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.

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

Price premium for up to 308 fishers:
- 26% in month 1
- 45% in month 13
- 58% in month 72

<table>
<thead>
<tr>
<th>Stakeholder</th>
<th>$/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fishermen</td>
<td>$404,825 USD</td>
</tr>
<tr>
<td>Employees</td>
<td>$218,317 USD</td>
</tr>
<tr>
<td>COPROPAG</td>
<td>$67,677 USD</td>
</tr>
<tr>
<td>Government</td>
<td>$172,395 USD</td>
</tr>
<tr>
<td>Total</td>
<td>$863,214 USD</td>
</tr>
</tbody>
</table>

Value-add percentage per sector:
- Fishermen: 47%
- Employees: 25%
- COPROPAG: 8%
- Government: 20%
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 Segments

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Seafood Demand</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locals</td>
<td>272 MTon</td>
</tr>
<tr>
<td>Tourists</td>
<td>599 MTon</td>
</tr>
<tr>
<td>Total</td>
<td>871 MTon</td>
</tr>
</tbody>
</table>

Local Population: 25,708

# Tourists: ~240,000/year

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

### Local Market by segment

- Local Restaurants: 43%
- Tourism Cruises: 16%
- Local Market: 16%
- Seafood shops: 5%
- Sushi Restaurants: 21%

Both locals and tourists have demonstrated a preference for consuming white fish (86%) instead of tuna (14%) in Galapagos.⁴¹

### Percent Tuna Grade & Sale by End Market

<table>
<thead>
<tr>
<th>Quality</th>
<th>Total</th>
<th>Sushi</th>
<th>Cruises</th>
<th>Restaurants</th>
<th>Local Market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grade 3</td>
<td>29%</td>
<td></td>
<td></td>
<td></td>
<td>29%</td>
</tr>
<tr>
<td>Grade 2</td>
<td>50%</td>
<td>7.5%</td>
<td>40.2%</td>
<td></td>
<td>2.3%</td>
</tr>
<tr>
<td>Grade 2+</td>
<td>15%</td>
<td>2.5%</td>
<td>10%</td>
<td>2.5%</td>
<td></td>
</tr>
<tr>
<td>Grade 1</td>
<td>6%</td>
<td>2.5%</td>
<td>3.5%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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:

New Commercialization Company

Higher value markets

Currently limited distribution and undifferentiated commercialization

Fishery Cooperative

Sustainable Fishermen
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).

<table>
<thead>
<tr>
<th>Grade</th>
<th>% of Overall Tuna</th>
<th>Global Market Price/lb</th>
<th>Current Export Price/lb</th>
<th>Prices/lb With Inspector</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6%</td>
<td>$9.22</td>
<td>$4.00</td>
<td>$4.50</td>
</tr>
<tr>
<td>2+</td>
<td>15%</td>
<td>$6.85</td>
<td>$3.50</td>
<td>$4.00</td>
</tr>
<tr>
<td>2</td>
<td>50%</td>
<td>$4.39</td>
<td>$3.00</td>
<td>$3.50</td>
</tr>
<tr>
<td>≤3</td>
<td>29%</td>
<td>$2.93</td>
<td>$3.00</td>
<td>$3.00</td>
</tr>
</tbody>
</table>

- 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).

Summary

- The Internal Rate of Return (IRR) for the commercialization entity in the three cases is:
- 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.
<table>
<thead>
<tr>
<th>Investment Opportunity</th>
<th>Core Investment</th>
<th>Why? (Pain-Point)</th>
<th>Funding Required</th>
<th>Expected Returns</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply-chain interventions to achieve better operational efficiency</td>
<td>1. Capacity Building to improve tuna fishing, handling and quality assessments.</td>
<td>• Prices for Galapagos tuna are low and undifferentiated based on quality.</td>
<td>$83,000 + $15,000 + $30,000/yr. + $25,200/yr.</td>
<td>$153,200</td>
</tr>
<tr>
<td></td>
<td>2. Cold-chain upgrades to improve tuna quality and prices.</td>
<td>• 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</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>3. Secure sufficient working capital to immediately purchase all tuna.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Improved commercialization that enables better market access</td>
<td>4. Establish purchase agreements that better coordinate fishing schedules among fishermen, and secure a stable supply for buyers.</td>
<td>• 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)</td>
<td>$45,000/yr. + $30,000/yr. + $12,000</td>
<td>$87,000</td>
</tr>
<tr>
<td></td>
<td>5. Social Marketing Campaign to develop a local market for sustainable Galapagos tuna.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Management and fishing gear improvements that drive fish stock protection</td>
<td>• Support government with tuna fishery monitoring and enforcement.</td>
<td>• 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.</td>
<td>Included above</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Reformulate fishing licensing system (to species-specific licenses) to avoid effort creep; charge new entrant fee.</td>
<td></td>
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<tr>
<td></td>
<td>• See C-FIP action plan for full list of potential government investments in management to support case (not required for case implementation).</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Key Partners

- For both Customer Segments: Sustainably-minded Fishermen, Conservation International, Galapagos National Park, New centralized commercialization company

### Key Activities

- For both Customer Segments: Ensure tuna quality and food safety control, Ensure sustainability of tuna (i.e. Galapagos Seal), Social Marketing campaign to create ‘storied-fish’ (Eco-Gourmet Program)

### Value Proposition

High-quality, sustainable and fully traceable tuna from Galapagos (‘Storied Fish’).

**Differentiated Products**

Responding to the following customer problems for the two Segments:

1. Limited availability of a reliable supply of local sustainable tuna; not a well-developed ‘storied fish’, so can’t capitalize on price premium.
2. Mainland restaurants are not capitalizing on ‘storied fish’ (i.e. Eco-Gourmet model)

### Customer Relationships

New commercialization company employees: Company Manager, Client Relationship Specialist

### Key Resources

Human capital dedicated to improving the commercialization of sustainable Galapagos tuna, Working Capital to purchase large volumes of tuna

### Channels

- For both Customer Segments: Communication, Sales and Distribution (CI + new commercialization company)
- For each Customer Segments: Distribution (COPROPAG)

### Customer Segments

1. Galapagos local seafood markets, including live-aboard cruises, local restaurants and hotels.
2. High-end seafood restaurants in Quito and Guayaquil.

### Cost Structure

- Employees / Salary
- Infrastructure / Equipment / Rent
- Working Capital

### Revenue Streams

*From both Customer Segments:* Profit margins between fair-trade tuna prices paid to sustainable-minded fishermen, and price premium received from sustainable ‘storied fish’.

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