



Investing in Sustainable High-Quality Galapagos Tuna

A BUSINESS CASE FOR INVESTMENT IN TUNA MANAGEMENT, FISHING GEAR IMPROVEMENTS, SUPPLY-CHAIN INTERVENTIONS, AND IMPROVED COMMERCIALIZATION



LOCATION

Galapagos Marine Reserve
(GMR = 133,000 km²)

FISHERY

Yellowfin tuna hand-line fleet

PROPOSED INVESTMENT

\$270,000 USD

INVESTMENT TERM

6-years

FINANCIAL RETURNS

15% Interest Rate



INVESTMENT OPPORTUNITY

Supply-chain interventions that increase operational efficiency.

Improved commercialization that enables better market access and value.

Management and fishing gear improvements that drive fish stock protection.

CONSERVATION IMPACT

Promoting sustainable hand-line tuna fishing in the GMR will protect regional tuna stocks from overfishing (Bucaram *et al.* 2018).

Supporting sustainable and profitable tuna fishing in Galapagos will be leveraged to alleviate fishing pressure on locally-threatened species.

Ensuring Local and Tourism Food Security through the tuna fishery will reduce the risks of invasive species introduction via imports.

CORE INVESTMENTS

- 1. Capacity Building to improve tuna fishing, handling and quality assessments.
- 2. Cold-chain upgrades to improve tuna quality and prices.
- 3. Secure sufficient working capital to immediately purchase all tuna.
- 4. Establish purchase agreements that better coordinate fishing schedules among fishermen, and secure a stable supply for buyers.
- 5. Social Marketing Campaign to develop a local market for sustainable Galapagos tuna.
- 6. Support government with tuna fishery monitoring and enforcement. See C-FIP action plan for full list of potential government investments in management to support case (not required for case implementation).

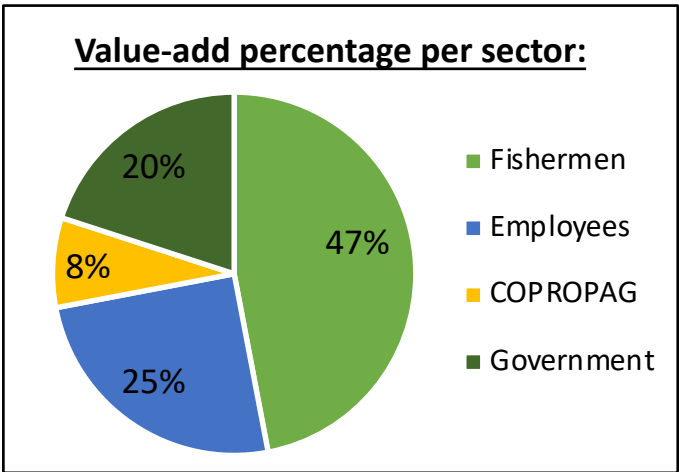
SOCIAL IMPACT

\$860,000 USD of value created for Galapagos stakeholders in year 4 (Berman *et al.* 2018).

Stakeholder	\$/year
Fishermen	\$404,825 USD
Employees	\$218,317 USD
COPROPAG	\$67,677 USD
Government	\$172,395 USD
Total	\$863,214 USD

Price premium for up to 308 fishers:

- 26% in month 1
- 45% in month 13
- 58% in month 72



FISHERY CONTEXT

Target Species and Stock Status: Yellowfin Tuna (YFT) harvests in the Eastern Pacific Ocean (EPO) are sustainable, but the population is slightly depleted; Bigeye Tuna (BET) stocks in EPO are sustainable.

Contributions to Economy: The economic importance of demersal and pelagic species in Galapagos, particularly of yellowfin tuna, shows an increasing trend in recent years. The fishing industry employs approx. 3.6% of the active economic population (INEC 2007) and its contribution to the Galapagos Gross Domestic Product (GDP) is approximately 1.9% (\$US 3.2 million: Castrejón, 2011).

Pelagic Gear/Vessels: Handline gear in 30-45 small vessels (<15m)

Annual YFT exports from Galapagos: 118 tonnes (=0.04% of YFT MSY in EPO), representing \$750,000 in revenues; IATTC estimates that the YFT Maximum Sustainable Yield (MSY) is 275,300 tonnes.

Management: Fishing license required and only available to Galapagos residents, but no species-specific licenses. Gear and spatial restrictions for pelagic fisheries.

Infrastructure: Roads and landing/processing facilities are good, but the latter may require cold storage upgrades; airport may also require cold storage upgrades, since packaged fish sometimes sits on the tarmac for up to 5 hours while the plane arrives.

Other fisheries: To achieve local/tourism food security in Galapagos, ~119 MTons of fish is from threatened coastal fisheries and imports.



Monitoring and Enforcement: Patrol vessels operated by the Galapagos National Park and Navy. AIS transceivers and software to complement the existing VMS satellite technology system in the park's control center were recently procured and installed to track all fishing and tourism vessels. The AIS system in Galapagos appears to be working well, both for monitoring IUU incursions by the external fishing fleet into the reserve, as well as for monitoring the local artisanal fleet. While the system is operational, and explicitly recognized through fisheries regulation, there remain weaknesses as far as using the AIS information to prosecute local IUU fishing such as turning off AIS transponders (pers. comm. Jerson Moreno).

Enterprise: Varied capacity, but improvements to fish handling, processing and commercialization are needed.

MARKET OPPORTUNITY

Local Market Size

- The annual demand for fish in Galapagos was estimated to be 871 MTons in 2017, with 272 MTons (31%) consumed by locals and 599 MTons (69%) by tourists.¹.
- The large, and growing high-end tourism market in Galapagos (240,000 tourists in 2017) provides ample opportunity to increase tuna prices and consumption by product differentiation & branding.

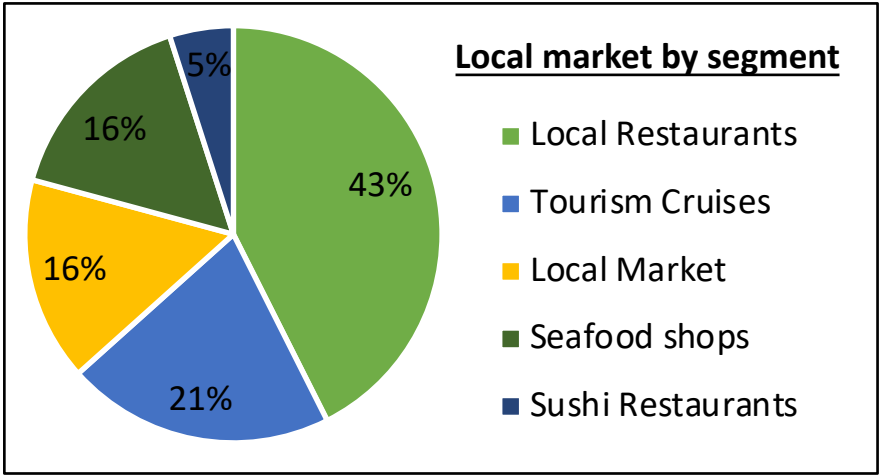
Market Segment	Seafood Demand
Locals	272 MTon
Tourists	599 MTon
Total	871 MTon

Local Population: 25,708
Tourists: ~240,000/year



Galapagos Local Market Segments

The largest customer segments are local restaurants (=43%):



Seafood consumption in the local market was much higher (871 MTon) than Galapagos exports (118MTon).

Both locals and tourists have demonstrated a preference for consuming white fish (86%) instead of tuna (14%) in Galapagos⁴¹.

Percent Tuna Grade & Sale by End Market

Quality	Total	Sushi	Cruises	Restaurants	Local Market
Grade 3	29%				29%
Grade 2	50%		7.5%	40.2%	2.3%
Grade 2+	15%	2.5%	10%	2.5%	
Grade 1	6%	2.5%	3.5%		

Tuna quality grade improvements can be targeted to different end markets, with Grade 1 going to Sushi Restaurants and Cruises.

PROBLEM STATEMENTS

- The prices for exported tuna are low and undifferentiated based on quality. Furthermore there is a lack of branding of the product (i.e. origin, sustainability, and brand).
- There is only one buyer of tuna for the export market, and fishermen lack market information, which means that the fishermen and COPROPAG have limited negotiating power.
- The price at which fishermen currently sell tuna on Santa Cruz is determined by the market in Quito. Fishermen are not able to coordinate their efforts to set prices, and are therefore price takers.
- Fishermen exit the value chain early and are unable to capture some of the higher prices offered by tour operators.
- To achieve local and tourism food security, an estimated 119 MTons of fish is derived from threatened coastal fisheries and from imports.



IMPLEMENTATION APPROACH

A series of profitable investments have been identified which can generate quantifiable ecological and socio-economic benefits for local stakeholders. These are (1) management and fishing gear improvements that drive fish stock protection, (2) supply-chain interventions that increase operational efficiency, and (3) improved commercialization that enables better market access and value.

A total loan investment of \$270,000 USD will be given to a new centralized seafood distribution and commercialization company, with a 15% interest rate. We modelled that this loan could be fully repaid by year 6 with the additional cash flows, and generate an additional \$860,000 USD in value for local fishery stakeholders.

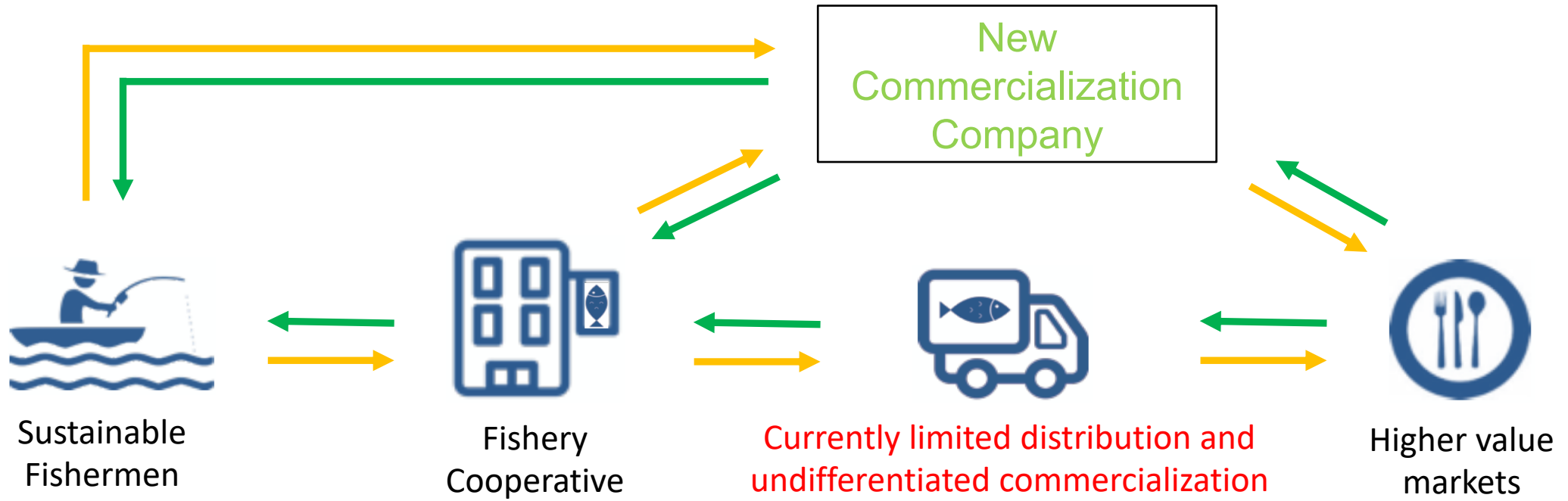
Conservation International, the Galapagos National Park, and select partners will be on the company Board, and help guide decision-making, particularly on the sourcing of sustainable Galapagos tuna. Execution of these strategies will support sustainable tuna fishing, alleviate fishing pressure on threatened coastal species, improve incomes for local fishermen, and enhance local and tourism food security in Galapagos.

ASSUMPTION & POTENTIAL RISKS

See 'Risk Analysis' Section in the OPP - Business Case.

SCALABILITY/REPLICABILITY POTENTIAL

See 'Scalability and Replicability Analysis' Sections in the OPP - Business Case.



New Company Model

Money Flows:



Service Flows:



FINANCIAL ANALYSIS

Cost Structure

- Manager: Oversee execution of activities, and socialize program with fishermen and buyers: **\$45,600 USD/year.**
- Tuna Quality Assurance Specialist: Responsible for grading large volumes of sustainable Galapagos tuna: **\$30,000 USD/year.**
- Client Relationship Specialist: Responsible for purchasing tuna from fishermen, and for creating/maintaining relationships with buyers (i.e. fish shops, restaurants, hotels, and cruise boats): **\$30,000 USD/year.**
- Operations: Two employees responsible for fish processing, packing and delivery: \$12,600 USD/year each = **\$25,200 USD/year.**
- Office Rent: **\$12,000 USD/year.**
- Refrigerated Truck: **\$15,000 USD.**
- Start-up working capital to support price-premium paid to fishermen and other operational costs: **\$112,200 USD.**

Total Loan Investment Needed : \$270,000 USD



FINANCIAL ANALYSIS

Revenue Streams

• A significant source of revenues for the current business case is derived from the capacity of the new entity to distribute and commercialize better quality and higher priced “storied” tuna. The latter strategy includes not only increasing the proportion of grade 1 vs. grade 2 tuna as a result of improved fish handling, cold-chain transport, and formal quality assessments, but also includes raising the current price for each Galapagos tuna grade by highlighting the sustainability and “storied fish” attributes rewarded by premium markets (see below).

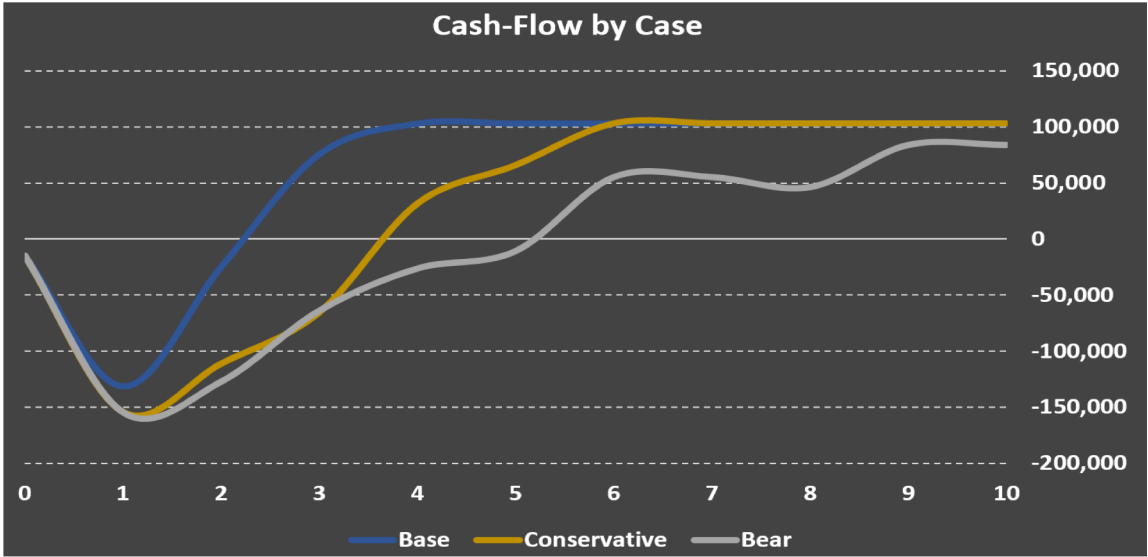
Grade	% of Overall Tuna	Global Market Price/lb	Current Export Price/lb	Prices/lb With Inspector
1	6%	\$9.22	\$4.00	\$4.50
2+	15%	\$6.85	\$3.50	\$4.00
2	50%	\$4.39	\$3.00	\$3.50
≤3	29%	\$2.93	\$3.00	\$3.00

• A related value driver is the ability of the new entity to more cost-effectively commercialize Galapagos tuna by aggregating larger tuna volumes (i.e. economies of scale), and exerting greater purchasing and pricing negotiating power relative to tuna end-buyers and supply-chain middlemen.

Cash-Flow Analysis

The following graph and table display the cash flows analysis for the new commercialization entity based on the previously described cost structures and revenue streams, and with varying degrees of market penetration (Bear Case: 40% penetration in 6 months).

Year	Cash-Flow		
	Base	Conservative	Bear
0	-15,000	-15,000	-15,000
1	-131,588	-153,867	-154,557
2	-24,944	-110,808	-127,180
3	75,650	-65,163	-63,963
4	103,087	31,784	-26,408
5	103,087	65,933	-10,875
6	103,087	103,087	55,024
7	103,087	103,087	55,024
8	103,087	103,087	46,099
9	103,087	103,087	83,654
10	103,087	103,087	83,654
Perpetuity	908,456	908,456	737,200



Summary

• The Internal Rate of Return (IRR) for the commercialization entity in the three cases is:

Case	IRR		
	Base	Conservative	Bear
No Perpetuity	37%	11%	-3%
With Perpetuity	43%	22%	13%










• Financing required to implement the case consists of a loan of \$270,000 USD at a 15% interest rate to be repaid in year 6.

Investment Opportunity	Core Investment	Why? (Pain-Point)	Funding Required	Expected Returns
Supply-chain interventions to achieve better operational efficiency	<p>1. Capacity Building to improve tuna fishing, handling and quality assessments.</p> <p>2. Cold-chain upgrades to improve tuna quality and prices.</p> <p>3. Secure sufficient working capital to immediately purchase all tuna.</p>	<ul style="list-style-type: none">Prices for Galapagos tuna are low and undifferentiated based on quality.Incomplete cold-chain transport, resulting for instance in packaged fish sometimes sitting on the tarmac for up to 5 hours while the plane arrives.Fishermen exit the value-chain early, and as a result are price-takers	<p>\$83,000 + \$15,000 + 30,000/yr. + 25,200/yr. ----- = \$153,200</p>	15% Interest Rate
Improved commercial-ization that enables better market access	<p>4. Establish purchase agreements that better coordinate fishing schedules among fishermen, and secure a stable supply for buyers.</p> <p>5. Social Marketing Campaign to develop a local market for sustainable Galapagos tuna.</p>	<ul style="list-style-type: none">Current fishing schedule creates cyclical over-supply in the local market which lowers prices.Both locals and tourists have demonstrated a preference for consuming white fish instead of tuna in Galapagos, in-part due to a lack of branding of the product (i.e. quality, origin)	<p>\$45,000/yr. + \$30,000/yr. + \$12,000 ----- = \$87,000</p>	
Management and fishing gear improvements that drive fish stock protection	<ul style="list-style-type: none">Support government with tuna fishery monitoring and enforcement.Reformulate fishing licensing system (to species-specific licenses) to avoid effort creep; charge new entrant fee.See C-FIP action plan for full list of potential government investments in management to support case (not required for case implementation).	<ul style="list-style-type: none">While the AIS and VMS systems are operational, and explicitly recognized in fisheries regulation, there remain weaknesses as far as using the AIS information to prosecute local IUU fishing such as turning off AIS transponders.Lack of species-specific fishing licenses are a barrier to secure tenure for Galapagos fisheries.	Included above	

A scenic view of a rugged, rocky coastline. In the background, a large, steep mountain peak rises above the water, its slopes covered in patches of green vegetation and exposed brown rock. The sky is bright blue with scattered white clouds. The foreground shows the calm, dark blue water of the sea. A dark blue rectangular overlay is positioned in the center-left of the image, featuring the word "Annex" in a white, sans-serif font.

Annex

BUSINESS MODEL CANVAS

<div><div>Key Partners</div><div></div></div> <div><div>For both Customer Segments:</div><div>Sustainably-minded Fishermen</div><div>Conservation International</div><div>Galapagos National Park</div><div>New centralized commercialization company</div><div>Key Actors within tourism sector</div><div>For each Customer Segments:</div><div>2. COPROPAG, strictly as a service provider of packing, and distribution to airport in Quito and/or Guayaquil</div></div>	<div><div>Key Activities</div><div></div></div> <div><div>For both Customer Segments:</div><div>Ensure tuna quality and food safety control</div><div>Ensure sustainability of tuna (i.e. Galapagos Seal)</div><div>Social Marketing campaign to create 'storied-fish' (Eco-Gourmet Program)</div></div> <div><div>Key Resources</div><div></div></div> <div><div>Human capital dedicated to improving the commercialization of sustainable Galapagos tuna</div><div>Working Capital to purchase large volumes of tuna</div></div>	<div><div>Value Proposition</div><div></div></div> <div><div>High-quality, sustainable and fully traceable tuna from Galapagos ('Storied Fish').</div><div>Differentiated Products</div><div>Responding to the following customer problems for the two Segments:</div><div>1. Limited availability of a reliable supply of local sustainable tuna; not a well develop 'storied fish', so can't capitalize on price premium.</div><div>2. Mainland restaurants are not capitalizing on 'storied fish' (i.e. Eco-Gourmet model)</div></div>	<div><div>Customer Relationships</div><div></div></div> <div><div>New commercialization company employees:</div><div>Company Manager</div><div>Client Relationship Specialist</div></div> <div><div>Channels</div><div></div></div> <div><div>For both Customer Segments:</div><div>Communication, Sales and Distribution (CI + new commercialization company)</div><div>For each Customer Segments:</div><div>2. Distribution (COPROPAG)</div></div>	<div><div>Customer Segments</div><div></div></div> <div><div>2-Segments:</div><div>1. Galapagos local seafood markets, including live-aboard cruises, local restaurants and hotels.</div><div>2. High-end seafood restaurants in Quito and Guayaquil.</div></div>
<div><div>Cost Structure</div><div></div></div> <div><div>Employees / Salary</div><div>Infrastructure / Equipment / Rent</div><div>Working Capital</div></div>		<div><div>Revenue Streams</div><div></div></div> <div><div>From both Customer Segments:</div><div>Profit margins between fair-trade tuna prices paid to sustainably-minded fishermen, and price premium received from sustainable 'storied fish'.</div></div>		