

## COLD CATCH

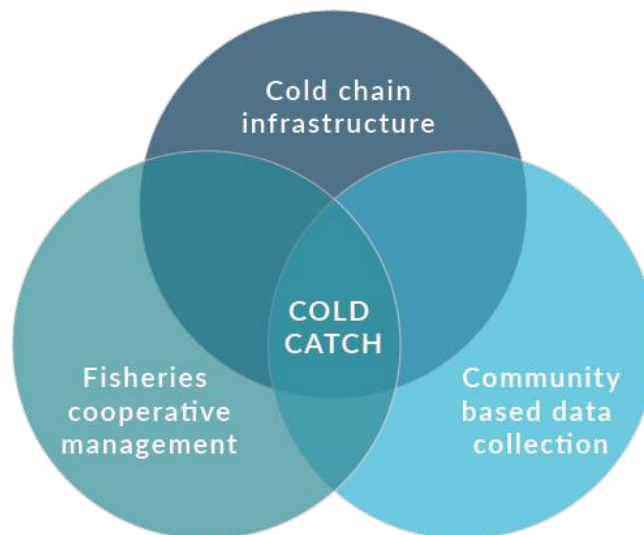
### Leveraging fisheries governance, data collection, and cold chain infrastructure to demonstrate the promise of the Somali fishing industry

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#### SUMMARY

The *Cold Catch* project will demonstrate that investment in an unbroken cold chain, when supported by fisheries co-management and community-led data collection, can improve livelihood and food security in Somali coastal communities. The lack of cold chain infrastructure (ice, coolers, cold storage, refrigerated transportation) is a significant impediment to sustainable growth of marine fisheries in Somalia. Secure Fisheries has joined with the Ministry of Fisheries and Marine Resources (MFMR) in the Somali state of Puntland to expand the fisheries sector in three coastal communities. Two key components differentiate *Cold Catch* from similar projects: coupling infrastructure procurement with robust data collection to guide and track progress, and cooperative fisheries governance and management to prevent unsustainable fishing. Over two years, *Cold Catch* will secure ice making equipment, ice boxes, solar-powered refrigerator/freezer units, and refrigerated transportation for the fishing communities of Bander Beyla, Gumbax, and Callula in Puntland. The fish caught in these communities will be transported first to Qardho, where an existing cold storage facility will be refurbished, and later to additional inland cities and the export market to Ethiopia. We estimate 500 Somalis will see increased profits throughout the value chain. Data collection and the resulting value chain analysis will ensure the infrastructure investment is viable and sustainable, while fisheries co-management will secure localized fisheries management plans that protect fish stocks while creating community ownership and empowerment over their marine resources. We seek \$436,000 to complete this project, which will supplement \$57,000 Secure Fisheries has already committed.



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[securefisheries.org](http://securefisheries.org)

## BACKGROUND

Somalia's productive marine fishing grounds provide opportunities for job creation, economic growth, and food security. Unfortunately, the industry's growth is limited by the lack of reliable infrastructure. Inefficient fishing and processing methods combined with limited access to ice and cold storage mean fish often spoil before they reach the market. This translates to lost profits for fishers. Moreover, the lack of data on fish catch and value means investors do not have the information needed to guide business projects. Finally, the absence of sustainable fisheries management throughout the region means poor fishing methods and overfishing threatens the long-term health of fisheries ecosystems and, consequently, the viability of Somali fishing businesses.

The ocean environment around Somalia is one of the most productive in the world, yet fishing is a nascent industry in Somalia. The potential for growth is significant. This potential is well-recognized by the Somali government, Somali society, and international donors and investors. Consequently, the Federal Government of Somalia has taken important steps in the past six years to support its fishing sector. In 2014 alone, the FGS joined the Indian Ocean Tuna Commission (which manages tuna, shark, and billfish stocks), updated its Federal Fisheries Law, and declared its Exclusive Economic Zone to the United Nations. More recently, the FGS has initiated fisheries data collection in six major coastal cities, has ratified the UN Food and Agriculture Organization's Port State Measures Act, and is further modernizing its fisheries legislation. While investment in the Somali fishing sector may have been risky ten years ago, today the foundation is set for success.

A lack of proper infrastructure is one of the most significant barriers to the profitable growth of the sector. Without a well-connected cold chain, Somali seafood products do not meet most standards for export. Additionally, the sector has high levels of waste, which contributes to overfishing and risks the long-term health of the fishery. With proper handling and storage, closing the Somalia Seafood Gap could result in significant economic growth in the fisheries sector. For example, in three of the top fisheries in the region, Somali products garner far lower prices than the global average.

The Somalia Seafood Price Gap		
Fishery	Somali price (USD)	Global mean price (USD)
Swordfish (ex-vessel price)	\$1.40 per kg	\$6.50 per kg
Yellowfin tuna (ex-vessel price)	\$1.60 per kg	\$2.30 - \$2.60 per kg
Spiny lobster (export price)	\$16.60 per kg	\$45 - \$78 per kg

## PROJECT VISION

**This pilot project will combine fisheries co-management with community-led data collection and externally-provided cold chain infrastructure that will reduce waste, improve product quality, and guarantee return-on-investment for businesses and investors.**

- Fisheries cooperative management (co-management) is a partnership between government and fishing communities that provides an effective governance structure for fisheries management. Local resource users work hand-in-hand with local, regional, and national government officials to design sustainable fisheries management plans. Co-management leverages local knowledge to create resource management plans that are realistic, have community support, and are tailored to community needs. Secure Fisheries has established co-management in two communities in the Somali region, and the government has encouraged its expansion. Co-management is needed in the region to support growing efforts at fisheries management that have been lacking for many decades. Successful co-management results in sustainable fishing practices, community ownership over resource protection, and more engaged fisheries cooperatives that support value chain growth.
- Community-based fisheries data collection, in this context, uses local data collectors trained in best practices of collecting fisheries catch and effort information. Data collectors work in and with communities to generate fisheries catch and effort data. Fishers voluntarily submit their daily catch information, and the records are shared with the fishing Co-Management Association, businesses, and the government. Secure Fisheries has established successful data collection in fishing communities around the Somali region, resulting in a national database that is informing large-scale legal reforms, international treaty compliance, and investment decisions. Furthermore, data collection informs business decisions by creating empirical input to formal value chain analysis.
- The cold chain refers to infrastructure that maintains desired temperature ranges for perishable items. In this case, the fisheries cold chain includes ice boxes (coolers) for fishing boats, ice makers, cold storage at fishing landing sites, refrigerated transportation, cold storage facilities at points of distribution and sale (restaurants, markets), and insulated containers for long-distance transportation, including export.

## PROJECT LOCATION

Cold Catch will begin in Bander Beyla, a fishing community in the Somali state of Puntland with valuable finfish and lobster fisheries that serve domestic and export markets. Over the past year, Secure Fisheries has provided skills-based training to the fishing community (net repair, environmental education, business development) and established [Somalia's first Co-Management Association](#) (CMA) as a foundation for sustainable fisheries management. In May 2020, in response to closed export markets due to the COVID pandemic, Secure Fisheries and SECCCO installed a 240 kg capacity solar-powered refrigerator, and fishers

have now expanded sales to the inland cities of Qardho and Garowe, and to nearby villages. The CMA is now collecting data on lobster catch, and storage and sales of finfish that move through the new refrigerator. This has informed a preliminary value chain assessment (see Appendix 2).

The Puntland MFMR has identified Bander Beyla, Gumbax, and Callula for this project. We propose to build on Secure Fisheries’ momentum in Bander Beyla by linking it to the inland markets of Qardho and Garowe (see Appendix 1). The field study in Bander Beyla will inform feasibility of expansion to Gumbax and Callula.

**Location of proposed sites for Cold Catch: Garowe and Qardho, two large inland cities, will receive fish from Bander Beyla (2021), Gumbax (2022), and Callula (2022).**



**PHASE 1 MICRO-PILOT: BUILDING FOUNDATIONS IN BANDER BEYLA (Completed)**

- The [UN75 Global Forum Innovations in Partnerships](#) event showcased *Cold Catch* and launched the partnership between the Ministries of Fisheries and Marine Resources (MFMR) of the Federal Government of Somalia and the state of Puntland; Secure Fisheries; the Global Cold Chain Alliance (GCCA); and the Somalia Seafood Exporters Association (SSEA).
- The Puntland MFMR agreed to the project scope and locations of work.
- Secure Fisheries established the Bander Beyla Co-Management Association, represented by a governing board that includes representatives from the local fishing cooperative, the mayor’s office, a women’s cooperative, and the regional MFMR.
- A solar-powered refrigerator/freezer unit (240 kg capacity) was provided by Secure Fisheries to Bander Beyla. This unit is managed by the CMA and has expanded the ability for Bander Beyla fishers to sell to the inland cities of Qardho and Garowe.

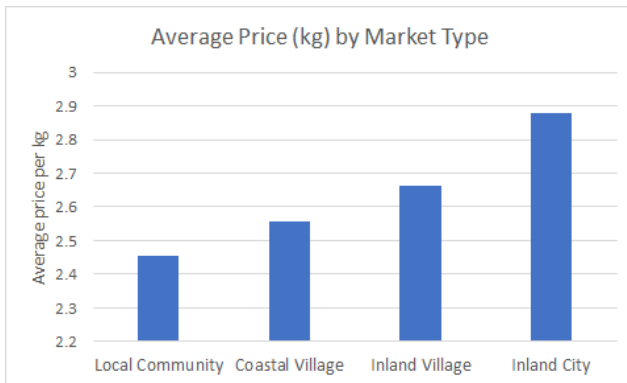
- The Bander Beyla CMA began collecting data on the type and quantity of seafood that is stored in the refrigerator, where it is sold, and the sales price, contributing to our value chain analysis.
- The Bander Beyla CMA began regular catch data collection for spiny lobster (size, sex, maturity) to contribute to the value chain analysis. This is expanding to finfishes in March 2021.
- Secure Fisheries & Future of Fish conducted value chain analysis of the lobster fishery (Appendix 2).
- Secure Fisheries assessed the market demand for seafood from Bander Beyla in Qardho, the nearest inland large market (Appendix 1).



The Bander Beyla Co-Management Association (CMA) was established in October 2020. Here, the Puntland Director General of Fisheries, Secure Fisheries' Field Manager, and the head of the fishing cooperative sign the agreement.



Secure Fisheries, with technical support from SECCCO, installed a solar-powered refrigerator/freezer unit in the CMA offices.



Data on refrigerator use has contributed to an initial study of the potential profit increase when cold chain equipment is used. Fishers earn a higher price per kilogram when they sell to large restaurants and hotels in the inland cities of Qardho and Garowe.



Community-led data collection began during the 2020 lobster season. Bander Beyla will begin a similar data collection effort for the finfish sector in early 2021. These catch data will inform sustainable fisheries management plans, developed by the CMA.



## PROPOSED NEXT STEPS

### Phase 2 Pre-scaling: Growing the Bander Beyla Corridor (2021)

- The on-going pilot project in Bander Beyla, led by **Secure Fisheries**, will provide data to inform a field-based feasibility and market study.
  - Finfish and lobster catch data from Bander Beyla will inform a fisheries profile
  - Sales data from fish caught in Bander Beyla, stored in a cooperative-owned solar-power refrigerator, and sold locally and in Garowe and Qardho will be used to estimate demand and inform a preliminary value chain analysis
  - A survey of buyers in Garowe and Qardho will supplement the sales data
  - A community survey will determine specific needs and involvement of the fishing community in Bander Beyla
  - A formal value chain assessment will be conducted by **Secure Fisheries** and **Future of Fish** (Appendix 2)
  - Baseline data for monitoring and evaluation will be collected
- The Bander Beyla Co-Management Association will develop a new fisheries management plan for the marine resources of Bander Beyla.
  - The **CMA** will organize members to participate in fisheries data collection
  - The **CMA** will maintain the cold chain infrastructure
  - The **CMA** will be responsible for maintenance and fuel for infrastructure
  - The **CMA and Secure Fisheries** will develop a local, multi-species fisheries management plan that focuses on the lobster and finfish fisheries. Data collection from the first six months will inform the plan, including the potential for closed areas or size limitations.
- **SECCCO**, a local solar company which has expertise in the Somali energy grid and cold chain, will contribute to technical aspects (specifications, installations, community training).
- The **Global Cold Chain Alliance** will assist SECCCO with training material and short courses.
- **Secure Fisheries** will provide ice boxes to fishers in Bander Beyla.
- **Secure Fisheries**, and **SECCCO** will install ice-making equipment in Bander Beyla (ideally, solar-powered) to be managed by the Co-Management Association. Pre-cooling will be tested.
- **Carrier Global, Secure Fisheries**, and **SECCCO** will install a blast freezer (-45C) in Bander Beyla.
- **Carrier Global** and **Secure Fisheries** will procure refrigerated vehicle(s) for the fishing community in Bander Beyla to transport their finfish to Garowe and Qardho, and to support exports of lobster to Dubai. Funding will be sought from a combination of donors and industry.
- Training for the vehicle drivers and point of purchase operators (e.g., restaurants, markets) will be provided to improve knowledge of food safety and basic refrigeration. **GCCA** will provide technical and source material support.
- A cold storage facility will be installed in Qardho.
- Community-based data collection for finfishes will be added to on-going lobster data collection
- **Secure Fisheries** will develop a monitoring and evaluation system to capture data for a profit and payback analysis with input from **all partners**.

### Phase 3 Scaling: Expansion to Gumbax and Callula (2022)

- Updated analysis of feasibility, based on data and monitoring in Year 1, will be undertaken in Gumbax and Callula.
- **Secure Fisheries** will complete an ecological sustainability analysis for the Bander Beyla component (e.g., “Did fishing effort grow too quickly to be sustained?”).
- Cold storage needs and solutions in domestic purchaser locations (Garowe and Qardho) will be explored.
- Expanded training on product handling will contribute to efforts to expand export markets.
- Cold chain solutions will connect Gumbax and Callula to Garowe and Qardho based on the model developed in Bander Beyla and supported by externally-raised funds.

### PARTNERS

- [Secure Fisheries](#) is a program of the One Earth Future Foundation. It has three offices in the Somali region and has operated for six years.
- The **Puntland Ministry of Fisheries and Marine Resources** (MFMR) is the governing body for fisheries in the Somali state of Puntland.
- [Carrier Global](#) is a leading provider of HVAC, refrigeration, fire & security solutions.
- The [Global Cold Chain Alliance](#) is a partnership of trade associations that grows the cold chain industry to improve safety and quality.
- [Future of Fish](#) is a non-profit organization dedicated to fisheries value chain growth and sustainable fishing practices around the world.
- [SECCCO](#) is a leading provider of solar-power energy in the Somali region.

*Statement from Carrier Global on the Cold Catch Project (March 11, 2021):* Carrier is committed to advancing the cold chain in low and middle-income countries. Through collaborations with NGOs and governmental partners, Carrier conducts pilots all over the world to help reduce food waste and food loss. Today, our products can be found in virtually every country, and we have deep expertise to share in protecting and preserving perishable foods and medical temperature-controlled products. Carrier works to build relationships and support networks around our customers to promote sustainable operational development and follow-up.

### EXPECTED IMPACT

Bander Beyla is home to 300 full-time fishers and their families. The community relies heavily on fishing for livelihood security. The demand for fish has dropped dramatically during the COVID-19 crisis. The city of Qardho has a population of about 120,000 people. Recently, heavy floods destroyed the city’s only central fish market. Finally, Gumbax and Callula are small coastal towns, and the number of permanent fishers is unknown. We estimate that profits will increase for about 400 Somali fishers, and about 100 traders, processors, and restaurant owners. Given the average size of a Somali family, we anticipate greater livelihood security for about 2000 people by the end of this project. Our proposed monitoring and evaluation assessments, supported by our data collection efforts, will assist us in validating these numbers.

## BUDGET

We are seeking an investment of \$436,000 to complete Phases 2 and 3 of this project. Secure Fisheries will lead the assessment of the project in Bander Beyla and complete a report of profits, investment opportunity, and sustainability to inform Phase 3 expansion into Gumbax and Callula. This will supplement the \$100,000 that has already been committed to the successful completion of the project.

Item	Cost (USD)	Funds Committed	Funds Needed
<i>Phase 1 Micro-pilot: Building Foundations in Bander Beyla</i>			
Solar-powered refrigerator/freezer	\$6,000	\$6,000 (SF)	-
Refrigerator data collection	\$1,200	\$1,200 (SF)	-
Lobster catch data collection	\$1,800	\$1,800 (SF)	-
Initial value chain assessment	\$7,000	\$7,000 (SF+FoF)	-
Qardho market demand assessment	\$1,000	\$1,000 (SF)	-
<i>Phase 2 Pre-scaling: Growing the Bander Beyla corridor</i>			
Feasibility and market study	\$40,000	\$10,000 (SF)	\$30,000
Fisheries management plan	\$10,000	\$10,000 (SF+CMA)	-
Cold chain maintenance and training	\$5,000	-	\$5,000
Ice boxes (50)	\$2,500	\$2,500 (SF)	-
Flake ice-making machine	\$26,000	-	\$26,000
Blast freezer	\$30,000	-	\$30,000
Refrigerated truck	\$75,000	-	\$75,000
Cold storage facility in Qardho	\$40,000	-	\$40,000
Finfish and lobster data collection	\$7,500	\$7,500 (SF)	-
<i>Phase 3 Scaling: Expansion to Gumbax and Callula</i>			
Value chain, sustainability, expansion report	\$10,000	\$10,000 (SF)	-
Co-management associations	\$20,000	-	\$20,000
Data collection	\$10,000	-	\$10,000
Cold chain infrastructure	\$200,000	-	\$200,000
<b>Total</b>	<b>\$493,000</b>	<b>\$57,000</b>	<b>\$436,000</b>



## APPENDIX 1 - PRELIMINARY MARKET STUDY OF QARDHO



City: Qardho

Other spellings: Gardo

Population: As of 2020, 120,000 people (20,000 households). Population in 2000 was around 47,400 - more than doubled over 20 years.

Located 238 km south of Bossaso and 215 km north of Garowe.

Notable infrastructure: Major road connecting Bandar Beyla, Garowe, and Bosaso runs through the center of Qardho. It appears many restaurants and hotels are on this road.

Was incorporated into Italian Somaliland during the early 20th century, but in Puntland now. In April 2013, the Puntland Ministry of Fisheries and Marine Resources announced plans to open a new fish market within the year in Qardho. The project is part of a larger regional development plan that will also see a similar marketplace inaugurated in Galkayo, in the model of the already launched Garowe fish market.

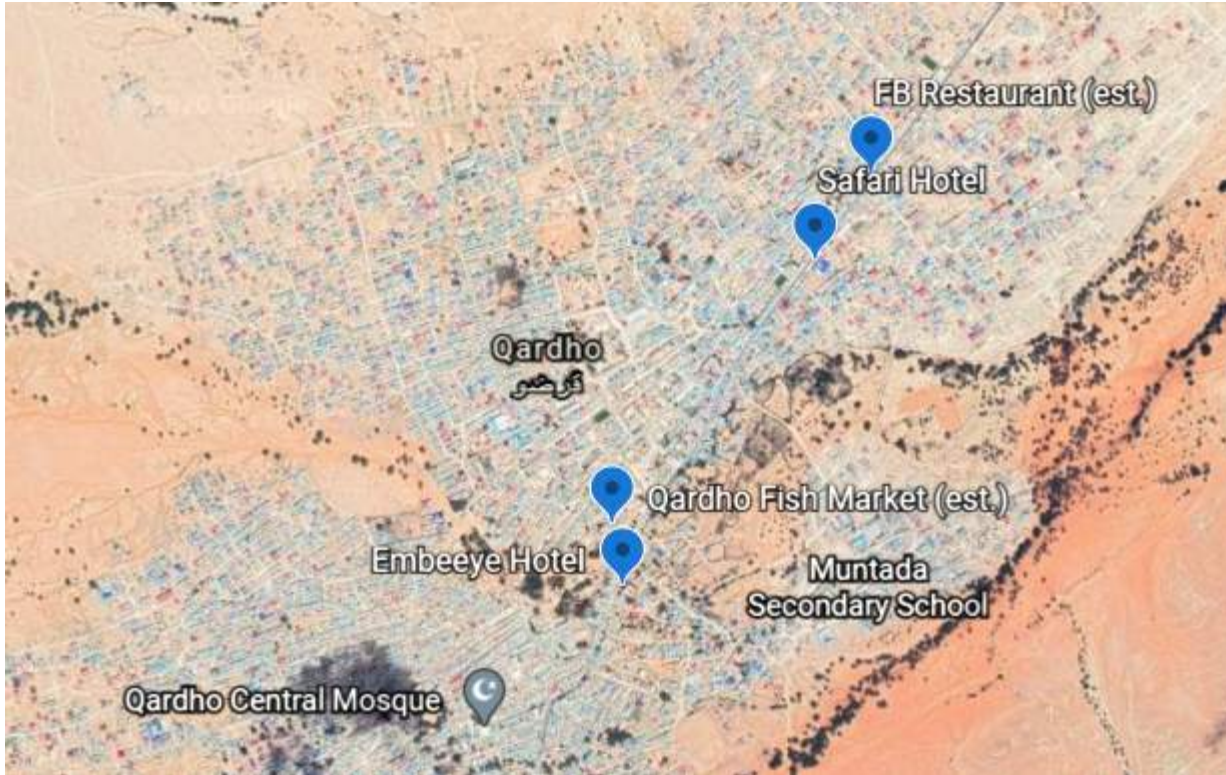
Hot desert climate, history of flash floods. In April 2020, flooding displaced 22,000 people (3,750 households), over 1/5th of the population, and destroyed 750 houses. Some fishers donated fish to the victims of the flood. The fish was stored in the market, but no information about cold chain.

According to a Fair Fishing survey of 115 Fresh Fish on the Dish Participants in Galkayo and Qardho in 2019, 100% of fish mongers and chefs report seeing an increase in fish demand. 65% of households eat fish at least once a week, and 17% of households eat fish three or more times a week. On September 25, 2018, an event in Galkayo announced ice machines, generators, and cold storages had been shipped to fish markets in Qardho and Galkayo - no updates on their use or state.

The Qardho fish market was destroyed in the flash flood and is not functioning right now.

### Qardho Market Data (Buyers and Available Cold Storage)

Potential Buyer Name	Type of fish needed	Quantity (Per week)	Cold storage used	Price (per kg)	Profit Range per Delivery
Farah Biyoole Restaurant	Yellowfin tuna (YFT), king fish, skip jack, Kawakawa (KAW), Sailfish	500kg	Small refrigerator (with the capacity of 600kg)	YFT: 2.5 - 2.8 King: 2.7 Skip: 2.5-3 KAW: 2-2.7 Sail: 2-2.7	1,000 - 1,500
Embeeye Hotel	King fish, skip jack, Marlin	380kg	Small refrigerator (with the capacity of 400kg)	King: 2.7 Skip: 2.5-3 Marlin: 2-2.5	760 - 1,140
Safaari Hotel	Yellowfin tuna, king fish	300kg	Small refrigerator (with the capacity of 350kg)	YFT: 2.5 - 2.8 King: 2.7	750 - 840
Iwaydii Restaurant	Yellowfin tuna, long tail tuna, marlin	270kg	Small refrigerator (with the capacity of 300kg)	YFT: 2.5 - 2.8 Long Tail: 1.8-2.6 Marlin: 2-2.5	486 - 810



## APPENDIX 2 - PRELIMINARY VALUE CHAIN ANALYSIS OF BANDER BEYLA'S LOBSTER FISHERY

[Future of Fish](#) has developed an innovative tool for assessing fisheries value chains in data-poor locations and for identifying the interventions that will produce the highest return-on-investment while prioritizing resource sustainability. Secure Fisheries has used this tool to assess the lobster fishery in Bander Beyla.

Future of Fish's **Fisheries Development Model (FDM)** unlocks hidden value in marine fisheries. The FDM is a systems approach that provides both a framework and a process for solving complex fisheries issues. The FDM orients *creation of value* as the best approach to achieve long-term security and sustainability in fishery systems. The value created or captured introduces new incentives (such as improved incomes for artisanal fishers) and unlocks new resources (such as private investment), by promoting the social and economic benefits of fishery transformation. This framework includes a research and design process: five core "streams" are used to assess the current status of a fishery and its associated supply chains, characterize systemic barriers (where resources and energy are "stuck"), and identify opportunities for intervention and capital coordination. The five streams of the framework are:

1. Business Innovation
2. Blended Finance
3. Data and Technology
4. Community Development and Livelihoods
5. Management and Governance

Using a combination of existing data and field research, the FDM methodology maps and analyzes the full fishery system and socializes the findings with stakeholders to refine and develop solutions. Secure Fisheries and Future of Fish have completed Phase 1 for the Bander Beyla lobster fishery.

### Phase 1: Research

The Research phase of the FDM combines existing data with new data generated from interviews and observations in the field to assess factors across the five streams. The Research phase provides the raw material from which to begin identifying opportunities for interventions and includes the following outputs.

1. Stakeholder map
2. Blended finance landscape that categorizes funding resources across funder types
3. Supply chain map and market analysis
4. Value scorecard that assesses of key areas where value is lost or could be created
5. Maturity assessment of current conditions in the system across all five streams
6. Discovery method to identify stuck points and strategies of success

### Phase 2: Synthesis

Results from the Research phase are then analyzed in a Synthesis process to identify the following.

1. Barriers: systemic challenges faced by multiple actors in the system that, if resolved, could open up resources and opportunities for many and diverse individuals and/or stakeholder groups.
2. Opportunity Areas: aspects of the system that are ripe for intervention.



### Phase 3: Co-design of interventions

Once the outputs of the framework are created, they are socialized with stakeholders in the community. This is the start of the Co-design phase, where findings from Research and Synthesis are verified and refined by stakeholders, illuminating specific interventions—both for-profit and not-for-profit—that can help unlock value in the system and direct that value towards generation of economic, social, and environmental benefits.

### Preliminary results of the Fisheries Development Model for Bander Beyla’s lobster fishery

This table shows select metrics from the value chain analysis of Bander Beyla’s lobster fishery. Each Attribute of the fishery is ranked, based on input from fisheries data, experts, and the community, from one (worst) to five (best). These scores, combined with data on lobster catch and prices, informs a scenario analysis that estimates financial return to the lobster fishery based on different interventions in the market or fishing sector. *(Note: the full analysis considers dozens more attributes and additional stakeholders than shown here).*

Attribute		Stakeholder							
Data		Fisher	Wholesaler (domestic)	Hotels (domestic)	Wholesaler (Export)	Exporting Proc.	Government (Federal)	Government (State)	Government (District)
Data	Infrastructure Maturity	2	3	3	3	3	4	4	3
Data	Technology Maturity	1	2	2	2	2	2	2	1
Data	Process Maturity	1	2	2	2	2	1	1	1
Data	Information Management Maturity	2	3	3	3	3	3	3	3
Data	Stakeholder Adaptability	2	2	2	2	2	3	3	3
Data	Data Sharing / Traceability Maturity	2	2	2	3	3	2	2	2
Data	Data Richness	2	2	2	2	2	2	2	2
Data	<b>Overall (average)</b>	1.7	2.3	2.3	2.4	2.4	2.4	2.4	2.1
Value Chain		Fisher	Wholesaler (domestic)	Hotels (domestic)	Wholesaler (Export)	Exporting Proc.	Government (Federal)	Government (State)	Government (District)
Value Chain	Stakeholder Alignment	1	3	1	1	1			
Value Chain	Product Mix Optimization			2					
Value Chain	Product Standing Maximization			1					
Value Chain	Efficiency	2	2	2.5	2	2			
Value Chain	Resilience			2					
Value Chain	<b>Overall (average)</b>	1.6	2.5	1.8	1.5	1.5			

The following graph shows how the Fisheries Development Model can quantify the value of a specific intervention. In this scenario, improvements in efficiency and quality coupled with product-market optimization increases the total value of the Bander Beyla lobster fishery. The first bar (left) is the current value of the fishery, broken down by where value is found in the system. The second bar (right) is the potential value of the fishery if an intervention provided a 5% gain in efficiency and quality, making the lobster more desirable on the export market, increasing its value there, and adding a small amount of domestic distribution. The result of these modest changes is an increase in the overall value of the fishery—in just Bander Beyla—of \$1.3 million USD without any increase in fishing effort.

