSION AS ALLOWED BY TAC INCREASES

PHASED VESSEL ACQUISITION AND CONCESSION PLAN

Over a period of 5 years, AssetCo proposes to invest up to \$5 million in equity funded by the MarketCo's (holding company) Capex reserve cash balance to acquire 8 gillnet fishing vessels, monkfish fishing licenses and quota.^{58, 59} Under the base case, the purchase of the first vessel is assumed to occur at the end of Year 3; however, the rationale behind staging the investment is to maintain flexibility, and the decision to invest in assets should only be undertaken once project risk is reduced and governance is deemed effective.

The vessel and permit acquisition enable MarketCo to create a de facto long-term tenure over the monkfish resource in order to best capture the expected future value created in the fishery, even if a formal quota system is not established in the interim. It also will be a point of leverage in enforcing compliance with sustainable fishing practices and quality controls (including MSC certification) to achieve the targeted impact returns, to differentiate the product, and to realize the full value of the landed volumes.

⁵⁸ The remaining -\$8 million would be financed by commercial mortgage loans secured by the assets themselves - total capital committed to vessels over the 5 years period would be \$12.2 million, including debt and equity.

⁵⁹ Note that Sapó anticipates that the vessel acquisitions will be financed in part through commercial-rate bank loans that in combination with the equity investments described enable purchase of \$12.2 million of gillnet fishing vessels over time.

MarketCo would seek to establish a joint venture with CatchCo, a hypothetical fishing vessel operator with experience in the capture and landing of monkfish in Brazilian waters. CatchCo would implement the on-the-water fisheries management improvements, and would receive a concession to operate MarketCo's gillnet vessels and permits, serving as the supplier of the gillnet monkfish landings to the processing and distribution operations of the company. In return, the CatchCo fishers would be able to utilize the vessel and keep 60% of the landings value after trip expenses have been paid out. This compares favorably to current catch sharing arrangements in which crews share 20-50% of the net landings value, and solves a critical problem for operators who cannot afford the risk of purchasing and holding vessels on their personal balance sheet, and do not want to tie up that capital. In addition, individual vessel owners are rarely able to take advantage of tax benefits associated with accelerated depreciation of the assets.

CatchCo's leadership would ideally have a shared vision of long-term stewardship of the monkfish resource and habitat, as well as a demonstrated commitment to sustainable fishing practices. Sapo would seek a co-investment of 10% of the total vessel acquisition cost from CatchCo in order to put CatchCo capital at risk and better ensure alignment of the CatchCo partnership activities and interests.

The vessel concession licensing structure, well-established in industrial fisheries around the world, is analogous to the farming leasehold arrangements and operating partnerships common in large-scale agriculture, in which independent operating companies lease farmland from landowners, then manage farming operations and either pay a fixed lease or share of returns (and associated risks) with the asset owner. The concession agreement MarketCo would execute with CatchCo would incorporate (1) an in-kind concession "payment"

for the use of vessels, in the form of the 40% of remaining catch by value after paying out trip expenses; (2) an administrative fee of 2.75% of the CatchCo net landed value paid to MarketCo to cover administrative expenses; (3) a robust supply offtake agreement; (4) sustainability compliance requirements and covenants, (5) quality standards, and (6) vessel maintenance requirements.

The supply agreement terms would commit a minimum share of monkfish landings, never in excess of Total Allowable Catch volumes (or the associated quota on a per vessel basis), to MarketCo for processing and distribution. This would have two critical benefits. First, before investing in capital infrastructure or marketing activities, MarketCo must ensure a minimum product throughput in order to become profitable. MarketCo's profitability, in turn, drives continued investment back into the fishery management improvements, training, price premiums, and profits for CatchCo. Second, the supply agreement terms and commitments ensure full traceability and sustainable product sourcing. The supply agreement terms would require strict adherence to fisheries management improvements, including catch documentation/vessel logging, areas fished, bycatch reduction tactics, ongoing bycatch data collection and assessment, size limits, and other measures to be defined.

Sapo believes that the vessel concession model can allow fleet capitalization to occur in a managed fashion that coordinates fleet management and logistics and employs sustainable fishing practices. In this manner, the gillnet fishing fleet, growing in size as the monkfish biomass stabilizes and recovers, is actively monitored for compliance, can support traceability of the product, is improving product quality and food safety, and creates opportunities for economies of scale and product differentiation.

LANDING FACILITIES

Phased installation of modern landing facilities would likely first occur in Itajai, Santa Catarina, followed by a second investment elsewhere once scale is achieved (with Cabo Frio, in Rio de Janeiro being a promising location). These landing sites would improve the handling of the landed volumes as they are moved from ship to shore, reduce

direct waste of damaged products, and improve the hygiene and food safety compliance of the landing activities. These improvements, in turn, would enable MarketCo to capture higher prices for greater volumes of final products delivered to market, even without any increase in biomass or Total Allowable Catch levels. (See Figure 9).

PROCESSING AND PACKAGING

Sapo proposes that the initial processing activities be contracted to third-party processing plants during the first 5 years, due to the initially low volumes of raw material and the tremendous uncertainty and risk in making large, debt-financed capital investments before the business model has been validated and the management regime has proven effective and durable.

Eligible processors would need to hold a valid sanitation certificate through the Brazilian Ministry of Agriculture's Federal Inspection Service (SIF, in Portuguese), which is required for sales of finished goods both across state lines and for export. Sapo has identified four third party contract processing facilities with SIF certification: one near a current monkfish landing facility, and at least two other

facilities in the Itajaí region in the process of obtaining SIF status. All four of the eligible facilities are qualified to export frozen product, with only one able to export fresh product, which is held to a much more stringent criteria.

In the second phase of the capital plan, upon achieving raw material landings volumes of close to 2,000 mt, (assumed in year 5 under the base case), AssetCo would invest \$2.2 million in a new, state-of-the-art, in-house processing operation for monkfish and retained bycatch, with a line capacity of 2,000 mt and storage capacity of 500 mt. The processing facilities would be designed to enable efficient processing of both fresh and frozen monkfish for overnight shipment to customers around the world.

RAW MATERIAL SOURCING STRATEGY AND HARVEST PLANNING

As regulators and scientists gather additional stock assessment data, assuming strong evidence of stock recovery, the total monkfish TAC could be increased to 3,800 mt, 85% of which Sapo assumes to be allocated to the gillnet fishery (~3,250 mt). Assuming that stocks increase, monitoring and enforcement improve, and the science becomes more robust, TAC increases could result in landings of up to 70%-80% of MSY, a level consistent with better-managed monkfish stocks in other parts of the world.^{60, 61}

MarketCo's supply agreement and vessel concession program would enable it to source consistent supplies of sustainably harvested monkfish, while sharing 60% of the total net landed value with CatchCo. By reducing catch volumes in the trawl fishery through the vessel buyback program, and elimination of IUU fishing activities, Sapo would enable an increase in gillnet monkfish landings from the current ~600 mt to the current TAC of 1,500 mt. Assuming that the total TAC can be sustainably increased to 3,800 mt as the stock stabilizes and better science informs management, Sapo would consider the expansion of the gillnet fleet capacity accordingly. The current model assumes scaling

the fleet to 10 vessels over the first seven years, in coordination with strict monitoring, best-in-class science, (including frequent data collection, stock assessments, and bycatch assessments), and adaptive management of the fleet in response to research outcomes.

The harvest strategy would ultimately support fleets and processing facilities at each of the two regional hubs (See Figure 9). The first of these will be based in Navegantes/Itajaí. These Itajaí and Navegantes sister cities are separated by the Itajaí-Açu River, which forms a natural deep-water harbor, and serves as the largest commercial fishing port in the country. The port is also the eighth largest export site in the country, in a municipal region of 250,000 people. Because Santa Catarina is the center of Brazil's meat industry, the port specializes in the exportation of perishable food products. Navegantes Airport offers domestic commercial flights to the major hubs in southern Brazil, with 14 daily direct flights to São Paulo and four daily flights to Rio de Janeiro. The fishing grounds along the continental slope are located approximately 170 km due east of the port, or 12 hours by boat.

⁶⁰ Using NOAA's proxy measure for monkfish MSY based on pristine biomass, and assuming a pristine biomass equal to the measured biomass in 2001 of 63,000mt, the MSY in this fishery may in theory be as high as ~8,000mt based on comparable numbers from the U.S. monkfish fishery.

⁶¹ Although nearly all global monkfish fisheries fall short on sustainability measures, this is primarily due to the high levels of bycatch and habitat damage associated with the gear types, which is dominated by trawl gear. However, there are several stocks that are currently considered well-managed from a sustainable yield standpoint, including Iceland and North America.

The second hub would eventually be added as sustainable seafood production ramps up after year 8 with monkfish producing at near-MSY and other products being brought into the model. This would likely be in the state of Rio de Janeiro, with Cabo Frio a potential location due to its deep, natural harbor, low traffic, existing fishing industry and processing facilities, and access to fishing grounds. Cabo Frio is located 150 km due east of the city of Rio de Janeiro, which is a 2½-hour trip by truck, and it is home to an

existing processing facility with licenses to process and export frozen fish. Cabo Frio currently processes monkfish caught from the local trawl fleet. A primary attraction is its location on the seaward end of a cape that lies just 100 km from the fishing grounds, cutting travel time to between five and seven hours (depending on vessel type) and enabling the more-efficient sourcing of fresh product, which (unlike frozen fish) cannot remain at sea for more than a few days and still maintain its high quality.

SALES CHANNELS

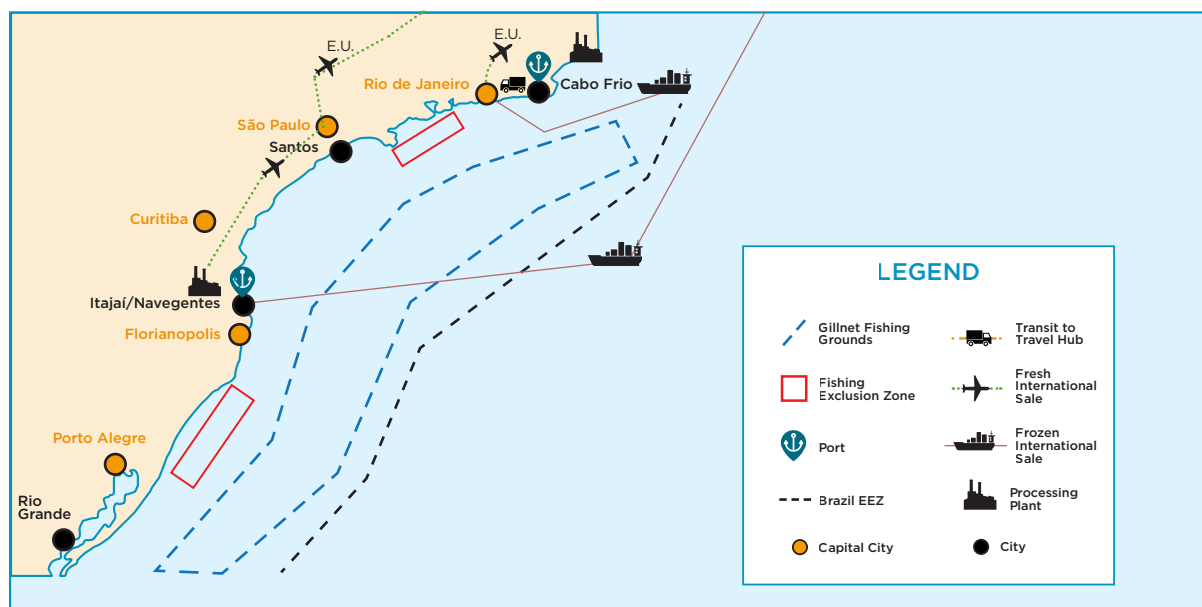
MarketCo's branding and marketing strategy for the monkfish tails would be aimed at direct sales to retail operations such as Migros, Coop, and Waitrose, which are representative of retailers serving relatively affluent customer segments in Switzerland, France, Germany, Spain, and the U.K. Each of the retail customers highlighted herein has made explicit sustainability commitments to source seafood from certified or otherwise sustainably harvested fisheries.

Since at present there are no MSC-certified monkfish fisheries anywhere in the world, Sapo believes that many buyers are eager to access sustainably harvested monkfish products in adequate

volumes. While there is no specific assignment of a "sustainability premium," evidence suggests that well-managed gillnet monkfish products receive a price premium on the order of 7.5% to 15%, particularly when sold to the established EU buyers. Sapo would expect that 100% of sales of monkfish tails be delivered through this channel for the first three years of production.

Livers would be processed into ankimo and sold to food service companies in Japan, with gradual expansion to Japanese restaurants in Brazil.⁶² As scale grows, the company would seek large buyers willing to pay higher prices for quality products.

FIGURE 9: Map of Harvest and Route-to-Market Strategy Under the Sapo Strategy



⁶² Brazil is home to a large Japanese diaspora nearly as large as that in the U.S., and there are more Japanese nationals living in São Paulo than any other city in the world besides Tokyo.

The demand for monkfish comes almost entirely from the EU and Asia, as well as a growing North American market. France, Spain, and Portugal were the initial consumers of monkfish, and remain among the top buyers for the product.

While not initially a significant source of revenues, sales to high-end Brazilian food service should be pursued, cultivating the local market through elite restaurants and the adaptation of “Brazilian-style”

preparations such as “monkfish churrasco.” As foie gras was recently banned in the city of São Paulo, the monkfish liver, often called “foie gras de mer,” could be a popular replacement among wealthy paulistanos.

MARKET CONTEXT

Monkfish was considered to be a “trash” fish until the past few decades, having previously been caught only as bycatch by vessels targeting commercially attractive groundfish such as hake and cod. Up until the latter part of the 20th century, it was referred to as “poor man’s lobster,” in reference to the firm, slightly sweet tail-meat similar in consistency to lobster or scallops. However, the product began to take hold in European haute-cuisine during the 1960s and 1970s, particularly in France, and worldwide

production and commercial value began to grow. Its popularity spread to North America (which was a major producer of the product but had no domestic market) during the 1990s, and began to appear as a staple in upscale restaurants during the early 2000’s. Korea and Japan experienced an even more rapid growth in demand for not only the firm white meat of the monkfish tails and cheeks, but also the liver, which is used in a variety of dishes and often prepared as “ankimo”, similar to foie gras and especially sought after in Japan.

DEMAND

No longer the “poor man’s lobster,” monkfish is today among the top 10 highest value seafood products in the world, and demand is growing rapidly. Eleven countries constitute 97% of demand for the product, importing approximately \$421 million annually.⁶³ The demand for monkfish comes almost entirely from the EU and Asia, as well as a growing North American market. France, Spain, and Portugal were the initial consumers of monkfish, and remain among the top buyers for the product. The U.K., Switzerland, and Germany also have strong but somewhat smaller demand, though these markets are somewhat smaller. While the upmarket food service industry has been a primary driver of monkfish demand, there is increasing penetration into the retail grocery segment, as Europeans are learning how to prepare this slightly unconventional fish (Figure 10).

South Korea has become a dominant player in the global market during recent years, such that over 50% of North American exports and ~50% of Brazilian product is destined for this market (Figure 11). Seoul imports ~19,000 mt annually, with a total value of over \$75 million (~\$4-\$5/kg FOB).⁶⁴ With the relatively recent boom in popularity, there are now thousands of restaurants specializing in a dish called agujjim, or “braised spicy monkfish,” which sells for \$50 to \$90 a serving. While Europeans demand processed tails and cheeks, Koreans will typically buy the fish whole (gutted), as this market also values the stomach and liver of the fish, in some cases more than the tail meat.

In North America, the market remains somewhat less mature, with strong and growing penetration in the upscale food service segment, especially in large urban centers along the East Coast. However, smaller market food service providers outside of

⁶³ FAO FishStat, 2014.

⁶⁴ Freight on Board (FOB) value, a commonly used metric which takes assumes revenues received before consideration of any import taxes, tariffs, or shipping costs.

FIGURE 10: Monkfish Product Volume Demanded by Major International Markets

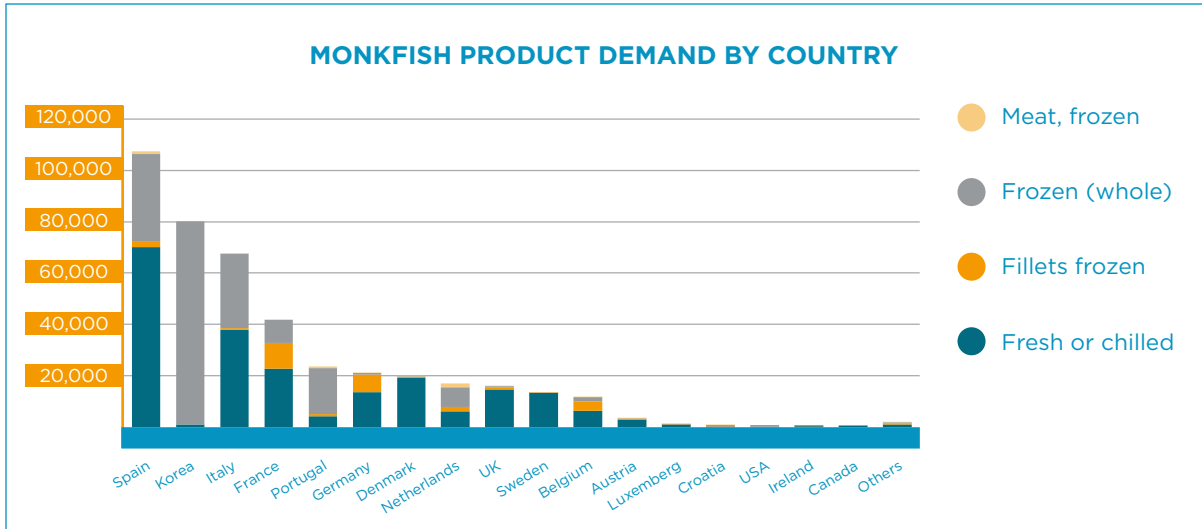
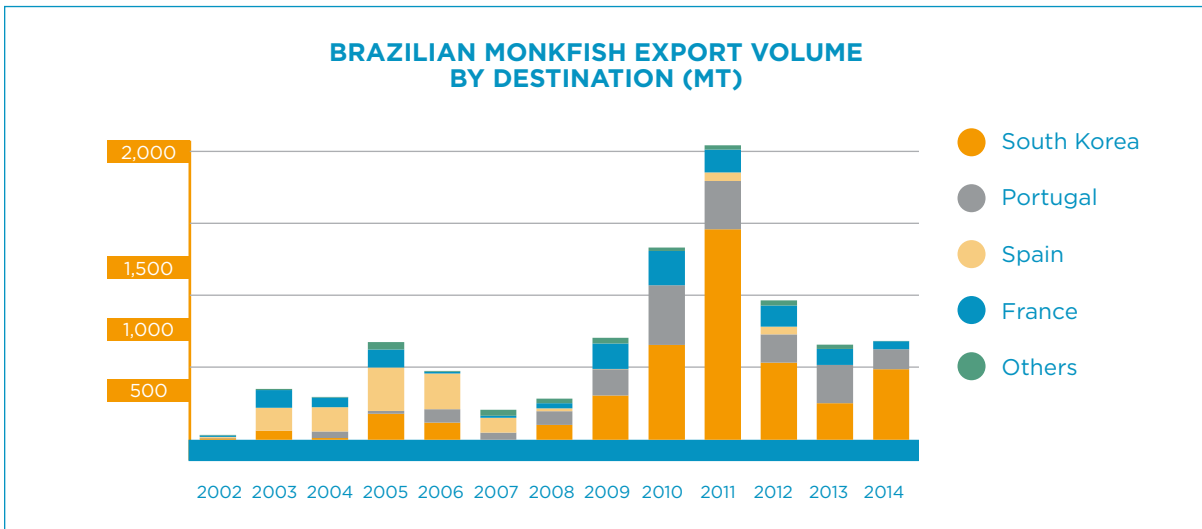
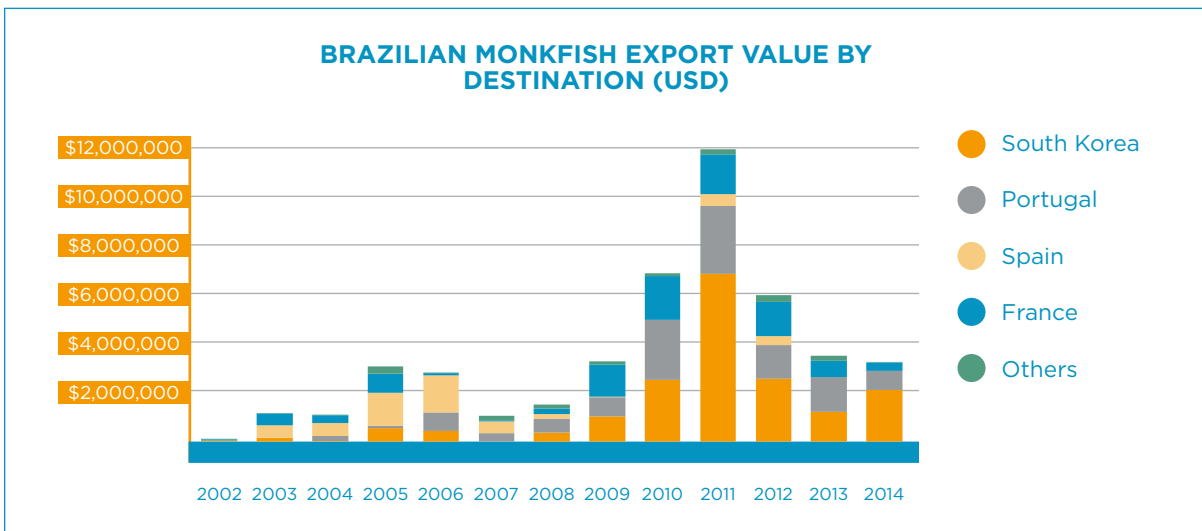


FIGURE 11: Brazilian Monkfish Exports by Destination (2002-2014)



the Eastern Seaboard are still an undeveloped market, and there is likewise relatively little retail demand, as many Americans are not familiar with how to prepare the fish.

Monkfish is virtually unknown as a domestic product in Brazil; however, given its popularity in Portugal, many Brazilians who travel there enjoy it as “*tamboril*”, and do not realize that the same product is available locally back home. While the business strategy is based on an export proposition, there is significant upside potential in developing the domestic market through high-end food service providers, which could command higher margins and would be a valuable hedge against currency fluctuations and domestic inflation.

Buyer power is relatively low for this product, however, because sourcing high-quality, traceable product in adequate volumes is extremely challenging. As a result of this, buyers are effectively “price takers,” despite the fact that in many cases producers are quite fragmented. This dynamic is a result of high barriers to entry, enforced TACs, overfishing in Namibia, and declining CPUE in the European fishery.

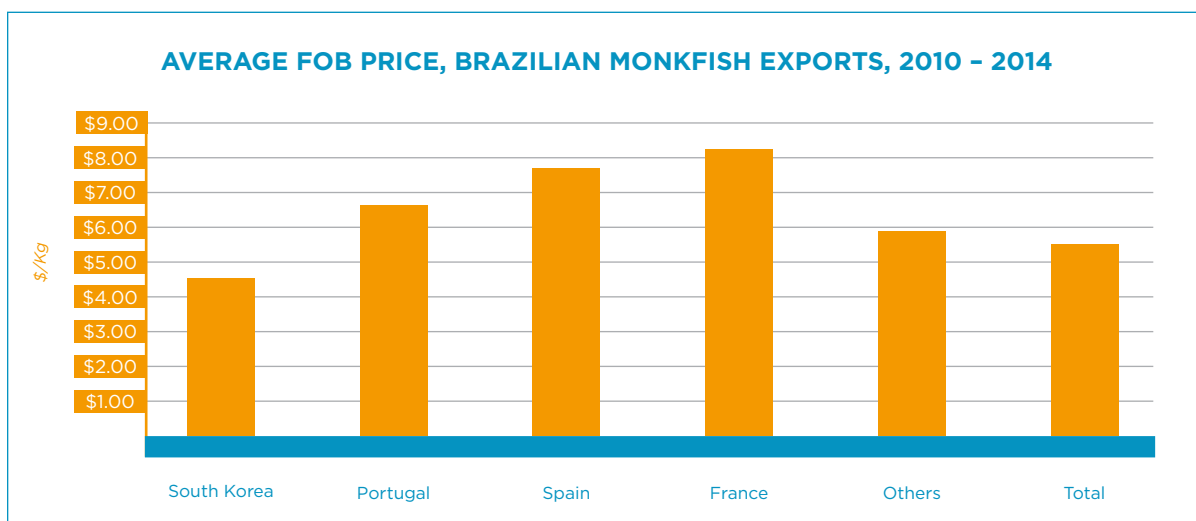
High-quality, fresh, product has the highest demand, and may command a price premium of 20%–30% over comparable frozen, trawl-caught fisheries. There is also a strong indication among buyers in the major European monkfish markets

of a willingness to pay an additional premium for MSC certification, as many leading retailers have signed pledges to purchase only MSC certified or Conservation Alliance FIP compliant products.⁶⁵ In the absence of MSC-certified product, these retailers are desperate to fulfill growing demand for monkfish while abiding by their sustainability pledges. The challenge faced by most fisheries is the fact that the majority are trawl-harvested, and therefore cannot meet guidelines around bycatch.

Brazil is thus in a position to become the largest global provider of premium quality, gillnet-caught, MSC certified and/or Conservation Alliance FIP compliant monkfish in the world. Ideally, this would have the additional impact of ushering in a shift to sustainable seafood production and consumption in the country, which in time would create a domestic high-end consumer market for responsibly sourced local product at a scale that would support quality and fisheries management upgrades across Brazil’s many fisheries currently under pressure.

FOB price varies by export destination as a result of regional market prices, but also varies in large part due to the nature of the products exported. The products that reach markets in France, for instance, are usually value added filet and tail products that fetch a high price per kilogram when compared with the entire monkfish that typically is exported to South Korea (Figure 12).

FIGURE 12: FOB Product Prices Received by Exporters from Primary Export Destinations



⁶⁵ <http://www.solutionsforseafood.org/wp-content/uploads/2015/03/Alliance-FIP-Guidelines-3.715.pdf>

SUPPLY

While generically referred to worldwide as simply “monkfish,” the product is actually made up of seven commercial species within the *Lophius*

genus, which are effectively pure substitutes. There is little or no differentiation between species in the market (Figure 13).

FIGURE 13: Global Monkfish Species Distribution and Status

SPECIES	ENGLISH NAME	OCEAN	GEOGRAPHY	LATITUDE/ LONGITUDE	MAX L	AVG. L	MAX. WT	MAX. AGE	IUCN REDLIST STATUS
<i>Lophius piscatorius</i>	Angler	N. Sea, NE Atlantic, Med.	N. Scandinavia to Strait of Gibraltar, incl. Mediterranean	75°N - 30°N, 28°W - 46°E	200cm	100cm	57.7kg	24 yrs	Not Eval
<i>Lophius budegassa</i>	Blackbellied angler	E. Atlantic, Mediterranean	British Isles to Ivory Coast of Africa; east to Italy	59°N - 12°N, 18°W - 2°E	100cm	50cm	n/a	21 yrs	Not Eval
<i>Lophius gastrophysus</i>	Blackfin goosefish	W / SW Atlantic	N. Carolina (U.S.), Gulf of Mexico, south to Argentina	39°N - 39°S	90cm	45cm	18kg	19 yrs	Least Concern
<i>Lophius vaillanti</i>	Shortspine African angler	E. Atlantic	African; Cape Verde to Gabon	17°N - 5°S	50cm	40cm	n/a	n/a	Not Eval
<i>Lophius vomerinus</i>	Devil anglerfish	SE Atlantic	Namibia & South Africa	25°N - 37°S, 12°E - 99°E	95cm	50cm	n/a	11 yrs	Near Threatened
<i>Lophius americanus</i>	American angler	NW Atlantic	Canadian Maritimes to Cape Hatteras, NC	60°N - 25°N, 81°W - 52°W	120cm	90cm	22.6kg	30 yrs	Not Eval
<i>Lophius litulon</i>	Yellow goosefish	NW Pacific	Japan, Korea, & the Yellow & East China seas	n/a	100cm	57cm	n/a	n/a	Not Eval

The total annual monkfish landed globally have averaged near ~100,000 mt in recent years, with an average global first sale value of ~\$450 million, or \$5.25/kg. There are six major fisheries globally across the following geographies: (1) North Sea and Barents Sea (including Norway, Iceland, Denmark, and U.K.); (2) North America and NW Atlantic (Canadian Maritimes south to North Carolina); (3) East Asia / South China Sea / East China Sea (China, Japan, Korea, Taiwan); (4) SE Atlantic (Namibia, South Africa); (5) East Atlantic and North Africa (U.K., France, Portugal, Spain, Morocco, Italy); and (6) SW Atlantic (southern/southeastern Brazil). Landings are highest in the East Atlantic/ North African fishery, due to both the large number of EEZs it covers, as well as the abundance of two of the larger monkfish species cohabiting these waters, *L. piscatorius* and *L. budegassa*, which make up about 30% of total landings (Figure 14; Figure 15). The latter fishery was also the first to start harvesting monkfish commercially at scale,

and as such is the most mature and scientifically well-understood. SW Africa produces the second greatest volumes, at 16% of total catch; however, this stock has been listed by the IUCN and others as “Near Threatened,” and suffers from overexploitation, insufficient monitoring, enforcement, and data collection.

Globally, the majority of monkfish landings are via trawl fleets in all fisheries, which make up close to 90% of the total catch. The Asian and Southern Africa fleets are 100% trawl, and the Eastern Atlantic/N. African fisheries have small numbers of gillnet landings but are substantially trawl-directed fisheries as well. The fisheries in the NW Atlantic, SW Atlantic, and N. Atlantic are characterized by both trawl and gillnet, though gillnet is in the minority and made up only about 35% of the North American production, 30-40% of Brazilian landings, and less than 15% of the North Atlantic production as of 2014.⁶⁶

⁶⁶ FAO FishStat Dataset, 2015.

FIGURE 14: Global Landings by Country, Species, and Region

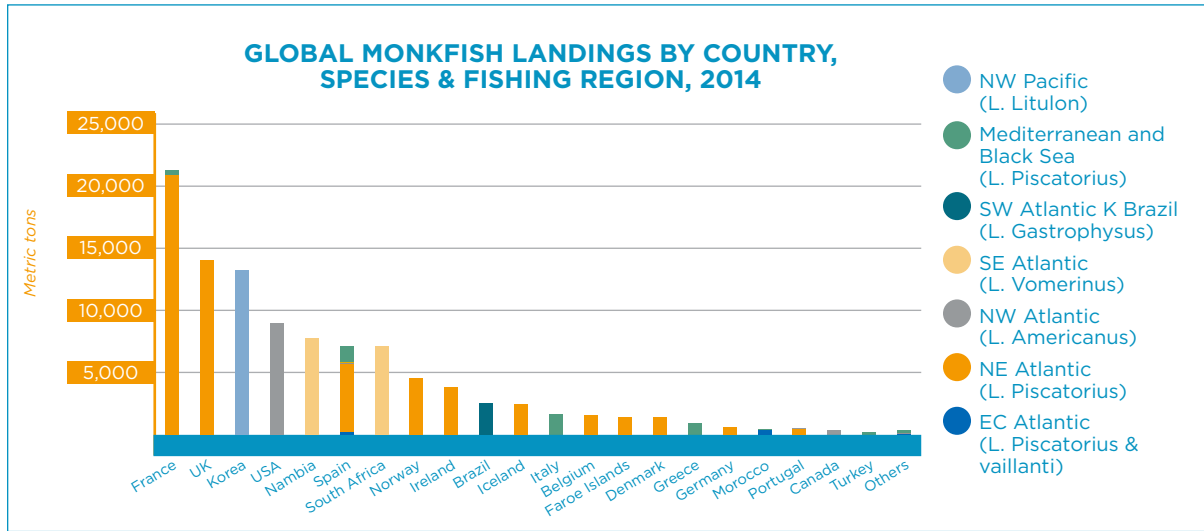
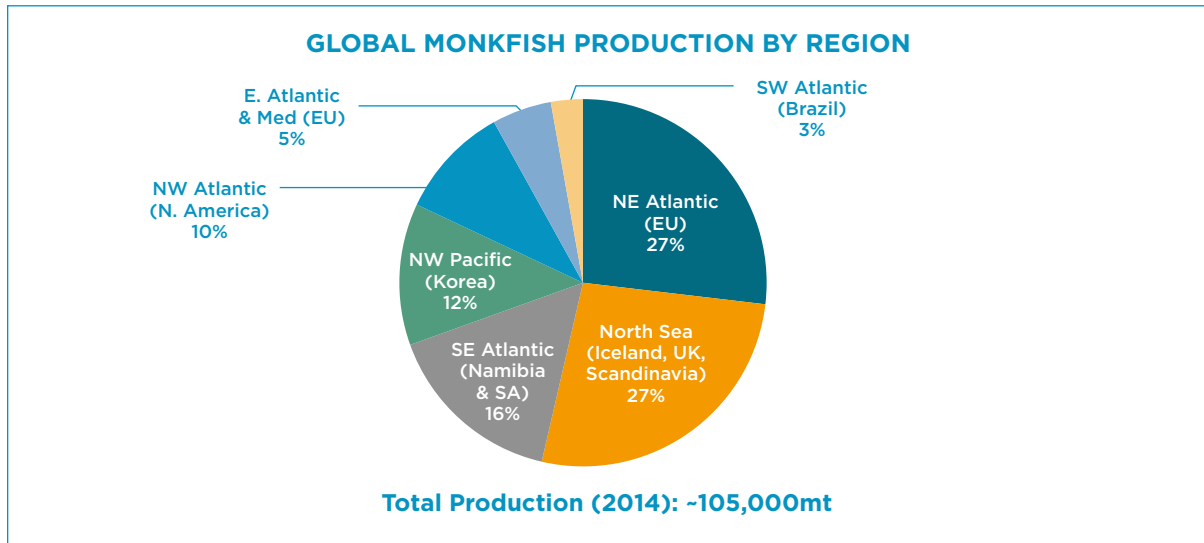


FIGURE 15: Global Production by Region



Because of the dominance of trawl gear in harvesting this species, many concerns have been expressed about the sustainability of production, and demand is high for the gillnet-caught fish, which tend not only to be larger and of higher quality, but also to be caught with a much more selective gear that may potentially reduce discards of the target species by nearly 50%, with substantial bycatch reduction as well. In addition, gillnets are

fixed gear-types that fish “passively,” so the impact on the seafloor and sensitive habitats is minimal compared to the highly disruptive and unselective trawl gear. However, fishing monkfish with gillnets requires an additional level of skill and experience, and is much more difficult than trawling and is more difficult than trawling, which has limited the adoption of this gear-type.



COMPETITION

The Sapo Strategy has identified three classes of competing monkfish suppliers internationally: (1) vertically integrated producers, (2) low-cost operators, and (3) small-scale operators. Large, well-capitalized, consolidated, vertically integrated players operate in, Asia, North America, and Europe. Although this segment has significant scale and reach, fisheries in these regions tend to have higher costs of production, so the majority of this catch is trawl, which is of lower quality and is less desirable than that caught by gillnet. Almost all of the products offered by the vertically integrated segment are frozen. As the primary consumer markets are co-located with these fisheries, the majority of this product is not exported but sold locally or regionally.

Low-cost operators typically operate in Namibia, South Africa, China, and North Africa, where labor costs are low and fuel prices are often subsidized. Virtually all of the monkfish in this segment is trawl-caught, and there are often inadequate fisheries management frameworks, governance, traceability,

quality control, and post-harvest infrastructure in place, for which the highest-end buyers are willing to pay a premium. Previously, Brazil was not cost competitive with this group. However, with the Brazilian *real* devaluing some 60% since 2011 relative to the dollar — with half of that decline occurring in the past year — this cost gap with the low-cost producer segment has narrowed.

Smaller, gillnet vessels focus primarily on procurement of fresh product in North America and Iceland, with a concentration on end-customers who demand premium quality, sustainability, traceability, and branding. These suppliers are trying to enter the same markets that Sapo targets, and while they are higher-cost producers, they have both strong connectivity to high-value markets and strong relationships with buyers. This class of product is constantly in short supply and demand is growing, given sustainability commitments made by many of the major buyers, which at present they are having trouble meeting.

Low-cost operators typically operate in Namibia, South Africa, China, and North Africa, where labor costs are low and fuel prices are often subsidized.



FINANCIAL ASSUMPTIONS AND DRIVERS

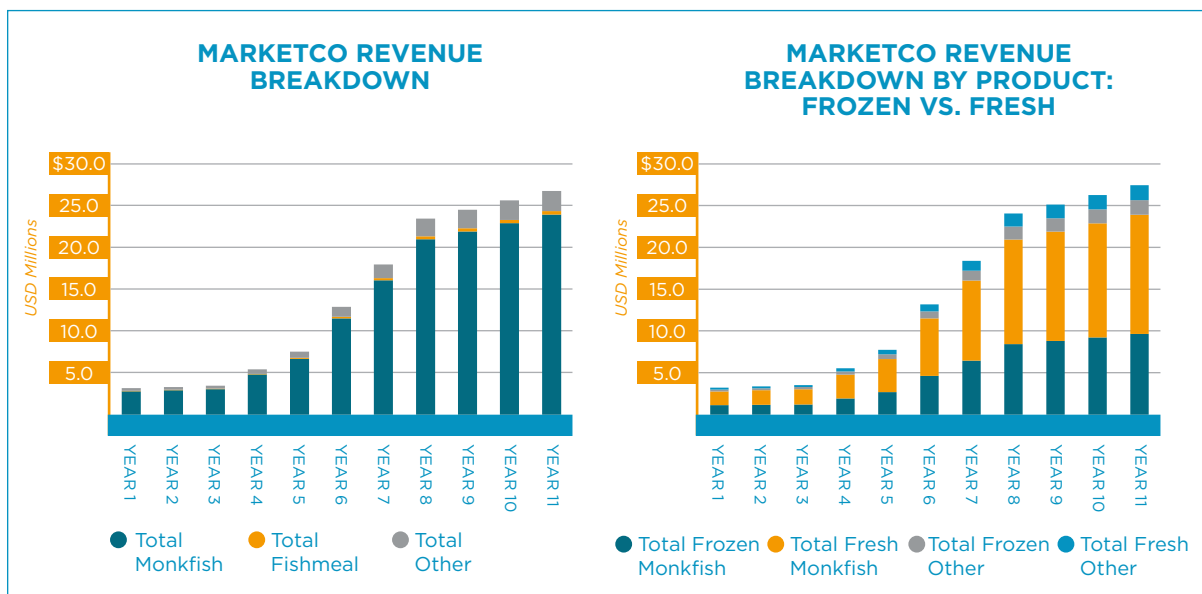
The Sapo Strategy's revenue and expenses are generated through its investment positions, including the trawl vessel buyback program, fishery management improvements, holding companies, and MarketCo launch and expansion. While the proposed transaction structure for the strategy involves various entities, the cash flow profile of Sapo is often presented on a consolidated basis throughout the remainder of this report.

REVENUE MODEL AND PRICES

The revenue model assumes that Sapo revenue is generated by sales of processed monkfish products as well as legally retained bycatch from fishing efforts (primarily tilefish), and the sale of waste products for fishmeal. Prices were taken from averages of current FOB⁶⁷ to various international markets, as well as the domestic prices where relevant. (See Figure 16.)

A whole monkfish, when processed, can be broken down into various marketable products that meet tastes of final consumers in Europe and Asia. The contribution to the strategy's revenue of various monkfish finished products is derived from the current state of the market demand, where European markets primarily demand fresh and frozen tail, while whole fish more typically are exported to Korea.

FIGURE 16: MarketCo Projected Revenue Profiles



⁶⁷ FAO FishStat Dataset, 2015.

Base-Case Monkfish Price Assumptions by Product Type

PRODUCT	FOB PRICE/KG (USD)	% OF SALES (BY VALUE)	PRODUCT	FOB PRICE/KG (USD)	% OF SALES (BY VALUE)
FROZEN			FRESH		
Whole (Gutted)	\$3.75	5.5%	Whole (Gutted)	\$4.69	15.9%
Tail (Bone-in)	\$9.25	19.4%	Tail (Bone-in)	\$11.56	24.3%
Tail Loin	\$11.25	10.2%	Tail Loin	\$14.06	12.8%
Cheek	\$11.25	2.2%	Cheek	\$14.06	2.7%
Liver	\$10.50	3.1%	Liver	\$13.13	3.8%

Fresh Monkfish is projected to constitute the majority of MarketCo's revenue, with large portions also made up of frozen fish product, and

fishmeal. The breakdown of each type of product's projected average annual revenue is shown in Figure 17.

FIGURE 17: Sapo Monkfish Revenue Breakdown Across All Monkfish Products, All Years

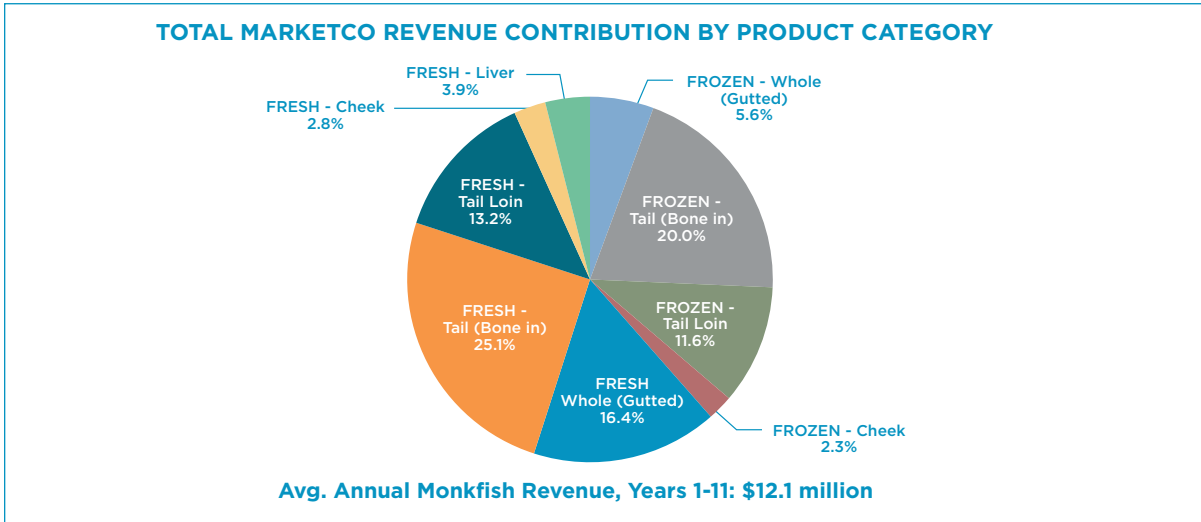
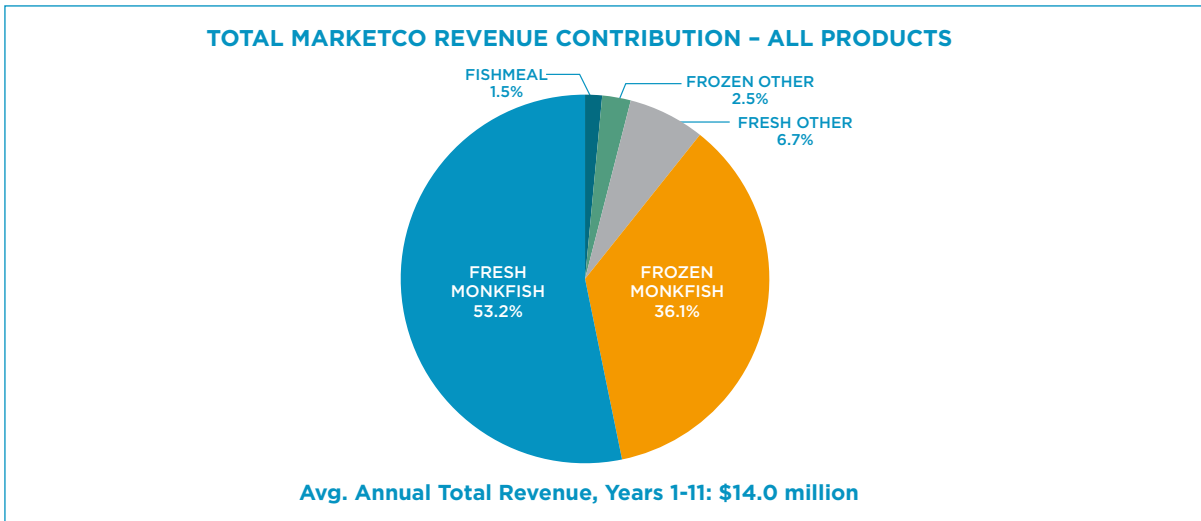


FIGURE 18: Total MarketCo Revenue Contribution by Product



COST STRUCTURE

The Sapo Strategy's Cost Of Goods Sold, (COGS) represents the lion's share of operating expenses (broken down in Figure 18; Figure 19). This is a higher proportion of COGS than in many comparable businesses because MarketCo has few large assets that would otherwise contribute

to OpEx. Other expenses include Operations and Maintenance (O&M), Selling, General, and Administrative costs (SG&A), Depreciation and Amortization (D&A) and the Fisheries Management Improvements (FMI). See Figure 20.

FIGURE 19: OpEx Profile

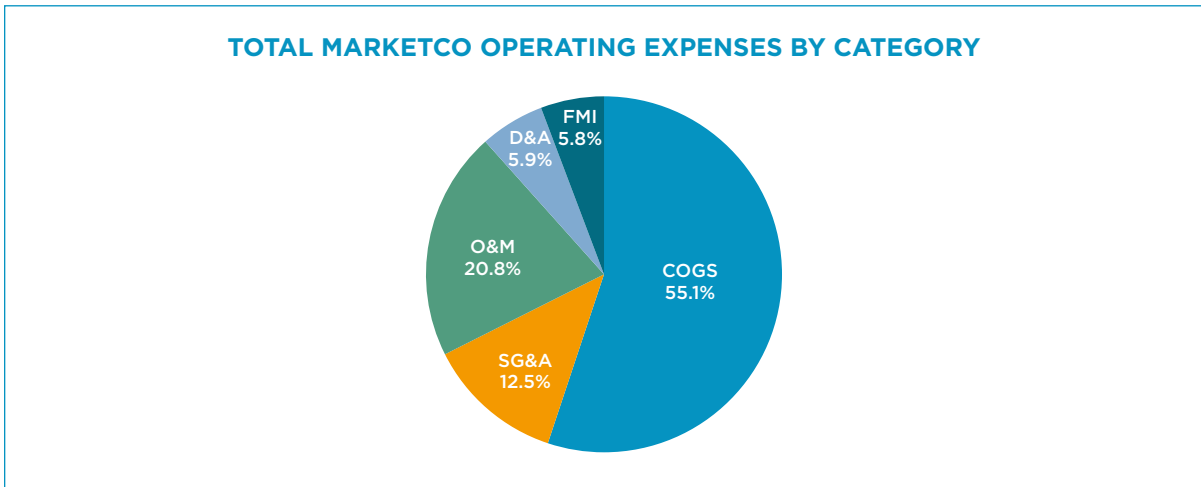


FIGURE 20: Cost of Goods Sold Breakdown

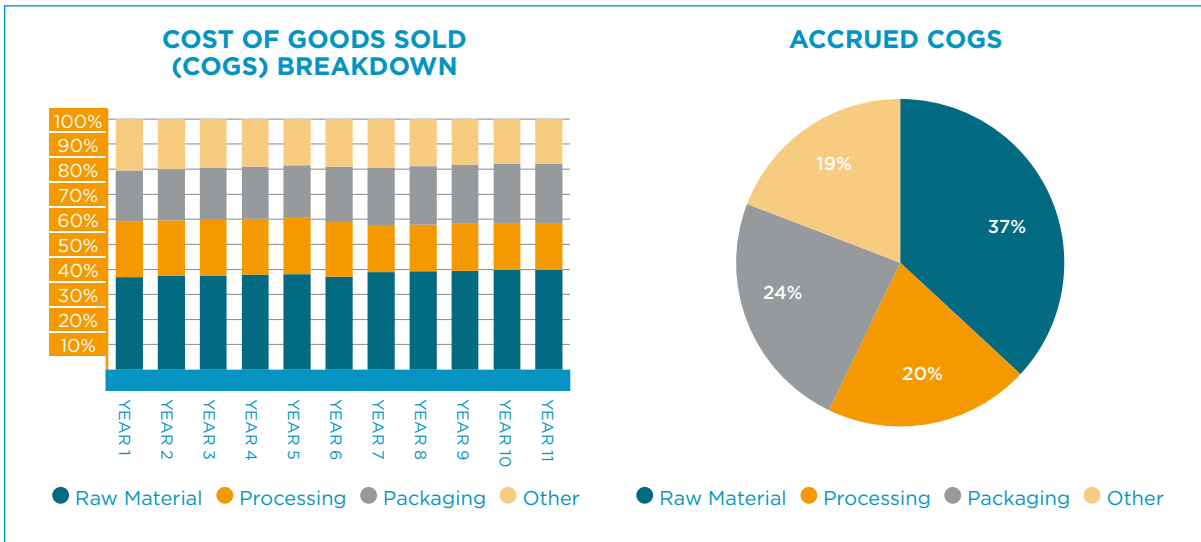


FIGURE 21: Sales, General, and Administrative Breakdown

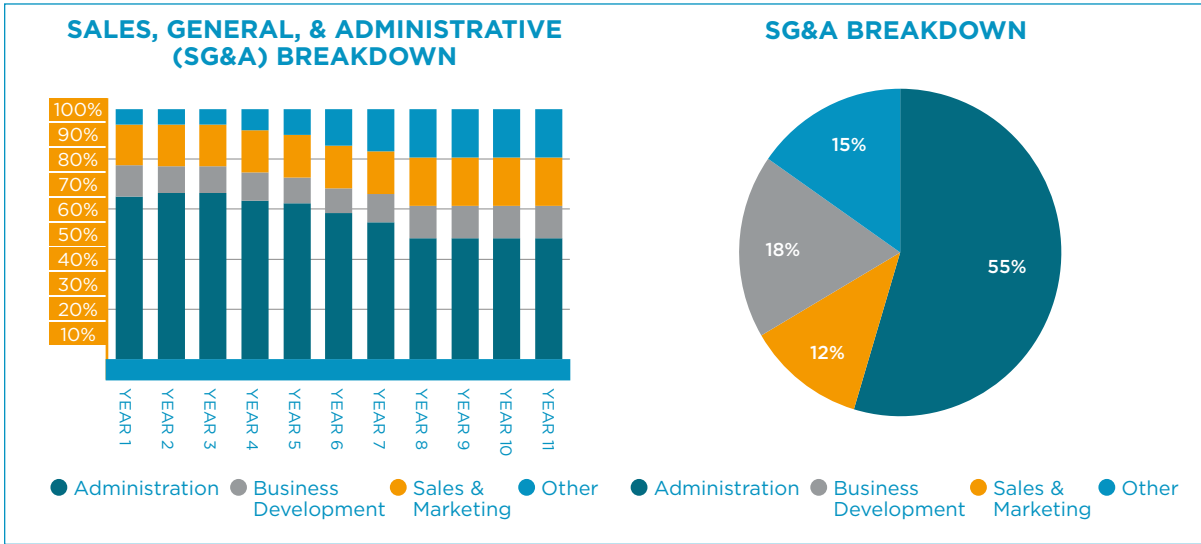
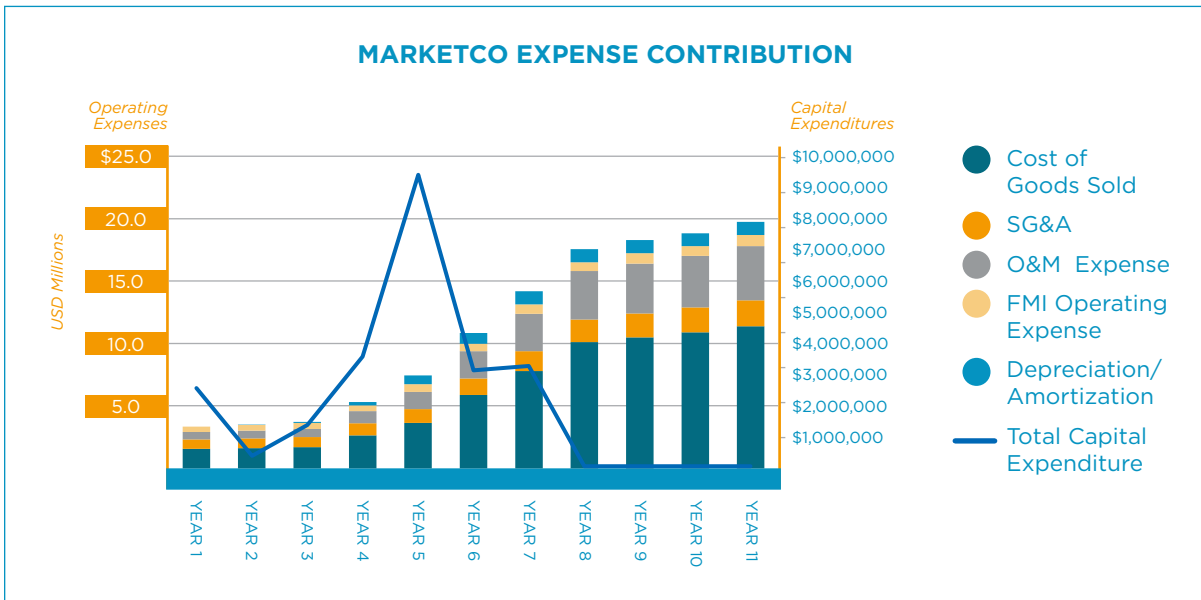


FIGURE 22: All Expenses by Category



TRANSACTION STRUCTURE

SOURCES AND USES OF FUNDS

As a new venture, Sapó carries significant development and early-stage execution risk. However, with a skilled team and attractive, scalable financial and impact returns, it should be able to attract impact equity with a 10 to 12-year time horizon. Due to the early-stage equity risk at the outset of Sapó, and the lack of an operating track record, this venture is unlikely to obtain unsecured commercial loans. However, as Sapó invests in its hard-assets base, the strategy would seek out commercial mortgage loans, and look for additional credit enhancement in the form of a loan guarantee. Here we also assume a \$2 million low-interest PRI loan to help finance the most impact oriented activities such as implementation of the Fisheries Management Improvements, including vessel buybacks. However, a portion of this could potentially be grant funded as well (Figure 23).

Capital investment requirements under Sapó are segmented between (1) commercial infrastructure and operations; and (2) fisheries improvement activities including vessel / license buybacks from the trawl fleet.

The initial investment proceeds will be used to fund the strategy development, company establishment, and capital expenditures, including the fisheries management improvements, as well as the construction of the central processing facility and cold chain logistics, which would be phased in over a period of approximately five years.

As the working capital needs increase, Sapó should seek to secure a commitment to a revolving credit facility such as those offered by the Brazilian Development Bank (BNDES), in order to finance the variable and high working-capital requirements of a business with Sapó's profile (ideally as part of a loan guarantee package).

FIGURE 23: Sources and Uses of Initial Sapó Strategy Investment Capital

SUMMARY SOURCES & USES OF FUNDS			
	Commitment	Balance	% of Total
Revolver - BNDES	1,000,000	-	-
Subordinated note / PRI		2,000,000	17.4%
Sponsor Equity		9,500,000	82.6%
Total sources		\$11,500,000	100.0%
Fund Minimum Cash Balance		\$500,000	4.3%
Capex Reserve - Processing Facility		2,250,000	19.6%
Capex Reserve - Gillnet Fleet Upgrade		2,500,000	21.7%
Capex Reserve - Logistics Infrastructure		1,000,000	8.7%
General & Administrative Startup Costs		1,000,000	8.7%
FMI Reserve		1,500,000	13.0%
Trawl Vessel Buyback Program		2,750,000	23.9%
Total uses		\$11,500,000	100.0%

The Sapo Strategy's opening \$11.5 million investment would be made into a 'MarketCo' holding company, under which there would be two complementary entities, each with a distinct capital structure, risk profile, and operating characteristics

STRUCTURE AND GOVERNANCE

Under Brazilian law, the most efficient structure for foreign private equity investments is to establish a Brazilian-domiciled investment shell company under the "limitada" structure, which would then make investments into local targets. The sponsor equity under Sapo would own 75% of the equity and four of six board seats, with two seats for MarketCo management, which will own 15% of the equity. The CatchCo would hold one board observer seat and would also own 10% of the equity.

Sapo would also establish an advisory committee made up of academic experts, industry leaders, policy experts, and key buyers. The advisory committee would exercise no formal governance over the commercial business, but would provide a diversity of stakeholder views to the proposed fishery management activities, lending credibility to the process and ensuring effective integrated resource management.

The Sapo Strategy's opening \$11.5 million investment would be made into a 'MarketCo' holding company, under which there would be two complementary entities, each with a distinct capital structure, risk profile, and operating characteristics, as follows:

MarketCo's "AssetCo": A special-purpose vehicle holding the physical PP&E (Plant, Property, and Equipment) assets associated with the production, storage, processing, distribution, marketing, and export of product.

MarketCo's "OpCo": An "asset-light" operating company specializing in the processing, distribution, marketing, and export of product,

with the objective of creating the leading Brazilian processor and exporter of sustainably harvested seafood.

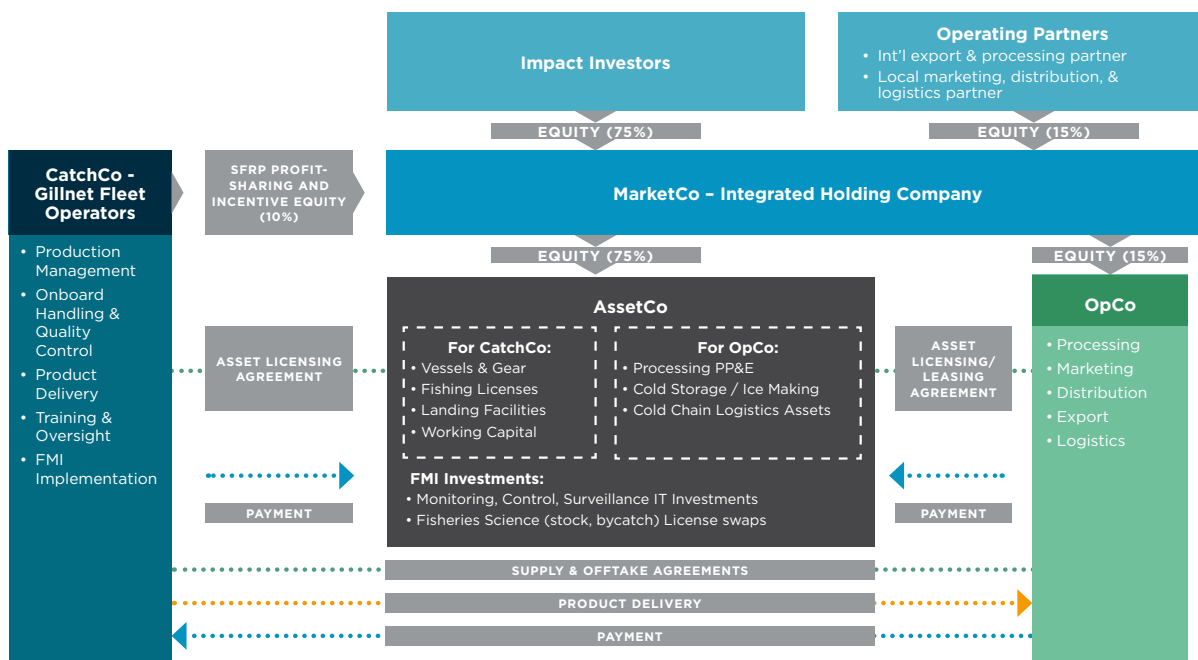
The "AssetCo" type structure is used commonly in Brazil, and elsewhere, as a "special purpose vehicle" (SPV) to provide some protection and fungibility of assets in the event that the operating company experiences any difficulties. While not entirely protected from the credit of the OpCo and CatchCo, this structure would give the operating company greater financial flexibility, while limiting recourse to its assets. In addition, accelerated depreciation on the assets and possible tax credits may offer greater optionality to monetize these currently unrecognized tax benefits. This is done in markets such as renewable energy and the "New Markets Tax Credit" in the U.S., which in the initial years offer significant tax credits that far exceed limited taxable current income.⁶⁸ As a "ring-fenced",⁶⁹ collateralized entity, AssetCo may be viewed as a better credit than an integrated operating company, since the assets are shielded by labor claims and other regulatory risks faced by the OpCo.

Finally, this structure enables MarketCo to offer incentive equity or attract outside equity investment directly into either the OpCo or the AssetCo without affecting ownership of the other. Given the importance of this hard infrastructure in terms of enforcing and maintaining sustainable management, this would, for example, allow MarketCo to sell a controlling stake in the OpCo without losing control of these strategic assets. (Figure 24).

⁶⁸ Under Brazilian tax law, the accelerated depreciation tax benefits and NOLs would roll up to the MarketCo holdco level.

⁶⁹ A ring fence is a protection based transfer of assets meant to protect those assets from undue restrictions, tax burdens, or other country specific laws.

FIGURE 24: Ownership Structure



EXIT STRATEGY

If the Sapo Strategy is able to restore distressed monkfish biomass over an 11-year period, combined with a 100% to 200% increase in regulated, sustainable TAC and landings (assumed at ~3,800 mt, equal to a 100% increase, in the base case), AND fisheries policy and governance continues to strengthen around a limited access catch share scheme and resource tenure is relatively assured under Brazilian law, then MarketCo will make a very attractive target for either management or a strategic buyer.⁷⁰ The impact provisions would be enforced post-exit by retaining the contractual commitments on the part of CatchCo and MarketCo, and would be further enhanced by continued ownership by the management. The Sapo Strategy's financial sponsor would grant MarketCo management a right of first offer agreement in the event that they wish to pursue a management buyout. Similarly, CatchCo would have a similar first offer right on the vessels and licenses/quota, subject to continued adherence

to fisheries management standards and supply agreements with MarketCo, though this could also be structured as a purchase option.

However, given the trend toward consolidation and vertical integration throughout the Brazilian middle market, and especially in the fishing industry, we anticipate significant interest for a domestic or international strategic buyer at the end of Year 11. Using a relatively conservative exit multiple of 6.0x Year 11 (LTM) EBITDA, (which compares favorably to the current sector averages for Latin America of between 7.5x and 10.0x for food processing and consumer perishables),⁷¹ Sapo is targeting a 17.5% levered IRR over the investment period under the base-case assumptions, with significant upside potential should stocks recover and/or show greater harvest potential beyond the base-case as the science improves. Figure 25 outlines the Sapo Strategy's base case exit valuation metrics.

⁷⁰ Base case TAC is based on the limited studies that have been undertaken on the stock and could be revised as stock assessments provide additional information on the biomass of the species. Wahrlich et al. "Structure and Dynamics of the Monkfish *Lophius gastrophysus* Fishery of Southern and Southeastern Brazil," Boletim do Instituto do Pesca, Sao Paulo, 2002.

⁷¹ American Appraisal, 2014. "Global M&A Valuation Outlook, 2014", p. 21.

FIGURE 25: The Sapo Strategy Year-11 Exit Valuation Metrics

SALE OF CONSOLIDATED COMPANY		
Closing Date		Year 11
Year 11 EBITDA		\$9,242,372
EBITDA Multiple		6.0x
Enterprise Value		\$55,454,234
Less: Total Debt		179,814
Plus: Excess Cash Balance		3,730,590
Less: Transaction Fees (3%)		1,663,627
Equity Value		\$57,341,384
Equity to Sponsor	75.0%	\$43,006,038
Equity to CatchCo	10.0%	\$5,734,138
Equity to Management Team	15.0%	\$8,601,208

SUMMARY OF RETURNS

Figure 26 summarizes relevant base case financial, social, and environmental impact metrics of Sapo:

FIGURE 26: Base Case Impact and Financial Returns

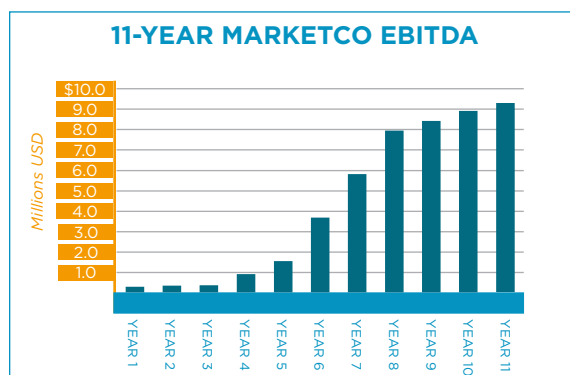
Values in millions USD

SUMMARY OF BASE CASE FINANCIAL RETURNS

Total Equity Investment (\$ mil)	\$9.5
Time Horizon	11.0
Total Leverage Level	17.4%
Equity IRR	17.5%

SUMMARY OF BASE CASE IMPACT RETURNS

Total Marketable Landings Increase (mt)	19,823
Total Avoided Bycatch (mt)	6,478
Total Income Increase to Fishers (%)	331.6%
Total Income Increase to Sapo Fishers (11 Years)	\$7,923,133
Total Fishers Incorporated	90
Additional Meals-to-Market (run-rate meals/yr)	7,498,847



PRIVATE CAPITAL FUNDING

	AMOUNT	%	RATE
Foundation PRI	2.0	32.0%	2.5%
Sponsor Equity	9.5	68.0%	-
Total Private Capital	\$11.5		

SENSITIVITY ANALYSIS

Several key inputs will have a particularly pronounced effect on project financial returns. As such, the model has been forecasted under multiple scenarios that flex the following key variables:

Increasing and Decreasing Total Allowable

Catch (TAC) Regimes for Monkfish: The annual total allowable catch of monkfish has a significant impact on the raw material availability to MarketCo. Because the current condition and future potential of the stock status is uncertain, this variable presents a significant area of uncertainty and a potentially wide range of values. The current TAC (gillnet-only) of 1,500 mt is just 2.4% of the estimated total pristine biomass (B_0) of approximately 63,000 mt, and 4.5% of pristine spawning biomass (SSB_0) estimates of 33,000 mt, which is a highly conservative level set for recovery after the extensive overfishing of the early 2000s. Based on an analysis of monkfish fisheries elsewhere, scientists believe that a reasonable TAC of up to 6% of B_0 could be achieved once the fishery has stabilized, which is the ~3,800 mt that Sapó assumes as the long-term run rate TAC for the entire stock in the base case. However, other monkfish fisheries currently appear to be managed with stable, healthy stocks at TACs set at 8%–9% of B_0 , which when translated to the Brazilian context would be 5,000–6,000 mt. Since the variables affecting any individual fishery are extremely complex, and it is not possible to make such a general extrapolation as a matter of policy, this suggests an indicative TAC “ceiling” at up to 4x current levels.

The Sapó base case model projects maximum landings of 3,800 mt by year 8, assuming that current estimates of B_0 are correct and using the 6% TAC ceiling estimated by local fisheries biologists from UNIVALI, the preeminent local fisheries scientists in Itajaí. The downside case assumes a precautionary TAC for the entire stock of 2,500 mt, or 4% of B_0 , which was recommended following the last stock assessment as a conservative number to stabilize the stock.⁷² In the upside scenario, Sapó assumes a TAC of 8% B_0 ,

or 5,000 mt. In the downside case, the lower TAC causes the equity IRR to fall by 6.1% to 11.4%, while the upside case pushes returns up by 2.1% to 19.6%.

Premium Paid to Fishers: Sapó proposes to pay a premium to fishers on top of the prevailing market ex-vessel price of \$0.90/kg gutted weight, which is held constant given the absence of forward pricing and forecast estimates. The base case sets that premium at 25%, while the downside scenario assumes a 45% premium and the upside a 5% premium. While paying higher premiums may increase social impact returns, it does increase the cost of raw materials to MarketCo, thereby reducing financial returns to the investors. In the downside scenario, the project IRR falls by 2.1% to 15.4%, while in the upside scenario the IRR increases by 1.8% to 19.3%.

Annual Changes in Real Sales Prices: As with any processing and distribution business, profitability is highly sensitive to changes in the sales price of the finished goods. The sales prices used in the model are based on thorough diligence into the market segments into which MarketCo would sell. The changes in these prices over time, particularly in an 11-year model, prove to be particularly impactful on the IRR. The base case scenario assumes no real growth in current market prices, with price inflation equal to the rate of baseline inflation. In the upside case, real price appreciation is 2.0%, which increases equity IRR by 4.9% to 22.4%. In the downside case, Sapó assumes that real prices decline by 2.0% each year, which pushes equity returns down by 6.6% to 10.9%, holding all else equal.

Annual Changes in Real Raw Materials Cost: The profitability of a vertically integrated processing and distribution business will be significantly influenced by changes to the cost of raw material inputs. The raw materials costs assumed in the base case are based on current raw materials plus a 25% price premium paid to fishers under the Sapó Strategy, which were obtained through market due diligence.

⁷² Perez et al. “A bycatch assessment of the gillnet monkfish *Lophius gastrophysus* fishery of Southern Brazil,” *Fisheries Research* 72, 2005.

The base case scenario assumes no real growth in assumed Sapó Strategy raw materials costs, with cost inflation equal to the rate of baseline inflation. In the upside case, real costs are assumed to decrease by 2.0% each year, which increases equity IRR by 1.9% to 19.4%. In the downside case, the model assumes an annual increase in real costs of 2.0%, which depresses equity returns by 2.7%, to 14.8%, holding all else equal.

Working Capital: One of the challenges of a seafood business is the need to pay cash at the time of raw material purchase while having to wait for long periods of time to be paid by buyers. Moreover, the volatility in seafood supply relative to the need to fulfill constant supply agreements requires holding significant inventory. Both scenarios create substantial working capital demand, and as working capital needs grow, they must be funded out of cash returns, decreasing levered equity IRR.

In the base case, the model assumes a cash conversion cycle⁷³ of 40 days for fresh product, and 90 days for frozen product. This yields a weighted average cash conversion cycle of 59.4 days, with 49.4 inventory days. In the downside scenario, inventory days are increased by 100%, resulting in a weighted average cash conversion cycle of 118.9 days (with 108.9 inventory days), which decreases the equity IRR by 0.2% to 17.3%.

In the upside case, inventory days are decreased by 50%, yielding a weighted average cash conversion cycle of 29.7 days (19.7 inventory days) and increasing IRR by 0.1% to 17.6%.

EBITDA Exit Multiple: In Year 11, the company is sold at a multiple of EBITDA, determined by current comparable sales multiples of similar companies. A fleet of strong assets with healthy fish stock can support a stable revenue stream over time, while the integrated supply chain provides the commercialization network to monetize the availability of raw resources. Additionally, this model can be replicated in other fisheries that fit a similar profile of high value, as well as some level of distress with strong long-term sustainability potential, which would make this an attractive target for a strategic buyer. Relative to similar company precedent transaction and public trading comparables for Latin American food processing and consumer perishables companies of between 7.5x and 10.0x,⁷⁴ a base-case multiple of 6.0x EBITDA is relatively conservative. The downside case assumes a multiple of 4.0x EBITDA, in the event that buyers do not view growth potential in the business, which reduces equity IRR by 3.0%, to 14.5%. In the upside case, an 8.0x multiple is assumed, indicating a growth-orientation, which increases the sponsor equity IRR by 2.4% to 19.9%.

BASE CASE LEVERED IRR 17.5%

SENSITIVITY ANALYSIS	SCENARIOS			IRR (%)		IRR IMPACT (percentage point Δ)	
	Base	Downside	Upside	Downside	Upside	Downside	Upside
Monkfish Max. Sustainable TAC	3,800	2,500	5,000	11.4%	19.6%	- 6.1%	2.1%
Price Premium Fishers (%)	25.0%	45.0%	5.0%	15.4%	19.3%	- 2.1%	1.8%
Annual Δ Real Product Prices (%)	-	- 2.0%	2.0%	10.9%	22.4%	- 6.6%	4.9%
Annual Δ in Real Raw Material Cost (%)	-	2.0%	- 2.0%	14.8%	19.4%	- 2.7%	1.9%
Inventory Days (# days)	49.4	108.9	19.7	17.3%	17.6%	- 0.2%	0.1%
EBITDA Exit Multiple (x)	6.0x	4.0x	8.0x	14.5%	19.9%	- 3.0%	2.4%

⁷³ The number of days that it takes a company to convert its investment in inventory and other resource inputs into cash - it's a function of inventory days, accounts payable days, and accounts receivable days.

⁷⁴ American Appraisal, 2014. "Global M&A Valuation Outlook, 2014", p. 21.

KEY RISKS AND MITIGANTS

The Sapo Strategy presents a range of potential risks that require mitigation or incorporation into the valuation analysis, as shown below:

RISK	DESCRIPTION	MITIGANTS
Key Risks Impacting Operations & Execution		
Partnership Risk	The Sapo Strategy depends on the negotiation of actionable agreements with the government, and on durable partnerships with a leading international marine conservation policy NGO. In addition, the strategy relies on strong communication and effective collaboration between the partners and other key fishery stakeholders in order to align interests and resources towards the impact goals of Sapo.	Strong agreements with fisheries authorities and with leaders within the fishery on the industry side should stabilize negotiations. Control over strategic assets affords leverage in terms of policymaking and supply chain.
Competitive Risk	Other local gillnet vessels or vertically integrated companies could enter the market before Sapo has an opportunity to consolidate control.	Sapo anticipates the right-of-first-offer for license acquisition and will focus on development of local and regional market for which Sapo will have cost and freshness advantages vis-à-vis product from Asia, Africa, Europe, and North America.
FMI Implementation Risk	Complexity, range of stakeholders, and sequencing of activities could prove difficult or impossible.	No major investment undertaken or operating risk assumed until FMI strategy is reasonably assured through feasibility study and implementation is successfully under way. Initial capital outlays for fleet upgrades may be largely recouped through asset sales, leasing arrangements, or application of assets to other fisheries
Key Risks Impacting Raw Material Sourcing Volume		
Assessment and Quota	Stock status is uncertain, and further study / assessment could suggest a smaller resource and/or cap to the growth of Sapo, or even a stock incapable of supporting commercial fishing. MSY estimates and resulting TAC levels may be lower than originally assumed, limiting the scale and economics of the commercial opportunity	Sapo would undertake an initial detailed feasibility study, including stock assessments and bycatch assessments, to better understand fishery, recovery and production potential, before making significant capital investments.

RISK	DESCRIPTION	MITIGANTS
Threat From Trawl Fishery	Continued high levels of exploitation by the trawl fishery, if unmanaged, may pressure the stock and reduce catch volumes for the sustainably managed gillnet fleet.	Sapo will work to ensure agreements by fisheries authorities to enact and enforce regulations on the trawl fleet. The purchase and retirement of trawl vessels with strict limits on new entrants should reduce pressure on the monkfish stock.
Natural Disaster and Exogenous Environmental Impacts	Climate change or natural disasters could impact stock health.	Vessel insurance, revolving loan facility to smooth cash flow, and eventual diversification to other, uncorrelated fisheries in other parts of the country.

Key Risks Impacting Revenue

Excess Asset Capacity	The strategy proposes acquiring underutilized assets (both hard infrastructure and fishing rights) from existing commercial players. Assets running at low capacity utilization could result in lower profit margins in the short term, and delay in increasing or failure to increase landings in the fishery could impair cash flow and terminal asset values for the strategy.	Phased investment, with no initial investment in processing facilities will provide more time for cautious acquisitions. Investment in processing facilities only takes place when more is known about stock, regulatory progress, trawl license transfer/retirement, MarketCo's ability to expand harvest capacity, and other developments.
Market Risk	Risk that adequate supply can't be assured, or that oversupply will flood the market. Tastes may change so the product is no longer desirable— Monkfish prices are currently set by the European (particularly French) market, so anything affecting the demand in this key market would have repercussions in Brazil.	Market fundamentals don't support an oversupply, as demand is exceeding supply with significant growth potential, while supply is capped. Development of local market will offer a potentially large source of additional demand that will be low-cost to supply at very high quality. Fresh product is in extremely short supply, and Sapo's focus on fresh will meet a high value and currently unserved segment of the market.

Key Risks Affecting General Business Environment

Legal Risk	It may prove more difficult or costly than anticipated to acquire the trawl vessel monkfish permits and vessels. Sapo's strategy depends on securing all, or nearly all, of the available gillnet fishing licenses in order to ensure that sustainability standards are met and sufficient volumes of raw material can be sourced.	Sapo will work with policymakers and fisheries authorities up front to ensure that the proper legal framework is in place before capital investment is made. Because the trawl fishery is under duress currently, there is an opportunity for trawl fishers to transition fishing effort and associated quota to better practices under the Sapo framework.
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RISK	DESCRIPTION	MITIGANTS
Government and Regulatory Enforcement Risks	<p>Securing commitments and regulatory action from Brazilian fisheries authorities could take longer than expected, and these may not be adequately durable.</p> <p>Brazil has a track record of ignoring, overriding, changing, and inconsistently applying enforcement and prosecution of existing laws; any commitment from the Brazilian government could result in the same outcome. If additional vessels are allowed to illegally fish the resource, or new licenses are issued to non-participating vessels before agreed time limits have passed, it could impair stock restoration and bycatch reduction, and affect the commercial viability of the production and processing businesses.</p>	<p>Legally binding contracts with authorities and stakeholders, as well as aligned incentives will be needed so that this is a “win-win” outcome for industry, authorities, politicians, and the conservation community.</p>
Credit Risk	<p>Brazil was recently downgraded to junk (below investment grade) status, which could affect market stability and access to capital.</p> <p>The strategy also depends on local operating partners to manage harvest & production (“CatchCo”), which have poor credit quality and little to no recourse in the event that they don’t fulfill commitments.</p> <p>Other financial / credit difficulties could affect partners’ abilities to operate, despite viability of Sapo.</p>	<p>Sapo would seek to secure loan guarantees from DFIs. PRI debt and possibly first loss high impact capital will also mitigate credit risk.</p>
Currency Risk	<p>While the value of the Brazilian Real has declined by about 35% and 50% against the Euro and U.S. Dollar, respectively, since 2011, this situation could reverse, which could affect the ability of Brazilian producers to compete on price.</p>	<p>Current falling currency is a boost to exports, and Sapo would develop local markets to mitigate negative impacts from a possible strengthening of the currency. Also, export and import sales act to diversify currency risk.</p>

APPENDIX

FINANCIAL PROJECTIONS

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	YEAR 11
# of Fishers	18	18	18	27	36	54	72	90	90	90	90
# of Vessels	2	2	2	3	4	6	8	10	10	10	10
SALES VOLUME (mt)											
Monkfish - Live Weight	774	774	774	1,160	1,547	2,321	3,094	3,868	3,868	3,868	3,868
Monkfish - Gutted	650	650	650	975	1,300	1,950	2,600	3,250	3,250	3,250	3,250
Monkfish	317	317	317	476	634	951	1,269	1,586	1,586	1,586	1,586
Other Catch	46	46	46	69	92	139	185	231	231	231	231
Fishmeal	484	484	484	726	967	1,451	1,935	2,419	2,419	2,419	2,419
REVENUES											
Monkfish											
Frozen	1,129,408	1,180,232	1,233,342	1,933,264	2,693,681	4,644,579	6,471,446	8,453,327	8,833,726	9,231,244	9,646,650
Fresh	1,666,479	1,741,471	1,819,837	2,852,594	3,974,614	6,853,229	9,548,832	12,473,162	13,034,454	13,621,005	14,233,950
Other											
Frozen	84,991	88,816	92,813	145,484	202,707	317,744	442,723	578,307	604,330	631,525	659,944
Fresh	228,060	238,323	249,047	390,381	543,931	852,612	1,187,973	1,551,790	1,621,620	1,694,593	1,770,850
Fishmeal											
Monkfish	46,398	48,486	50,668	79,423	110,662	173,463	241,692	315,710	329,917	344,763	360,277
Other	4,151	4,338	4,533	7,105	9,900	15,519	21,623	28,244	29,516	30,844	32,232
CatchCo Admin. Fee (2.75%)	15,640	16,344	17,079	26,772	37,302	58,471	81,469	106,419	111,208	116,213	121,442
Total	\$3,175,128	\$3,318,008	\$3,467,319	\$5,435,022	\$7,572,798	\$12,915,616	\$17,995,758	\$23,506,959	\$24,564,772	\$25,670,187	\$26,825,345
YoY Growth in Sales		4.5%	4.5%	56.7%	39.3%	70.6%	39.3%	30.6%	4.5%	4.5%	4.5%
OPERATING EXPENSES											
Cost of Goods Sold	\$1,547,957	\$1,608,398	\$1,671,145	\$2,604,422	\$3,607,792	\$5,816,775	\$7,699,070	\$9,991,613	\$10,373,000	\$10,768,479	\$11,253,060
SG&A	767,881	785,845	821,208	966,653	1,105,556	1,322,978	1,589,394	1,821,789	1,903,770	1,989,439	2,078,964
O&M	585,302	606,111	627,607	974,715	1,345,482	2,132,811	2,941,723	3,803,448	3,933,662	4,067,893	4,250,948
EBITDA	273,988	317,654	347,359	889,232	1,513,968	3,643,052	5,765,570	7,890,109	8,354,340	8,844,375	9,242,372
EBITDA Margin	8.6%	9.6%	10.0%	16.4%	20.0%	28.2%	32.0%	33.6%	34.0%	34.5%	34.5%
CAPITAL EXPENDITURES											
FMI Capex - Buybacks	-	\$2,560,250	-	-	-	-	-	-	-	-	-
Fleet Capacity	-	-	1,370,770	1,432,455	2,993,830	3,128,553	3,269,338	-	-	-	-
Processing Capacity	-	-	-	-	6,420,329	-	-	-	-	-	-
Logistics Infrastructure	-	382,209	-	1,908,030	-	-	-	-	-	-	-
Total CAPEX	\$ -	\$2,942,459	\$1,370,770	\$3,340,485	\$9,414,160	\$3,128,553	\$3,269,338	\$ -	\$ -	\$ -	\$ -



BALANCE SHEET

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	YEAR 11
ASSETS											
Current Assets	9,421,019	9,454,930	8,928,397	7,802,140	3,656,204	2,246,064	2,900,977	5,274,079	9,079,599	10,061,837	6,635,270
Non-Current Assets											
Property, Plant & Equipment	2,560,250	363,098	1,646,219	4,970,535	13,670,529	15,928,489	18,163,766	17,129,706	16,095,646	15,061,586	14,027,526
Total Assets	11,981,269	9,818,028	10,574,617	12,772,675	17,326,732	18,174,552	21,064,744	22,403,785	25,175,245	25,123,423	20,662,796
LIABILITIES											
Current Liabilities											
Current Portion LT Debt	-	49,687	173,056	585,797	1,417,227	1,558,012	1,688,138	1,564,769	1,152,029	2,320,598	-
Other Current Liabilities	283,581	205,759	321,073	370,262	643,173	920,644	1,343,986	1,644,070	1,748,278	1,792,560	1,893,435
Non-Current Liabilities											
Revolving Loan Balance	-	-	-	-	1,000,000	1,000,000	1,000,000	-	-	-	-
Long-Term PRI Debt	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	-
Commercial Mortgage Loans	-	248,436	815,595	2,706,240	6,277,595	5,564,293	4,905,348	3,217,210	1,652,441	500,412	179,814
Total Long-Term Debt (Less Current)	2,000,000	2,198,749	2,642,539	4,120,444	7,860,368	7,006,281	6,217,210	3,652,441	2,500,412	179,814	179,814
Other Long-Term Liabilities	-	(793,510)	(768,311)	(680,515)	(779,186)	(342,744)	720,025	2,611,387	4,758,980	4,963,582	4,612,001
Total Liabilities	2,283,581	1,660,684	2,368,357	4,395,987	9,141,582	9,142,192	9,969,360	9,472,667	10,159,699	9,256,553	6,685,250
SHAREHOLDER'S EQUITY											
Common Stock	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000
Retained Earnings	197,688	(1,342,656)	(1,293,740)	(1,123,312)	(1,314,850)	(467,639)	1,595,384	3,431,118	5,515,546	6,366,870	4,477,546
Total Shareholder's Equity	9,697,688	8,157,344	8,206,260	8,376,688	8,185,150	9,032,361	11,095,384	12,931,118	15,015,546	15,866,870	13,977,546
LIABILITIES & SHAREHOLDER'S EQUITY	\$11,981,269	\$9,818,028	\$10,574,617	\$12,772,675	\$17,326,732	\$18,174,552	\$21,064,744	\$22,403,785	\$25,175,245	\$25,123,423	\$20,662,796

CASH FLOW STATEMENT

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	YEAR 11
OPERATING ACTIVITIES											
Net Income	197,688	(1,540,344)	48,916	170,428	(191,538)	847,210	2,063,023	3,671,468	4,168,856	4,738,399	4,961,063
Income Statement Adjustments	-	2,579,360	87,649	254,673	714,166	870,593	1,034,060	1,034,060	1,034,060	1,034,060	1,034,060
Balance Sheet Adjustments	(189,985)	(515,279)	(291,846)	244,658	(338,915)	337,522	946,923	1,724,916	2,397,153	(90,642)	(123,748)
Cash Flow from Operating Activities	7,703	523,737	(155,281)	669,759	183,712	2,055,326	4,044,007	6,430,444	7,600,069	5,681,817	5,871,375
INVESTING ACTIVITIES											
MarketCo Property, Plant & Equipment	-	(382,209)	(1,370,770)	(3,578,988)	(9,414,160)	(3,128,553)	(3,269,338)	-	-	-	-
FMI Capex (Trawl Buyback)	(2,560,250)	-	-	-	-	-	-	-	-	-	-
Cash Flow from Investing Activities	(2,560,250)	(382,209)	(1,370,770)	(3,578,988)	(9,414,160)	(3,128,553)	(3,269,338)	-	-	-	-
FINANCING ACTIVITIES											
Revolving Loan	-	-	-	-	1,000,000	-	-	(1,000,000)	-	-	-
Total Commercial Loans	-	248,436	567,159	1,890,645	3,571,355	(713,303)	(658,944)	(1,688,138)	(1,564,769)	(1,152,029)	(320,598)
PRI Debt	2,000,000	-	-	-	-	-	-	-	-	-	(2,000,000)
Common Equity	9,500,000	-	-	-	-	-	-	-	-	-	-
Common Dividend	-	-	-	-	-	-	-	(1,835,734)	(2,084,428)	(3,887,075)	(6,850,387)
Cash Flow from Financing Activities	11,500,000	248,436	567,159	1,890,645	4,571,355	(713,303)	(658,944)	(4,523,872)	(3,649,197)	(5,039,104)	(9,170,985)
NET CASH FLOW	(2,552,547)	389,964	(958,892)	(1,018,584)	(4,659,092)	(1,786,530)	115,725	1,906,572	3,950,872	642,713	(3,299,610)

FINANCING

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	YEAR 11
DEBT FINANCING											
Beginning Debt Balance	2,000,000	2,000,000	2,248,436	2,815,595	4,706,240	9,277,595	8,564,293	7,905,348	5,217,210	3,652,441	2,500,412
Net Debt Issued / (Repaid)											
Revolving Credit Facility	-	-	-	-	1,000,000	-	-	(1,000,000)	-	-	-
Commercial Loans	-	248,436	567,159	1,890,645	3,571,355	(713,303)	(658,944)	(1,688,138)	(1,564,769)	(1,152,029)	(320,598)
PRI Debt	-	-	-	-	-	-	-	-	-	-	(2,000,000)
Ending Debt Balance	2,000,000	2,248,436	2,815,595	4,706,240	9,277,595	8,564,293	7,905,348	5,217,210	3,652,441	2,500,412	179,814
EQUITY FINANCING											
Beginning Equity Balance	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000
Change in Equity	-	-	-	-	-	-	-	-	-	-	-
Ending Equity Balance	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000	9,500,000

VALUATION ANALYSIS

		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	YEAR 11
Opening Equity Investment	9,500,000											
Opening Debt	2,000,000											
Total Initial Investment	11,500,000											
Project FreeCash Flow (Unlevered)		(2,844,936)	(973,495)	(1,723,514)	(2,960,978)	(8,910,935)	(487,911)	1,326,790	6,815,697	7,712,784	5,591,418	5,731,943
Cash Flow to Equity (Levered)		-	-	-	-	-	-	-	1,376,800	1,563,321	2,915,306	5,137,790
Year 11 EBITDA												9,242,372
Terminal EBITDA Multiple												6.0x
Terminal Enterprise Value												55,454,234
Net Debt												(3,550,777)
Transaction Fees												1,663,627
Terminal Equity Value												57,341,384
% Equity to Sponsor	75.0%											
Sponsor Equity Value												\$43,006,038
Project IRR (Unlevered)												13.2%
Equity IRR (Levered)												20.7%
Sponsor Equity IRR (Levered)												17.5%



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