INVESTING FOR **SUSTAINABLE GLOBAL FISHERIES**

With support from:

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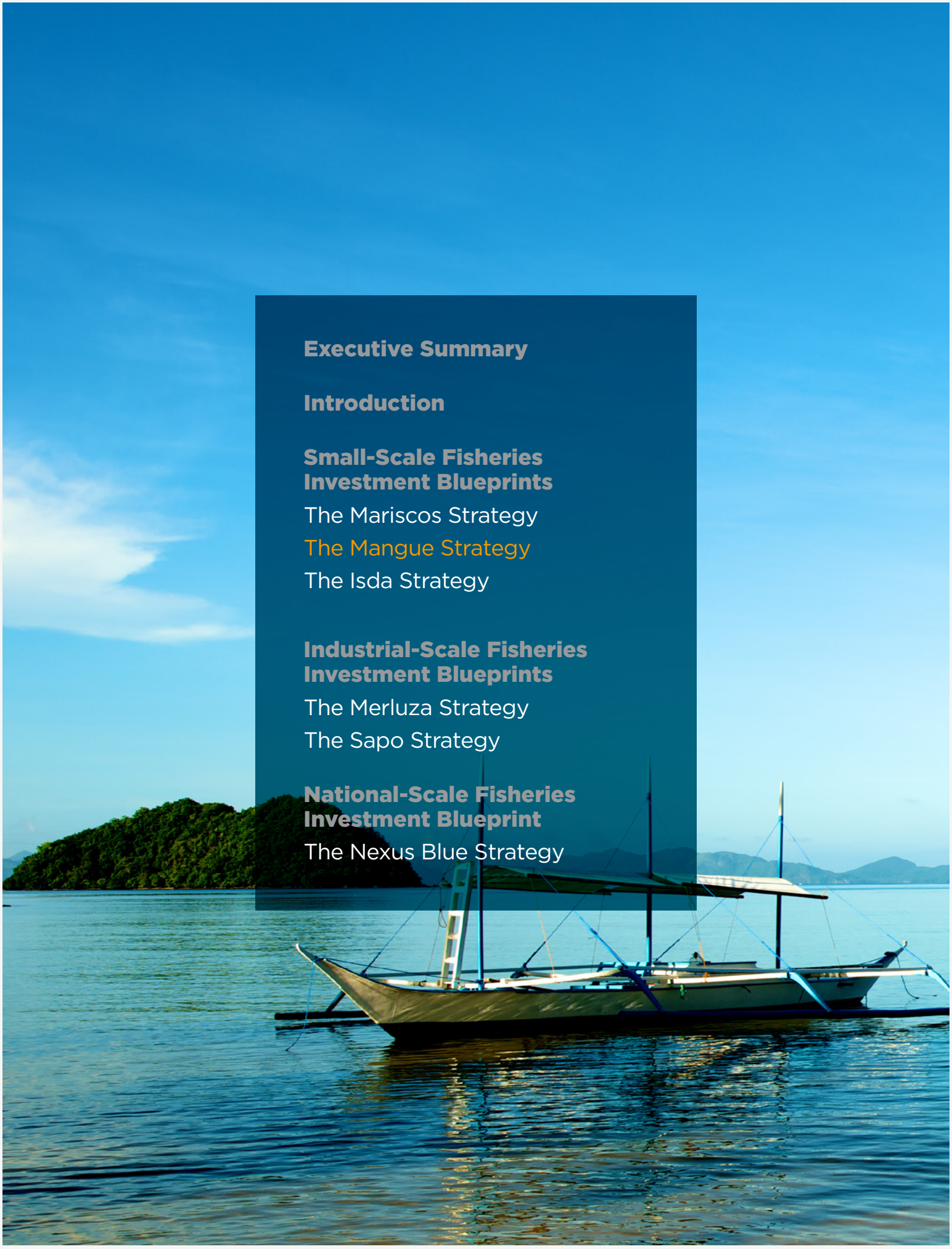

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THE MANGUE STRATEGY

AN INVESTMENT BLUEPRINT FOR SMALL-SCALE FISHERIES IN BRAZIL

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THE MANGUE STRATEGY

Encourage Capital has worked with support from Bloomberg Philanthropies and The Rockefeller Foundation to develop an impact investing strategy supporting the implementation of sustainable management and extraction practices in a small-scale fishery in Brazil. The Mangue Strategy (Mangue) is a hypothetical $15 million impact investment to protect the mangrove crab *(Ucides cordatus)* fishery in the Brazilian state of Pará.

This $15 million investment would fund the implementation of critical management improvements across the fishery, and be used to launch a crab export business with a network of buying stations and a modern processing facility designed to meet both domestic and international food safety standards. The Mangue Strategy has the potential to generate a 12.0% levered equity return while protecting the mangrove crab stock biomass from current and future overfishing, enhancing up to 1,300 fisher livelihoods across 10 extractive reserves (RESEXs), and providing an additional 2.4 million seafood meals to market annually by Year 9. Additionally, the strategy would support the sustainable management of up to 300,000 hectares of critical coastal mangrove forest within the Amazon Delta, protecting and capturing the economic and ecosystem services of this delicate ecosystem.

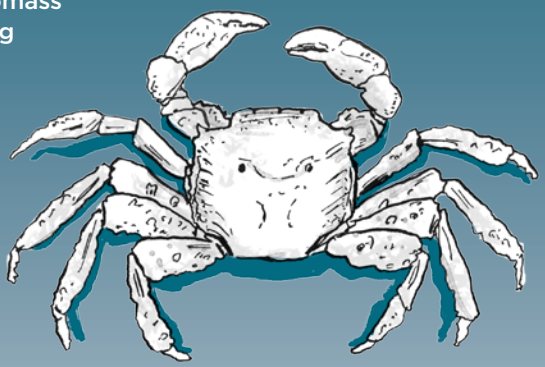
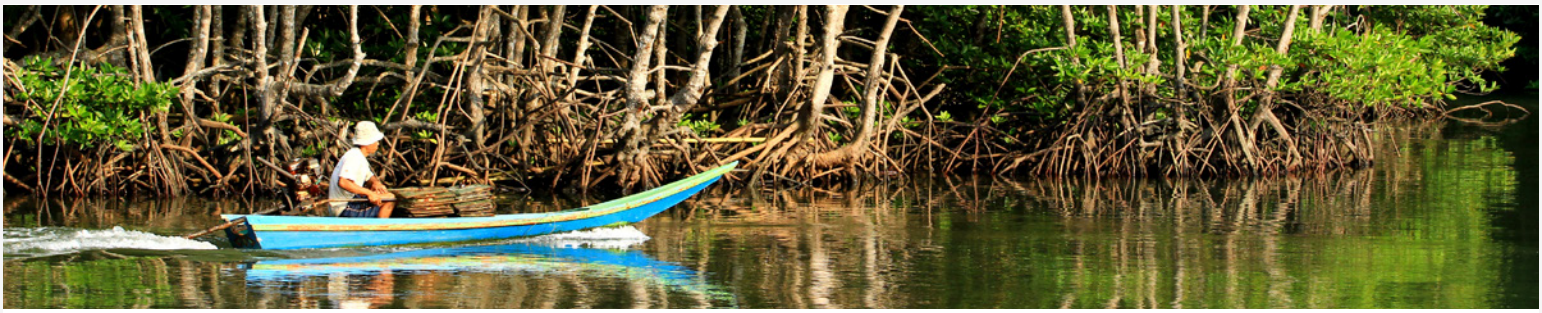


Illustration by Brett Affrunti

Note: While the Mangue Strategy is based on analysis of actual communities, fisheries, and commercial business opportunities, Encourage Capital has synthesized these findings into a single investment strategy to be used as a roadmap for stakeholders interested in sustainable, small-scale fisheries impact investing. As such, some of the commercial and programmatic entities referenced herein are hypothetical and have been assigned fictitious names. Wherever this is the case, the hypothetical entities will be clearly identified.



THE MANGUE STRATEGY

The sustainable harvest of mangrove crabs is of both environmental and social importance and is the basis of the Mangue Strategy ("Mangue" or "the Strategy"). Mangrove crabs are comparable to other mass-market crab species in terms of taste and texture, and can be processed into a variety of marketable seafood products. The crabs are found exclusively in dense forest ecosystems known as mangrove forests or "mangroves", which grow in tropical and subtropical coastal zones around the world. Brazilian mangroves, many of which are located in expansive protected areas along the coast, are among the most biodiverse ecosystems on Earth and provide critical spawning grounds and nurseries for many commercial and non-commercial marine species. Mangrove crabs are considered a keystone species in this ecosystem due to their role in shaping the physical, chemical, and biological conditions.

The Mangue Strategy outlines an impact investing strategy across a large swath of the coastline in the state of Pará, spanning some 300,000 hectares and encompassing nearly 30% of Brazil's total mangrove forest habitat (see Figure 1). The state's mangrove forests produce roughly 50% of the total mangrove crab landed nationally. Straddling the heart of the Amazon Basin, Pará consists of some of the most species-rich habitats on Earth, but is also facing intense pressure from destructive land-use activities including mining, aquaculture, and deforestation, making it the subject of much national and international environmental concern.

FIGURE 1: Map of Pará State, Brazil

Mangue outlines an impact investing strategy across a large swath of the coastline in the state of Pará, spanning some 300,000 hectares and encompassing nearly 30% of Brazil's total mangrove forest habitat.

Photo credit Tarciso Leão

The mangrove crab fishery spans a series of coastal extractive reserves, referred to as "RESEXs," which exclude non-community members from fishing the crab resource while allowing virtually unlimited extraction by community members living within the reserve area. This system regulates the fishery to a degree, but leaves the prospect of overfishing largely unresolved.

While data collection efforts have been lacking, research suggests that an estimated 2,000 full-time crabbers landed approximately 80% of the average 5,000 metric tons (mt) of total crab harvests in the years leading up to 2004. The last government assessment of landings was conducted in 2007, and showed only 3,000 mt of crab harvested from the fishery.[1] The reason for this decline in landings is unclear, but could be related to improved economic growth in the region from 2005 to 2007, drawing fishers into alternative economic activities. Crabbing has traditionally been seen as a profession of last resort due to the difficult working conditions and low pay, so activity levels in this fishery tend to be inversely related to the strength of the Brazilian labor market. As of 2014, landings in Pará were estimated to have increased once again to at least 5,000 mt, representing an aggregate value of approximately $5.3 million.

This rising rate of extraction, coupled with a weakening Brazilian economy, poor access limitations that technically allow any of the 150,000 community members across the 10 RESEXs to harvest crab, and growing demand for crab products domestically and internationally, threatens to dramatically increase fishing effort. Such overfishing, in turn, could drive significant crab-stock declines, with ramifications for the broader ecosystem, given the keystone role of the species. Neighboring states and select micro-regions within the reserve have already experienced this phenomenon.[2] Moreover, with the recent economic downturn in Brazil, there is increasing pressure being put on officials in Pará to allow the conversion of mangrove forests to shrimp aquaculture in an attempt to generate alternative livelihood opportunities, further threatening the mangrove crab fishery.

As such, the Mangue Strategy would attempt to implement robust management systems and provide an economic case for conservation *before* overfishing, habitat destruction, and stock depletion occur. To do so, the Strategy proposes the investment of $15 million in equity, program-related investments, and grant funding to launch CEB,[3] a mangrove crab processing and distribution business, combined with robust fishery

[1] ARR Araujo, "Fishery Statistics and Commercialization of the Mangrove Crab Ucides Cordatus (L.) in Braganca, Pará, Brazil," Center for Tropical Marine Ecology, 2006. Current (2014) estimates are based on consultant estimates derived from biological parameters and primary research undertaken by local universities.

[2] Based on conversations with local academics and conservation organizations operating in the region.

[3] CEB stands for "Crab Export Business," the name chosen for the hypothetical Brazil-based company to be established in the state of Pará.

management improvement measures implemented across 10 RESEXs in the state of Pará. Sourcing solely from community fishers adhering to strict sustainable management guidelines, CEB aims to be the first Brazilian mangrove crab processor licensed to sell crabmeat products across state lines and to export to international markets. The Mangue Strategy's innovative approach would incorporate the use of (a) investment capital to catalyze government policy reforms, (b) robust data collection technologies and systems, and (c) financial incentives that reward sustainable fishing practices over time. Bundling fishery management improvements with a commercial enterprise would enable the Mangue Strategy to capture higher value for the crab products, create a more efficient and responsible commercialization channel, and reward fishers for maintaining sustainable fishing practices on an ongoing basis.

The Mangue Strategy aims to preserve current stock levels, with a modest upside potential of 10% increased in biomass due to reduced fishing pressure.[4] The strategy aims to increase aggregate fisher incomes by 33%, offer greater resilience for fishing communities through profit-sharing mechanisms, and empower fishers through community organization and enhanced market power. The Mangue Strategy also has the potential to dramatically reduce spoilage in the supply chain while increasing the number of meals to market by up to 59% by the project's final year. In addition, the Mangue Strategy hopes to reduce the conversion of critical mangrove forest habitats to aquaculture or other uses by giving them additional economic value. Finally, the base case projections suggest that the Mangue Strategy has the potential to generate compelling financial returns, targeting a 12.0% levered equity return, with diversified cash flows stemming from both domestic and international markets, over a nine-year horizon.

IMPACT AND FINANCIAL RETURNS

- Safeguards mangrove crab stock levels across 10 RESEX sites with the potential to increase biomass by 10%, depending on current fishery conditions
- Increases aggregate fisher incomes by 33%, and improves community resilience through profit-sharing programs
- Empowers fishers and fishing communities by extending formal recognition to newly organized crabbing associations that provide political, legal, and professional representation, improving access to banking, credit, and government pension and health benefits
- Increases meals-to-market by 59% through spoilage reductions, delivering an additional 2.4 million meals to consumers annually
- Promotes the protection of more than 300,000 hectares of mangrove forest from encroaching threats of development, mining, and shrimp farming by providing a sustainable and profitable means of sustainable production
- Targets a 12.0% levered equity return over a nine-year period

The Mangue Strategy aims to preserve current stock levels, with a modest upside potential of 10% increased in biomass and biodiversity gains due to reduced fishing pressure.

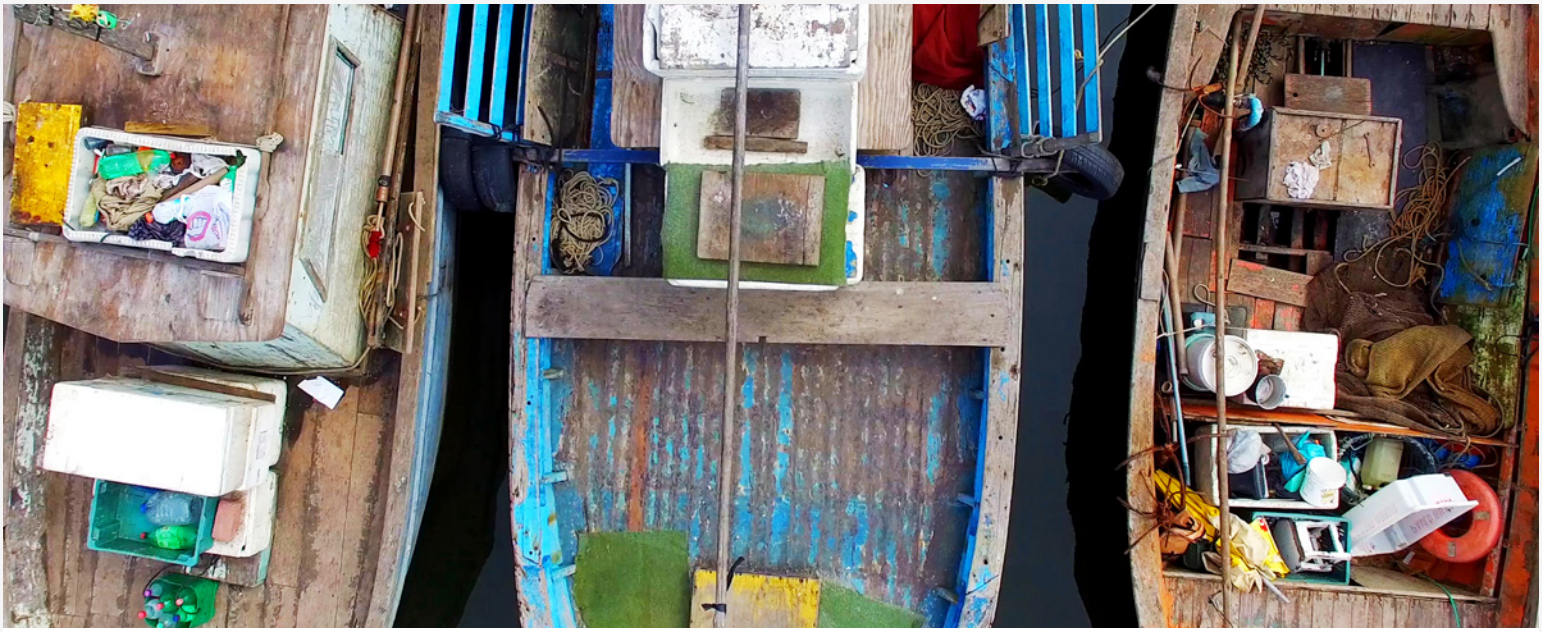
[4] While The Mangue Strategy believes that the potential exists for stock recovery, the business model and project economics both assume that the fishery is maintained at current biomass levels.

KEY VALUE DRIVERS

The impact and financial returns listed above are underpinned by the following set of key value drivers:

VALUE DRIVERS	DESCRIPTION
Catalyzes government policy reforms	The Mangue Strategy and its operating partners would negotiate with fisheries authorities to establish specific management policies, including science-based catch limits, increased enforcement and prosecution of illegal activity, and the imposition of rules to restrict the sale of illegally harvested crab.
Uses innovations to increase fisher compliance	The use of catch accounting and other data systems, in combination with financial market incentives to reward fishers for sustainable practices, can increase fisher compliance with fishery management improvements.
Establishes best-in-class partnerships	The Strategy would require close collaboration with complementary operating partners, particularly conservation NGOs and academic institutions, in the design and implementation of the fishery management improvements. Moreover, the Strategy will seek to create a collaborative stakeholder engagement process, aiming to cultivate buy-in from fishers and their communities to promote sustainable fishing practices.
Engages experienced commercial management	The Strategy would be overseen by an experienced, mission-aligned commercial management team to launch CEB and oversee its engagement with various operating partners. The proposed team has a three-year track record of success in seafood sourcing, processing, and distribution from emerging markets, and over 15 years working as retail buyers and advisors in the sustainable seafood arena.
Capitalizes on growth and margin expansion opportunities	The Mangue Strategy captures greater value from the current catch volumes by reducing spoilage from 50% to 5%, increasing the volume of marketable final product by up to 59%, and achieving 20% to 50% higher prices than current market channels through sales to new high-value markets.
Leverages a strong commercial market position	CEB can market its product with a set of unique social and environmental selling points to the proposed management team's existing network of global clients. CEB's product would be the first sustainable, artisanal seafood product from Brazil meeting international food safety standards.
Supported by strong underlying seafood market fundamentals	Global demand for traceable, responsibly sourced, quality crab meat is growing due to extensive fraud and illegal sourcing of product in recent years. Same-store crab-product sales are increasing in the U.S. at a compound annual rate of 8.5% since 2012.

We believe this set of value drivers will increase the probability of the Mangue Strategy's success.



PROFILE OF THE MANGUE STRATEGY FISHERIES

Brazil contains the second largest area of mangrove habitat in the world, with more than one million hectares found along its more than 7,000 km of coastline. No extraction or human interference is allowed inside the protected areas designated by IBAMA (the Brazilian environmental agency), except for in specially designated zones that are open to artisanal extraction using traditional, low-impact methods. These zones are defined as National Reserves for the Extraction of Natural Resources, or RESEXs by their Portuguese acronym. These RESEX zones are intended to serve as "territorial spaces destined for the self-sustained exploration and conservation of renewable natural resources by user populations".[5] RESEXs are established only upon request by local populations who participate in the design and implementation of a co-management plan (between the community and the government) in exchange for exclusive access rights to particular resources.[6] Inside these zones, industrial operators are not permitted, nor are fishers from outside of the designated communities.

The Mangue Strategy selected the state of Pará primarily because its large number of small-scale fishers and high volume of crab production offer compelling commercial and impact potential. Pará's mangrove forests, located at the mouth of the Amazon Basin, constitute the second longest contiguous stretch of mangrove habitat in the world, covering 3,000 km of coastline and approximately 30% of Brazil's total mangrove habitat. This area is of critical ecological importance, and NGOs and academia are active in the region, offering strong partnership opportunities for the Mangue Strategy's design and implementation.

In Pará State, the Mangue Strategy has identified 10 designated RESEX zones in which local community members are permitted to harvest specified marine resources, and in which the mangrove crab accounts for almost 50% of all extracted resource products by value. In these zones, only male crabs are caught due to the larger claws and higher meat content. The Mangue Strategy anticipates incorporating all 10 RESEXs into its sourcing program, which encompass a total area of 302,809 hectares (approximately 1,200 square miles), as shown in Figure 2.

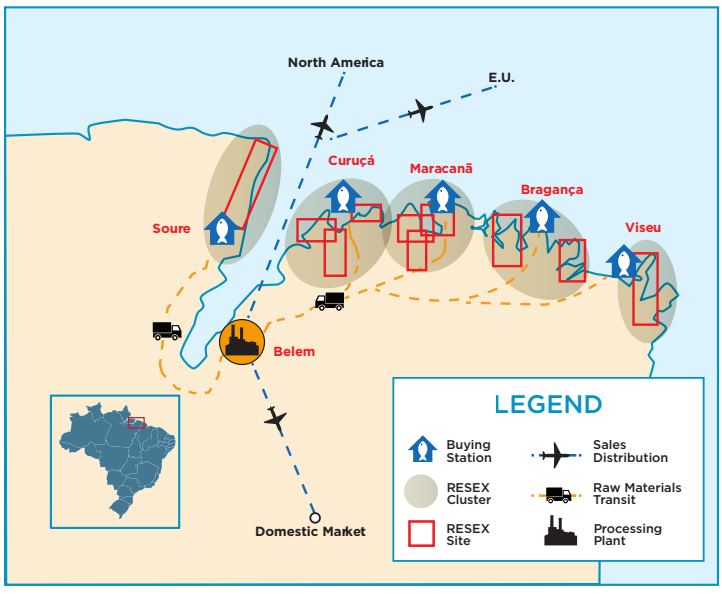
[5&6] U. Saint-Paul. "Interrelations among Mangrove, the Local Economy, and Social Sustainability: a Review from a Case Study in Northern Brazil". Environment and Livelihoods in Tropical Coastal Zones. CABI. 2006.

FIGURE 2: The Mangue Strategy RESEX Areas

RESEX AREA	SURFACE AREA (HECTARES)	MAIN MUNICIPALITY
Gurupi Piriá	74,082	Viseu
Marinha de Caeté Taperaçu	42,489	Bragança
Mãe Grande de Curuça	36,678	Curuçá
Maracanã	30,179	Maracanã
Soure	29,578	Soure
Marinha de Tracuateua	27,864	Quatipurú
Marinha Mestre Lucindo	26,465	Marudá
Marinha Mocapajuba	21,028	São Caetano de Odivelas
Marinha Cuinarana	11,036	Cuinarana
São João da Ponta	3,409	São João da Ponta
TOTAL	302,809	

The 10 RESEX zones can be broadly grouped into five extraction "clusters," each with its own buying station as a regional hub, as illustrated in Figure 3.

FIGURE 3: Regional Extraction Clusters, Sourcing Hubs, and Logistics Strategy for the Mangue Strategy in Pará, Brazil



CURRENT REGULATORY FRAMEWORK

The RESEX areas effectively serve as TURFs, or Territorial Use Rights for Fisheries areas, which prevent outsiders to the fishing communities from entering the fishing grounds and harvesting the crab. This basic access limitation offers a foundation for development of further fishery management improvements, and makes the RESEXs attractive candidates for the Strategy.

The mangrove crab fisheries in Brazil have historically been regulated through both federal and state laws outlining permissible catch zones, extraction methods, seasonal closures, and minimum size limits. Unfortunately, these laws are seldom enforced, given the fragmented nature of the mangrove crab fisheries in Pará and the lack of monitoring and enforcement capacity of local fisheries authorities. In the absence of public resources for implementation and enforcement, the Mangue Strategy hopes to improve the implementation of fishery management measures by introducing community-based accountability structures and gradually aligning fisher economic incentives with mangrove crab stock health. This co-management approach is a foundational tenet of the RESEX model, but to date has been poorly implemented in the mangrove crab fisheries due to a lack of organization among crabbers and the large extent of the RESEX areas.[7]

Bycatch and illegal landings of undersized or female crabs are not major problems for this fishery. However, the seasonal fishing closures, spanning six weeks in total during the months of January through March, are not enforced, as evidenced by the availability of fresh crabs and crabmeat in the market during the ban period.

Although the resource is not currently believed to be overexploited, growing harvest pressures due to the economic downturn in Brazil and rising demand for crabmeat domestically and internationally are cause for concern. Given these factors, The Mangue Strategy would seek to catalyze and secure certain regulatory reforms, particularly to: (i) establish a system of crabber licensing formalizing the profession, (ii) create a cap on total allowable harvest, and (iii) increase enforcement resources to reduce illegal harvest and commercialization. Achieving these goals would go a long way toward protecting and even increasing current mangrove crab biomass levels.

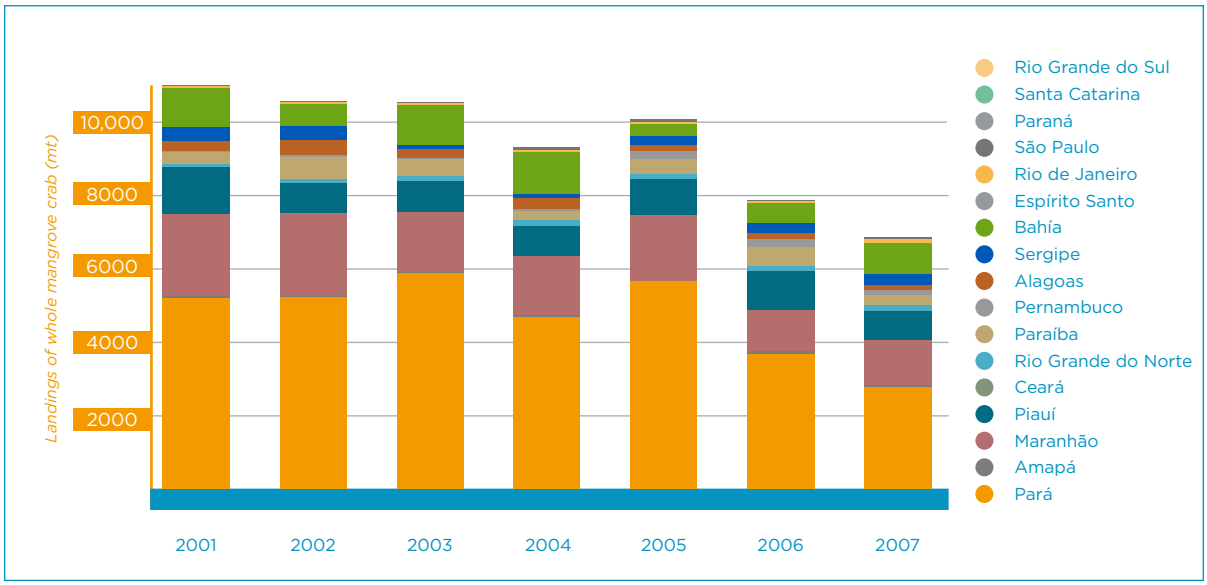
Mangue's approach is aimed at catalyzing government policy reforms to strengthen access limitations and increase enforcement, to eliminate fishing during the ban period, to introduce a full-catch reporting and documentation scheme, and to implement a traceability system to ensure that crabs are extracted in a sustainable way.

[7] U. Saint-Paul. "Interrelations among Mangrove, the Local Economy, and Social Sustainability: a Review from a Case Study in Northern Brazil". Environment and Livelihoods in Tropical Coastal Zones. CABI. 2006.

CONDITION OF MANGROVE CRABS IN BRAZIL

The Brazilian environmental agency, IBAMA, recorded annual landings by state and species until 2007 but has since suspended any mangrove crab data collection in the Pará region. Based on the limited historical information, annual landings in Pará oscillated from between 4,600 mt and 5,800 mt per year in the early 2000s, but decreased to less than 3,000 mt in 2006 and 2007.[8] (See Figure 4.) Given the lack of scientific data for the fishery, experts cannot currently determine whether the decrease was the start of a persistent reduction in crab catches or the result of reduced effort in the fishery during that period. Current unofficial estimates suggest that landings have since rebounded to nearly 5,000 mt, likely as a result of the recent economic downturn in Brazil and a resulting increase in fishing effort as crabbers return to the fishery.

FIGURE 4: Official Brazilian Government Landings Statistics for Mangrove Crab, 2001–2007



SOCIOECONOMIC CONTEXT

Upwards of 150 communities across the 10 associated municipal districts of Pará are within or bordering a RESEX, with 150,000 community members granted access to the extractive reserves. Of these, an estimated 120,000 people depend in some way upon the RESEX resources to earn a living, with approximately 75,000 relying on the harvest, processing, transport, or sale of mangrove crab for either all or a significant portion of their livelihood, which often combines subsistence with commercial activities.[9]

While there are full-time crabbers who take pride in what they do, many individuals use crabbing as a safety net for short-term poverty alleviation when other employment options disappear or become less economically viable. The fishery operates as such because of the lack of barriers to entry, the reduced need for specialized skills, and the absence of requirements for any up-front capital investment. The consequent influx of part-time and opportunistic crabbers can lead to turf conflicts, and during periods of increased fishing effort, oversupply can drive down prices. This is especially challenging for those full-time crabbers who rely on the resource for 100% of their income. A day of crabbing consists of an average of eight hours spent manually extracting the live crabs from their burrows. While fast-working crabbers under the best conditions can earn up to $20 per day net

[8] Instituto Brasiliero de Meio Ambiente (IBAMA), "Estatistica da Pesca: Brazil," Ministerio do Meio Ambiente, Brazil, 2007.

[9] Ulrich St. Paul and, Horacio Schneider, "Mangrove Dynamics and Management in Northern Brazil", Springer Science and Business Media, 2010.

Photo credit Tarciso Leão


Photo credit José Pinto

of costs, their productivity levels are restricted by variations in tides, weather, and seasons, as well as the number of days per week that they are able to go out. As a result, average daily earnings for full-time crabbers range from $3 to $4 per day over the course of a year.[10]

The state of Pará is located in the second poorest region of Brazil, behind the northeastern states, with 36% of the population considered "poor" (living on less than $130 per month) and 13% categorized as "extremely poor" (living on less than $65 per month). Among the rural population utilizing the RESEX resources, these numbers are even more pronounced, with between 50% and 80% of this population falling below the poverty line, depending on the region.[11] Crab fishers are among the most disenfranchised members of these communities, as they are unlicensed individuals operating almost entirely within the informal economy, and are afforded no professional or political representation in the form of associations or cooperatives common among other types of fishers. Because their profession is not legally recognized as such, they also lack access to government social security benefits, health coverage, minimum wages, and access to credit and the banking system.

THE CURRENT SUPPLY CHAIN

Collectors generally harvest mangrove crabs by either pulling them out of their burrows by hand or with a hooked stick, and tie the animals together in bunches of 10-20 live individuals. From this point, the crabs enter a fragmented and inefficient supply chain in which the product changes hands multiple times between intermediaries before it is ever consumed.

Crab fishers typically sell their catch immediately following harvest to reduce the risk of spoilage, and thus are at the mercy of price fluctuations, weather events, and any other external forces that may affect their yields. In some cases, crabbers sell live crabs to primary traders, who then mark up and sell fresh crab to restaurants or other consumers. Throughout this process, crabs are traditionally transported while tied together without padding or adequate humidity. This has been shown to lead to mortality losses of 50% on average, as crabs are dehydrated and become aggressive when tied together.[12] Crabbers also sell crabs in local open-air markets or directly to "pickers", artisanal processors who manually extract meat from between 150 and 300 crabs per day, often in their homes.[13] Processing the crab by hand

[10] Capistrano, et al.,. "Crab gatherers perceive concrete changes in life history traits of Ucides cordatus, but overestimate their past and current catches", *Ethnobiology and Conservation 1* (7), 2012.

[11] Instituto Brasileiro de Geografia e Estatistica (IBGE), "2010 Population Census," 2011.

[12] Daniel Viana, "Brazil Coastal Fisheries Fellowship Report," Rare International Service Program, Final Report, 2013.

[13] Fernandes, et al., "Productive Chain of the Mangrove Crab in the Town of Braganca, in the Northern Brazilian State of Pará," *Journal of Coastal Research,* April 2014.

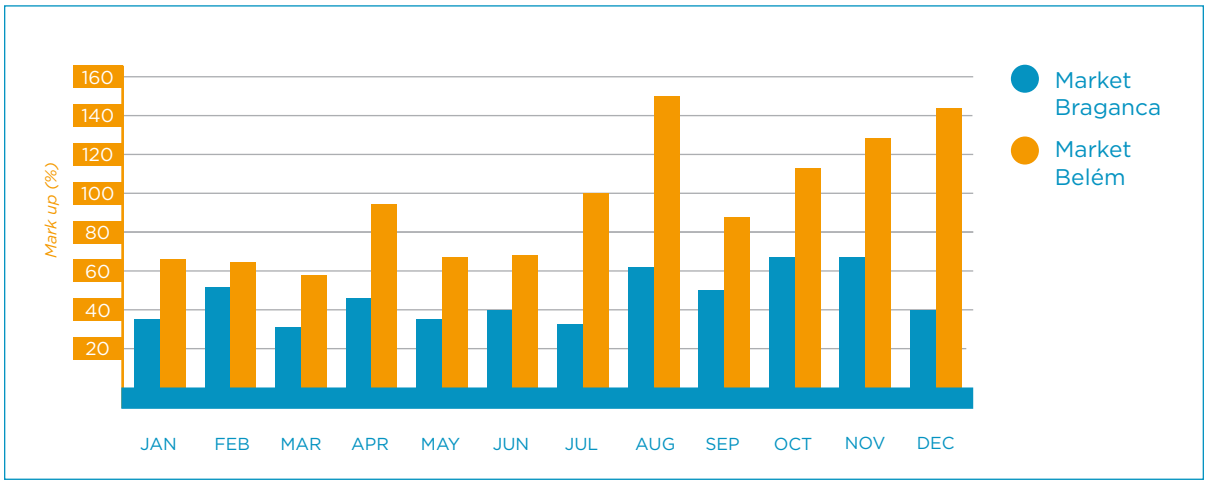
Photo credit Cristiano Burmester

is a painstaking, time-intensive, and highly inefficient process. Once pickers have removed the meat, secondary traders buy it and sell it to local restaurants or, in some cases, to larger regional markets.

At each turn in the supply chain the product price is marked up as each intermediary must carve out a profit, regardless of added value.

All of this markup occurs downstream from artisanal crabbers, who see none of the estimated 32%–150% markups that have occurred by the end of the live crab supply chain.[14] Figure 5 shows total supply chain markups for live crab in two major mangrove crab harvesting hubs, tracked throughout the year.

FIGURE 5: Estimated Markup of Mangrove Crab Prices



[14] Fernandes, et al.,. "Productive Chain of the Mangrove Crab in the Town of Braganca, in the Northern Brazilian State of Pará," *Journal of Coastal Research,* April 2014.

A supply chain analysis of the processed crabmeat commercialization chain in the crab markets of Braganca and Belem shows an even higher average markup in the processed meat market. The distribution of markup throughout the year at each stage in the supply chain is shown in Figure 6.

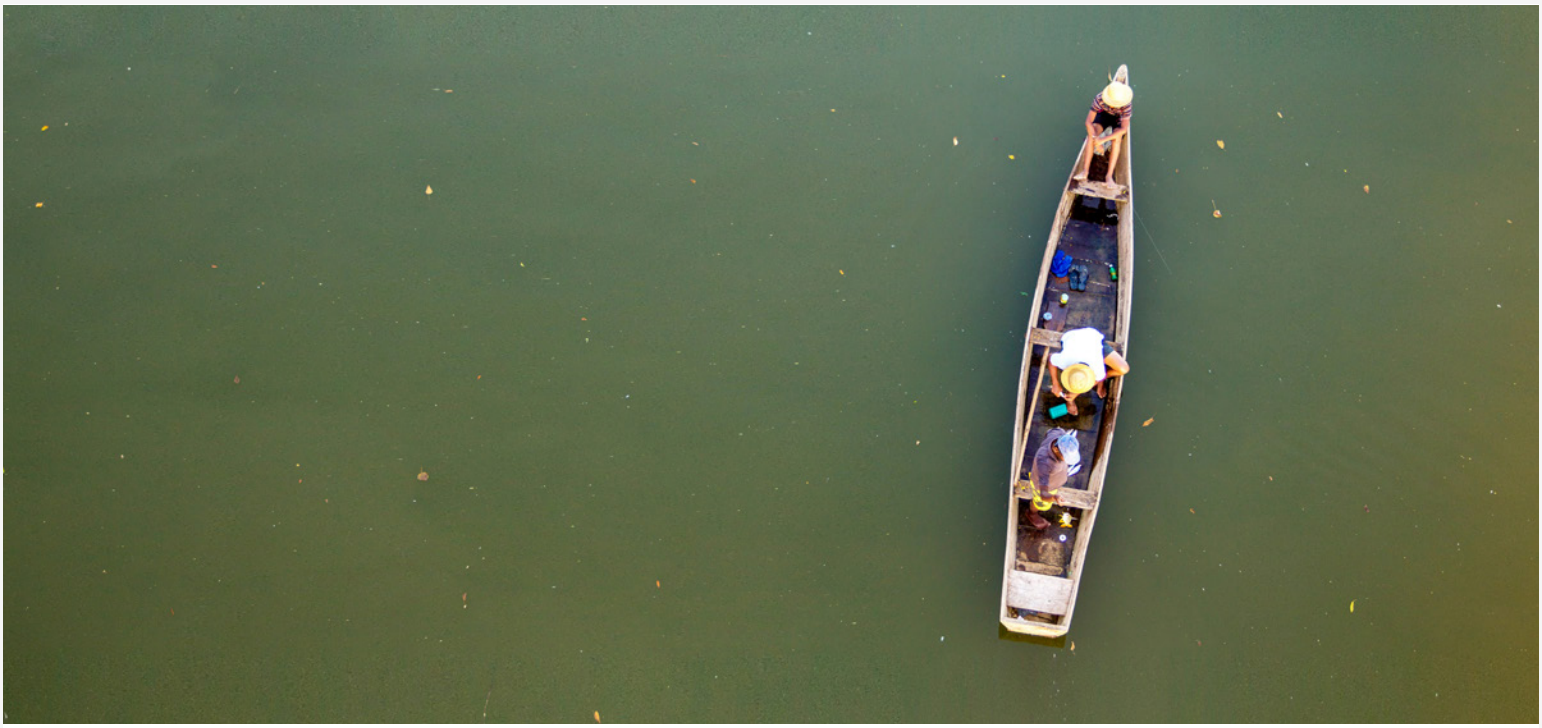
The sale of live crab takes place as quickly as possible due to high mortality rates and little to no access to cold storage. Crabbers must sell their catch directly to intermediaries and traders at whatever price they can get, leaving them highly vulnerable both to changes in yield due to weather events and profits due to price fluctuations. This vulnerability also largely excludes crabbers from the higher profit margins enjoyed by those further down the supply chain. Markups of live crab have been documented to be as high as 150%.[15] Because of the fragmented supply chain and lack of processing and transport infrastructure, crabbers have no access to higher-value markets and currently see no material benefit to engaging in sustainable fishing practices.

FIGURE 6: Total and Individual Markup (%) in the Pulp Crabmeat Commercialization Chain on the Braganca and Belém Markets, 2003

	TOTAL MARKUP (%)	MIDDLEMAN MARKUP (%)	WHOLESALER MARKUP (%)	RETAILER MARKUP (%)
January	149	27	29	52
February	160	23	31	60
March	143	21	25	60
April	124	7	33	58
May	127	6	58	35
June	211	37	64	38
July	110	6	38	43
August	154	25	33	52
September	156	15	45	52
October	204	15	59	66
November	212	16	50	79
December	216	12	57	79

Because of the fragmented supply chain and lack of processing and transport infrastructure, crabbers have no access to higher-value markets and currently see no material benefit to engaging in sustainable fishing practices.

[15] ARR Araujo, "Fishery Statistics and Commercialization of the Mangrove Crab Ucides Cordatus (L.) in Braganca, Pará, Brazil," Center for Tropical Marine Ecology, 2006.



THE MANGUE IMPACT STRATEGY

IMPACT INVESTMENT THESIS

The Mangue Strategy's impact thesis is premised on the opportunity to bundle investments into robust fishery management improvements with investments in crab processing and distribution to create the economic incentives necessary to finance ongoing fishery management improvements and reward fishers for complying with them. As such, the Mangue Strategy proposes three key steps:

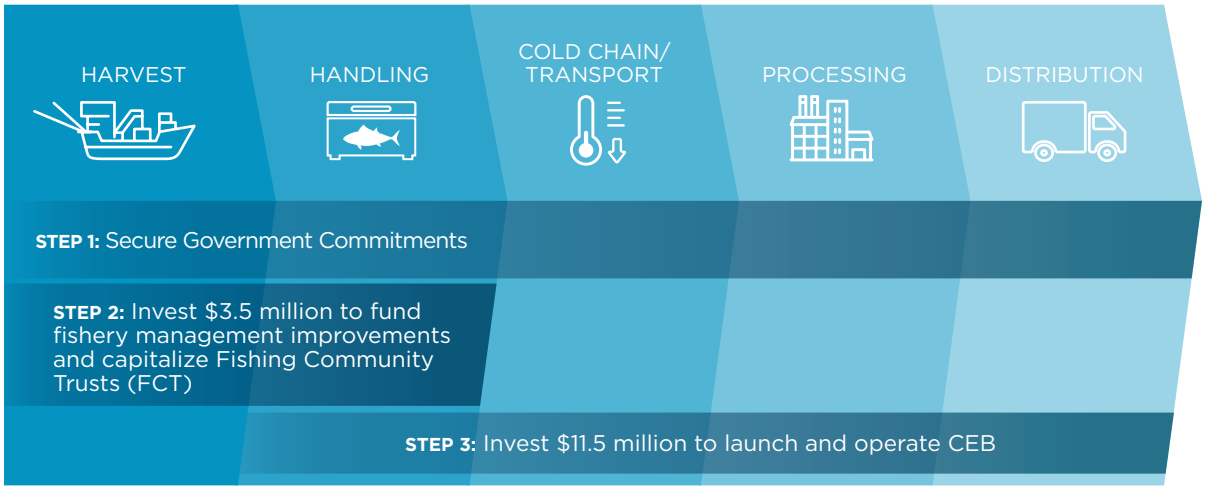
Step 1: Engage with fisheries authorities and communities to secure specific fishery management policy reforms.

Step 2: Invest an initial $3.5 million into the design and implementation of fishery management improvements and the capitalization of Fishing Community Trusts in each of the ten RESEX zones.

Step 3: Invest $11.5 million into a new Crab Export Business (CEB), funding the construction of 10 buying stations for sourcing raw materials, a state-of-the-art processing facility, and development of new marketing and sales channels for Brazilian mangrove crab. (See "The Mangue Strategy Commercial Investment Thesis" section below for a full description of CEB's strategy and value proposition.)

[16] This covers fishery management improvements costs for the first three years of the Strategy prior to CEB generating revenue.

SMALL-SCALE FISHERIES SEAFOOD SUPPLY CHAIN



STEP 1: SECURE GOVERNMENT COMMITMENTS

The Mangue Strategy would first seek to establish specific management commitments from Brazilian fisheries authorities at either the state or federal level. In order to protect mangrove crab biomass and mangrove forests, there must be effective access and total allowable catch limitations in place in the fishery. While the RESEX serves as an important cornerstone to access limitations by prohibiting non-community members from fishing the resource, the unlimited access afforded to community members without a total allowable catch limit leaves the fishery and ecosystem vulnerable to increasing numbers of community members entering the fishery. The Mangue Strategy would thus work with fishery authorities and the crabber association to codify a series of regulations including to (i) establish a system of fisher licensing, (ii) create a cap on total allowable harvest, and (iii) increase enforcement resources to reduce illegal harvest and commercialization. All of these measures would serve to facilitate and empower the creation of crabbing associations of legal harvesters.

The passage of these measures is believed to be feasible given their direct alignment with and reinforcement of the ultimate objectives of the RESEX management approach, wherein communities "co-manage" natural resources with limited government support, mostly in the form of codified harvest rules and enforcement. Moreover, the recent disbanding of the Ministry of Fisheries in Brazil is widely seen as positive step, and should help catalyze renewed government effort to improve fishery management, and particularly "win-win" opportunities such as this one.

STEP 2: FISHERIES MANAGEMENT IMPROVEMENTS

The Mangue Strategy's plan contemplates implementation of fishery management improvements in 10 RESEX zones in the state of Pará.

THE FISHERIES MANAGEMENT PLAN

The proposed fishery management improvements incorporate design criteria that are aligned with international sustainability standards and best practices. In addition to the anticipated government commitments highlighted in blue, the table below outlines the fishery improvement measures associated with the portfolio sites and funded by the Mangue Strategy. The Mangue Strategy would seek to have most of these measures in place by Year 4 when commercial operations would begin.

CORE FISHERIES MANAGEMENT COMPONENTS	ACTIVITIES	PROPOSED MANAGEMENT IMPROVEMENTS
Stakeholder Engagement	Government Engagement	• Engage with fisheries authorities to secure policy reform commitments and resources
	Community Engagement	• Hold convenings with fishers to educate them on sustainable harvest methods, closed seasons, catch documentation, size limits, and other critical sustainability measures
	Community Support	• Assist fishers in organizing into producer associations to enhance their political and market power, while also making it easier for CEB to coordinate fishery management and sourcing activities
Policy Rules and Tools	Exclusive Access Rights	• Establish crabber registration and licensing system with a cap placed on the number of permitted harvesters[17] • Establish science-based catch limits in accordance with estimates of maximum sustainable yield that can be refined as additional data is collected over time • Improve monitoring and enforcement of illegal harvest and commercialization
	Biological Monitoring and Assessment	• Conduct stock assessment based on four-year time series of capture data and catch per unit effort (CPUE)
	Fisheries Management	• Work with local operating partner(s) to design and oversee implementation of RESEX-specific fishery management plans outlining proper harvesting, landing, and catch-documentation practices, as well as other key environmental considerations
Compliance	Catch Accounting	• Create database for systematically storing all landings data recorded by CEB at buying stations to inform fishery management efforts, and particularly harvest limits
	Product Traceability	• Implement RFID tagging program to provide full traceability from the buying stations to market
	Local Enforcement Systems	• Sign contracts with the leadership of each of the crabbing associations stipulating that in exchange for access to the CEB commercialization channel and Sustainable Fishing Rewards Program (described below), all the association members must comply with the guidelines of the fishery management plan

[17] Given that the fishery is not currently overexploited, the total allowable catch would not necessarily decrease; rather, this regulation would seek to prevent harvest in excess of MSY by future entrants into the fishery and to allow for adaptive management based on stock conditions.

The Mangue Strategy proposes to utilize third-party auditing of its fishery management improvement implementation to create additional discipline and accountability in its sourcing policies and systems. The auditors would be asked to review reports provided by CEB and the local implementation partner, to conduct formal reviews of fishing practices and management systems, and to perform surprise annual audits.

SUSTAINABLE FISHING REWARDS PROGRAM

Fishers willing to commit to Mangue's fishery management improvements and serve as suppliers to CEB's sourcing network (see "Commercial Investment Thesis" section) would be eligible to participate in the Mangue Strategy's Sustainable Fishing Rewards Program (SFRP). The Mangue Strategy proposes to employ the SFRP as a financial incentive to catalyze and maintain the implementation of sustainable artisanal fishing practices to support habitat protection, stock preservation, and regulatory compliance across the 10 RESEX zones.

The SFRP would offer economic rewards to fishers and fishing communities in two ways: (a) through the payment of higher prices per unit of catch (referred to as "price premiums"), and (b) via a profit-sharing mechanism whereby fishing communities are allocated an economic interest in CEB's business, gaining access to a share of the proceeds from the Company's sale at exit (see Figure 7).

Raw Material Price Premiums

CEB expects to be able to pay fishers prices that are over 30% higher than current local market prices for live, whole crab raw material, as a result of a combination of improved supply chain efficiencies and resulting decreases in spoilage rates of up to 90%, and of higher-margin sales to export markets for finished goods.

The Fishing Community Trust

In addition, The Mangue Strategy will invest $2.5 million to capitalize 10 newly created financial entities called "Fishing Community Trusts" (or FCTs), with one FCT for each RESEX.[18] The FCT would serve as an adjunct entity to newly formed crab fishing associations in each RESEX, which CEB and the management implementation partner will help establish, creating an additional incentive to reward sustainable fishing practices beyond the up-front premium. The Mangue Strategy proposes that the FCT be structured as a community reserve fund or insurance pool, where funds could be drawn down to help participant communities cover revenue shortfalls as a result of inclement weather, changes in tides, or other environmental phenomena that curtail harvest.[19]

Each FCT would be capitalized at the project outset with $250,000 in grant funding from a combination of philanthropic sources and Brazilian state or federal governments or development agencies, with 25% of funds becoming available each year. The goal of the FCT in years 1 through 4 would be to provide incentives to the communities to participate in Mangue's fishery improvement efforts prior to CEB being able to pay out premiums for raw materials. Given that the FCT would be exhausted by Year 5, The Mangue Strategy would allocate 20% of the proceeds from the sale of CEB to recapitalize the portfolio FCTs in the ninth year of the investment.[20] In the intervening years, the premiums would be used as the primary financial incentive to reward compliance. In this way, the FCT both incentivizes participation from the Strategy's outset with committed funds up front, while also providing a share of longer-term profits generated through the success of the crabbing association-CEB collaboration. This approach avoids the challenge of sharing profits with thousands of crabbers independently, while still providing tangible benefits for participation to them and their communities.

[18] The concept and structure of the FCT is borrowed, in part, from the structures used by Fair Trade in distributing premiums earned on Fair Trade products to producing communities. Visit See "annualreport.fairtrade.org/en" for a description of Fair Trade's successful use of this mechanism.

[19] The allocation and use of FCT funds will be subject to all rules and restrictions pertaining to the use and distribution of grant and government funding both within the local Brazilian context as well as the domiciles from which the funds are sourced.

[20] If exit proceeds were sufficiently large or investors were willing to forgo a greater equity share, these funds could be used to endow a trust fund to pay for community or fishery improvements in perpetuity. This Fishery Management Fund mechanism is explored in the Merluza Strategy Blueprint.

The FCT would have the following governance and membership requirements:

a. The Fishing Community Trust (FCT) should be established as a public benefit trust, wholly owned and governed by each RESEX crab-fisher association, subject to minimum conditions established through an FCT charter document.

b. FCT leadership must be elected annually by its members by simple majority in a democratic vote.

c. FCT's governance would include rotating board members, one representing each of the crabber associations in the ten RESEX regions and selected by the crabbers in that region. Each member would have one vote. The Mangue Strategy would have three voting members selected from among its operating partners.

d. Fund distribution decisions would be on the basis of a simple majority vote, while proposed modifications to the FCT charter would require a two-thirds supermajority from the board with at least two votes from Mangue Strategy members.

e. The board would be responsible for determining to what use to put the funds each year, subject to the constraint that they be directed toward communities in full compliance with the Mangue Strategy fishery improvement plans and fall within the usage restrictions of the grant provider.[21]

f. Member obligations must include agreement to and compliance with the adopted fishery management improvement plan, to be updated and renewed annually.

g. The FCT will have a vesting period of four years, whereby the association receives an incremental 25% share of the total funds each year, but only after demonstrated compliance with the fishery management improvements. At the end of the project, the FCT would be recapitalized with the proceeds from the 20% equity share in CEB, dependent upon continued compliance throughout the life of the project.

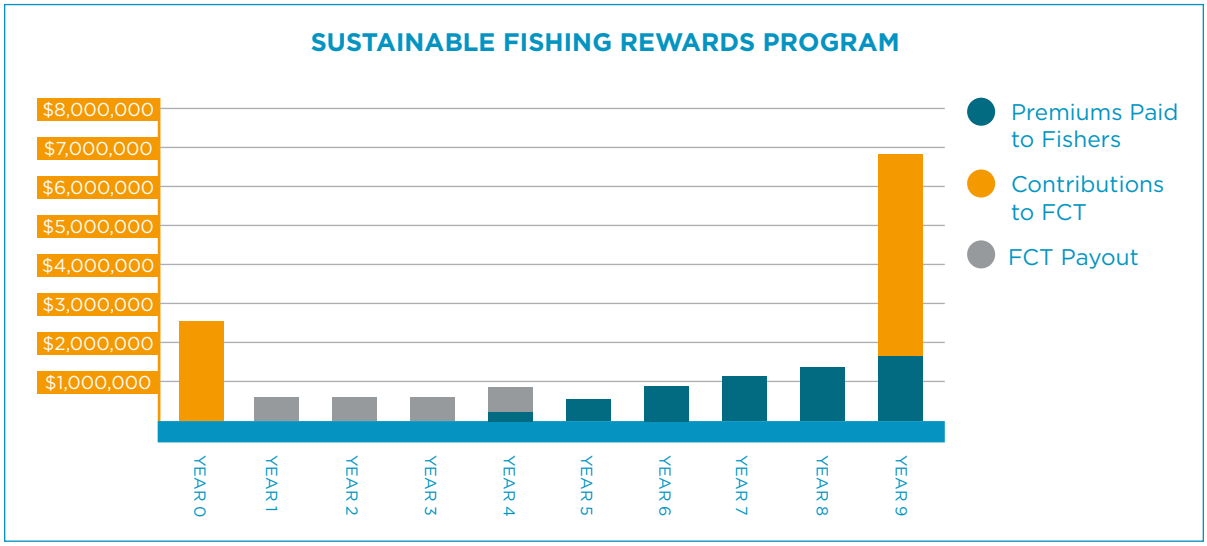
CEB would only source raw material from current members of the FCTs in each fishing association on the basis of individual and community compliance with the fishery management improvements as determined by local community monitoring and annual third-party verification. Prices for specific volumes of landings will be paid directly to fishers so long as their membership in the association and compliance with the terms of the FCT remain intact. Proceeds generated by the FCT's 20% economic interest in CEB's business operations generated at exit would be split among the FCTs in order to recapitalize them.

The Mangue Strategy estimates the current value of the estimated 5,000 mt landed annually across the 10 RESEXs to total approximately $5.3 million. The Mangue Strategy estimates that sufficient additional economic value can be generated each year across its operating footprint to pay out an average of $1 million in annual price premiums during the six years following the inception of raw material sourcing in Year 4, reaching $1.7 million annually by 2024. The value of the FCT equity stake is projected to reach $5.7 million in future value terms under base case assumptions, with further upside growth potential if the investment period were to be extended.

[21] The FCT would be capitalized initially with grant funds from philanthropic and regional government sources, potentially constraining how the funds are used.

The Mangue Strategy believes that it can generate sufficient additional economic value each year across its operating footprint to pay out an average of $1 million in annual price premiums during the six years following the start of sourcing operations in 2019, reaching $1.7 million annually by 2024.

FIGURE 7: Sustainable Fishing Rewards Program (FCT and Premiums)[22]



In addition, the Mangue Strategy proposes securing legal contracts with the leadership of each of the associations stipulating that, in exchange for continued legal status and access to the benefits provided by the crab fisher associations and affiliated FCTs (such as premium prices, CEB equity, and political recognition as legal harvesters), the members must comply with the fishery management improvements.

Any association or individual found to be in breach of the agreement could lose access to these valuable benefits as well as to the SFRP. This use of enforceable covenants and incentives would create a self-policing structure in which the association's leadership would be able to use a range of punitive measures to protect the broader interests of the association against the harmful actions of individual fishers, including revocation of both fishing rights (subject to legal approval) and membership in the federation. This structure highlights the important interplay between market incentives and fisher compliance in a context in which sanctions on individual fishers by the Mangue Strategy by itself may be legally or politically infeasible.

Management and Implementation

The Mangue Strategy would seek to establish partnerships with locally active NGOs, preferably with existing knowledge of mangrove crab fisheries in Brazil, to serve as implementation partners. The partnership would incorporate a services agreement offering a fee payment for delivery of specific fishery management activities, including organization of fishers and establishment of the proposed Fisheries Community Trust and Sustainable Fisheries Rewards Program, implementation of catch accounting systems, support for the proposed fisher licensing program, and coordination of the third-party audits required as part of the program.

[22] $2.5 million up-front contribution vests over four years, and is recapitalized upon exit through a 20% equity share.

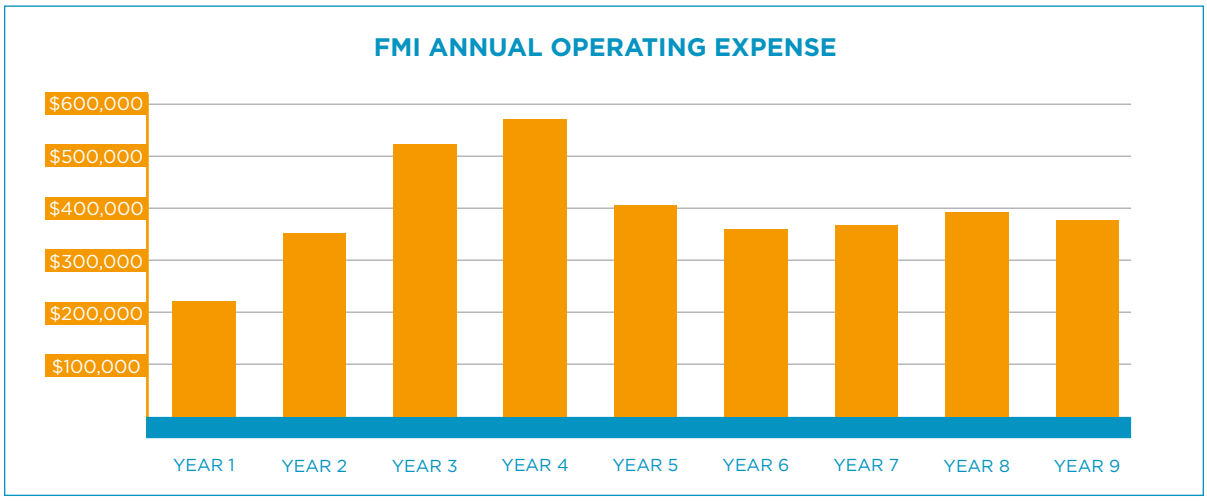
FISHERIES MANAGEMENT IMPROVEMENTS BUDGET

The Mangue Strategy anticipates implementation of the fishery management improvements across the 10 RESEXs and 98 communities over a nine-year time frame, as shown in Figure 8.

TARGETED SOCIAL AND ENVIRONMENTAL IMPACTS

The Mangue Strategy targets several specific medium- and long-term social and environmental outcomes, including (a) maintenance of current stock levels or modest stock increases, (b) increased income levels for fishers, (c) increased economic resilience for fishers, and (d) protection of the mangrove forest ecosystem from which the crabs are extracted.

FIGURE 8: Fisheries Management Improvements Expenses[23]



[23] "Operating Expenses" excluding expenditures on fixed assets (CAPEX).

[24] "Fishery Management Improvements" including CAPEX.

The table below sets forth the long-term impact return targets for the 98 communities and associated fisheries that TMS would incorporate into its sourcing network.

TARGETED IMPACT RETURNS	
Protect and Restore Fish Stocks	• Preserve current estimated biomass throughout the nine-year investment horizon and beyond • Deliver up to a 10% increase in biomass by Year 7
Support Fisher Livelihoods	• Generate 33% higher revenues relative to non-CEB market channels for participating fishers, or an estimated $1.7 million in additional annual value by 2024[25] • Increase community resilience through 20% profit-sharing interest in the CEB business, equivalent to $5.4 million over the nine year project and $4,320 per fisher in CEB supplier network[26] • Empower fishers through registration and licensing, formal government recognition and associated social benefits, organization and formalization of the sector, and access to formal banking channels.
Feed More People	• Eliminate 90% of post-harvest losses • Target the delivery of an additional 2.4 million sustainably produced meals to local, regional, and global seafood markets
Co-Benefits	• Help protect up to 300,000 hectares of mangrove forest habitats from conversion to aquaculture or other land-uses by improving the economic viability of standing mangrove forests

[25] Equivalent to $1.15 million in real (2015) terms.

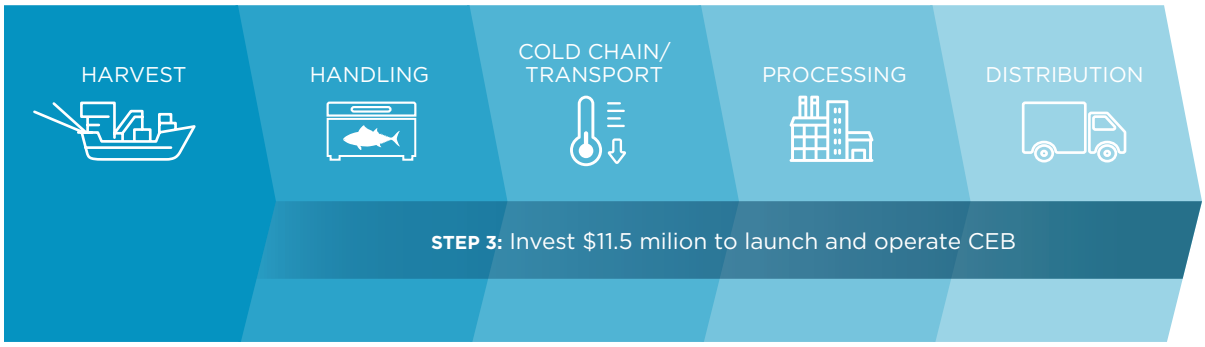
[26] Equivalent to $3.66 million and $2,908 per fisher in real (2015) terms. Assuming fishers-incorporated is held constant.

THE MANGUE COMMERCIAL INVESTMENT THESIS

STEP 3: LAUNCH AND GROW CEB

Step 3 of the Mangue Strategy's impact investment thesis proposes to fund an investment into a new processor and exporter of mangrove crab products, CEB. This company, launched alongside Steps 1 and 2, will create a commercial platform capable of adding value to the mangrove crab products and generating a 12% financial return to investors. The Mangue Strategy proposes an investment of $11.5 million to establish the supply chain infrastructure necessary to source sustainably-caught mangrove crab from the Mangue Strategy's portfolio communities, add value to the product, and ultimately sell it into higher-value markets.

SMALL-SCALE FISHERIES SEAFOOD SUPPLY CHAIN



VALUE PROPOSITION

In accordance with the other small-scale blueprints, the Mangue Strategy capitalizes on the opportunity to create additional value from products in order to reward fishers for sustainable practices while generating compelling financial returns for investors. Mangue's commercial investment thesis centers on a) the dramatic reduction of spoilage, reducing product volumes lost between first sale and retail by up to 90% (from 50% spoilage down to 5%); and b) the development of an export and high-value domestic-market oriented supply chain for artisanal seafood that can achieve significantly higher prices than the current local market.

The Mangue Strategy estimates the current value of the 5,000 mt of catch from the 10 regions from which it plans to source to be approximately $5.3 million, of which 65% would be included in the Mangue Strategy during the first nine years. Improvements to the quality of the current landings volumes could generate up to 33% more value for the products, implying an aggregate potential gain in value of approximately $1.7 million annually across the 10 RESEX regions by Year 9. This value creation is independent of any value that might be generated through stock restoration and higher landings volumes.

COMPANY DESCRIPTION AND MISSION ALIGNMENT

The Mangue Strategy would invest in the launch of a newly created company based in the Brazilian state of Pará established as the first processing and export business in the country to exclusively deliver sustainably-sourced mangrove crab products, including both crabmeat and live fresh crabs to domestic and international customers. CEB would require that its suppliers employ sustainable fishing practices and would offer financial incentives to engage and reward its suppliers. CEB would serve both customers throughout Brazil, particularly in the northeast where there is already a tradition of mangrove crab consumption and in other large Brazilian cities with high levels of tourism, as well as in Europe, North America, and Asia Pacific.

LAUNCH AND GROWTH STRATEGY

CEB would be a greenfield business venture with no operating history. The founders of CEB would ideally have extensive experience setting up and operating similar sustainable seafood processing companies in other developing countries, and would support a gradual buildup of CEB's operations while working to lay the groundwork for fishery management improvements with local implementation partners. The company would obtain all necessary permits to build and operate the processing facility in the first few years and would expect to source raw materials from the Mangue Strategy portfolio communities and generate initial revenue in Year 4. If successful, the business is projected to achieve a 45% gross margin and 24% EBITDA (earnings before interest, tax, depreciation, and amortization) margin by Year 9 in the base case, with total revenue and EBITDA of $15.5 million and $3.8 million, respectively.

Sourcing and Handling

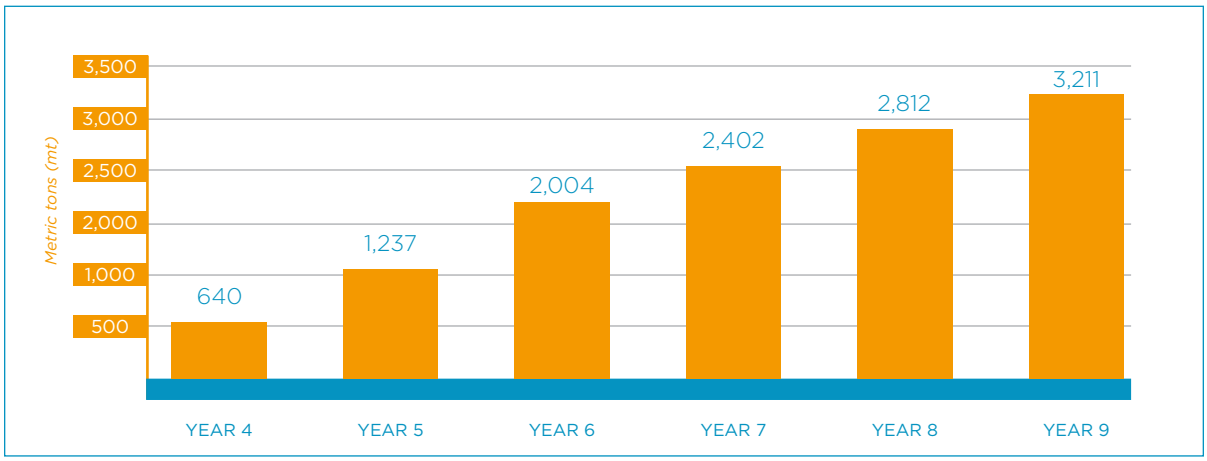
CEB would develop a sourcing portfolio covering 65% of the current fishery in combination with efficient sourcing logistics aimed at purchasing 3,200 mt of raw material by Year 9. The sourcing portfolio would seek to incorporate approximately 98 communities within the 10 RESEX zones in Pará where mangrove crab is currently being harvested.


Photo credit ICMBio/APA Delta do Parnaíba

Total volume of raw materials sourced by CEB is expected to grow from 640 mt in Year 4, its first revenue-generating year, to 3,200 mt by Year 9 (see Figure 9).

Investment proceeds would be used to provide fishers and fishing communities with crab transport boxes that allow crabs to be transported and stored in a chilled and aqueous environment so as to preserve freshness and reduce post-harvest mortality and spoilage.

FIGURE 9: Total Estimated Sourced Volume of Raw Materials (mt)



Cold Chain and Logistics

To support the sourcing network, the Mangue Strategy would fund CEB with $500,000 to construct a cold chain "backbone" to support all 10 sustainable fishing regions across the Pará RESEX zones, including the construction of 10 new buying stations, one in each RESEX. The buying stations would serve both as collection and consolidation points for raw materials to be transported to CEB's processing facility, as well as centers for outreach and commercial interaction with fishery stakeholders. In the buying stations, seafood raw materials would be procured from FCT members, inspected against quality parameters and sustainability requirements, labeled with identity tags that serve as the core of the traceability program, and prepared for loading and transport to the processing facility. The buying stations would be equipped with a crab storage room with air conditioning and regular hydration so that crabs can be kept in good condition for a maximum of 30 hours before loading and shipping to the processing plant.

CEB would also acquire 10 small collection trucks (one for each buying station) that would transport the raw materials from the buying stations to the processing plant. These trucks would be insulated and chilled to an inside temperature of 20 Celsius (69 Fahrenheit) to keep the crabs in good condition.

Processing

The Mangue Strategy proposes investing $6.7 million in the construction of a new, modern, and mechanized product manufacturing facility with a capacity of 4,000 mt of crab raw materials. Currently, all mangrove crab processing in Brazil, such as removing crabmeat from fresh crabs, is done by hand, and no machinery exists to

process mangrove crab. However, machinery to process other crab species, such as swimming crab, does exist and is being used widely in other parts of the world. Chile, Canada, and the U.S. are the countries with the most experience in crab processing technology, so it is CEB's intention to contract specialists in these countries to create machinery specifically for use in processing the mangrove crab.

The processing facilities would be constructed to meet international food hygiene and safety standards to avoid contamination and extend product life, utilize quality packing and packaging materials to extend product life and maintain quality, and pay factory workers at least the minimum official wage but with bonuses for achieving higher processing yields.[27] No mangrove crab processors currently operating in Pará are allowed to export processed crab products outside the state. This is due to historical noncompliance with national food safety laws, which has led to food safety problems in the market in the past. The CEB processing plant would be in compliance with international food safety and hygiene standards and intends to receive all the necessary permits and approvals to export high-quality crab products to Brazilian cities outside Pará and internationally.

The facility would also be equipped with advanced IT and data processing systems to support traceability throughout its various operations. The facility, with a total capacity of 4,000 mt, would allow CEB to process up 1,056 mt of crab products from the raw materials sourced by 2024 and allow for further growth in the following years. The final products would be composed of approximately 244 mt of raw frozen whole crab, 244 mt of cooked frozen whole crab, and 568 mt of frozen cooked crabmeat products, as shown in Figure 10.

FIGURE 10: Crab Product Forms and Markets

PRODUCT FORM	PRODUCT TYPES	DETAILS/REMARKS
Whole Crab	• Raw Frozen • Cooked Frozen	• Product mainly for Asian markets • Product mainly for Asian markets
Crabmeat	• Cooked Frozen Claw Meat • Cooked Frozen Leg Meat • Cooked Frozen Body Meat	• Potentially also for canned products • Potentially also for canned products • Potentially also for canned products

Distribution

CEB would work to build market access and distribution to support total volume of finished crab products sold of 1,056 mt by Year 9. Its marketing strategy would focus on the development of higher-value products such as cooked claw meat, and the cultivation of CEB brands with buyer recognition for sustainability, quality, and food safety. CEB would seek to secure client accounts in Europe, North America, and Asia Pacific.

From a marketing perspective, CEB would leverage and tap into its proposed management team's existing marketing network and experience in the international seafood markets. CEB would invest considerable time and capital to develop its brand identity in the international markets. CEB's marketing strategy would focus on linking major buyers and seafood businesses to its artisanal sourcing networks in Brazil. CEB would attempt to create deep linkages between buyers and suppliers such that the buyers become invested in CEB's sustainability standards across its sourcing networks. Customers would be provided with a range of promotional materials to position the products at the point of final sale, increasing customer awareness of sustainability values and objectives and creating a stronger customer constituency over time.

[27] Existing processing facilities pay their workers a monthly salary of RS 480 ($163), inclusive of all employer taxes, insurance, pension, and other social benefits.

FIGURE 11: Primary Crab Export Markets

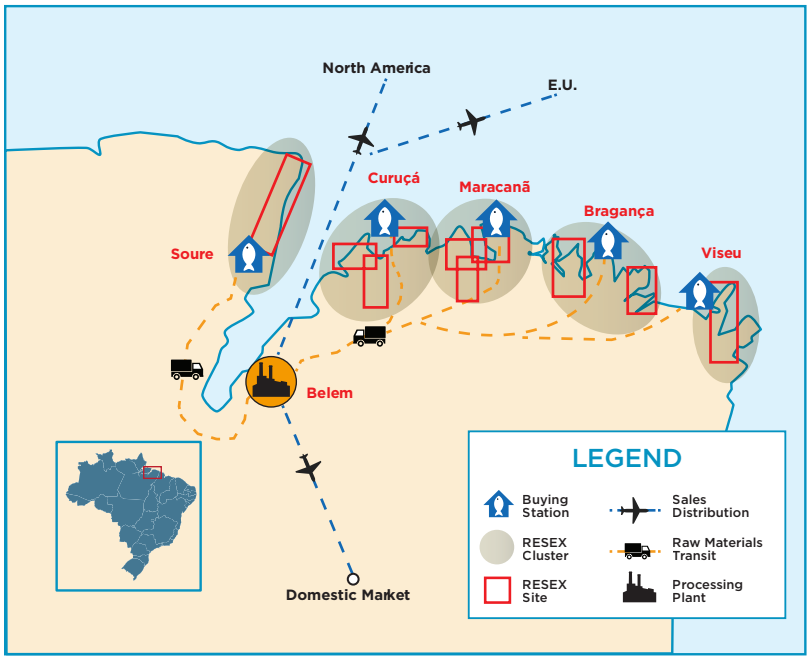
	EXPORT TARGET GEOGRAPHIES		
MARKET TYPE	**EUROPE**	**NORTH AMERICA**	**ASIA PACIFIC**
Sustainably harvested crab	France U.K. Netherlands Belgium	U.S. Canada	Hong Kong Singapore
Any crab	Spain Italy		China Korea

CEB's crab products would be marketed both internationally and domestically in both retail and food service channels. CEB would segment its target international markets into two groups: one with demand for sustainably harvested crab, and one with demand for crab of any kind (see Figure 11).

For domestic markets, the sales and distribution strategy would focus on retail and food service markets that are interested in good quality, reliability, and consistent supply. The marketing strategy would primarily focus on the classical and traditional crab markets in the northeast of Brazil, with the cities of Salvador da Bahia, Natal, Recife, Fortaleza, and Belem as the main centers and key target markets.

CEB would also work toward the development of Fair Trade or other comparable certifications for small-scale fishers in the CEB sourcing network. Appropriate certification would further support, frame, and promote the value of seafood products from small-scale fisheries on world markets, notably in North America and Europe.

Regional Extraction Clusters, Sourcing Hubs, and Route-to-Market Strategy for the Mangue Strategy in Pará



MANAGEMENT TEAM AND TRACK RECORD

CEB would be founded by seasoned seafood company executives bringing invaluable operational experience in the sustainable seafood sector to the Mangue Strategy. The ideal founders would have extensive experience in the marine and seafood sectors, with a wide range of technical and commercial skillsets and relationships.

CEB would be headquartered in the Brazilian state of Pará. It would be led by a local manager who would be responsible for running the contemplated processing facility to be based in that state. By 2024, CEB would expect to employ nearly 160 people, predominantly local community members, for its buying and supply chain logistics and crab processing facility.

DOMESTIC MARKET TRENDS

The Mangue Strategy expects CEB to benefit from favorable trends in Brazil's current seafood market. While the value of the Brazilian Real has fallen considerably at the time of this writing, Brazil still boasts a large middle class that is already driving growth in the domestic seafood market. Between 2003 and 2009, Brazil's middle class grew by an estimated 35 million people.[28] As is often the case, this demographic shift entails a change in diet as middle class consumers move away from grains and toward more meat and protein. Furthermore, the Brazilian government has declared an aim to boost domestic seafood consumption in the coming years to a target of 14 kilograms per capita. While per capita seafood consumption across Brazil remains lower than the world average (9 kilos per capita versus 17 kilos per capita in 2011), this is up from only 6 kilos per capita in Brazil in 2006.[29] The clear trend here has been an ongoing increase in seafood demand driven by a confluence of demographic and government factors.

COMPETITION

The Mangue Strategy foresees domestic competition from other local mangrove crab processors, as well as international competition from producers of other crab species.

DOMESTIC COMPETITION

There is currently no industrial-scale processing plant for mangrove crab in Brazil. The existing small-scale family producers can sell products in their home states, but cannot legally commercialize their products either in other states or internationally due to food safety requirements. The current processing companies rely on local labor to pick the crabmeat manually, with no companies having made investments into more efficient means of processing crabmeat with specialized machinery and technologies. There are roughly five more government-sponsored micro-facilities expected to become operational sometime in the short to medium term, but the Mangue Strategy does not expect them to have either modern machinery for processing or the ability to export products outside their home state. All existing crab manufacturing and commercial companies involved in Brazil focus their business on the local markets, predominantly those in the northeast of Brazil, where there is existing consumer demand for crab and crabmeat products.

[28 & 29] E. Tallaksen and, T. Seaman,. "Intrafish Seafood Report: Brazil," Intrafish Media AS, Norway, 2013.

FIGURE 12: International Competition

SPECIES GROUP	GENUS	MAIN PRODUCER COUNTRIES	PREDOMINANT TYPE OF PRODUCTS		
			CRABMEAT	LEGS & CLAWS	WHOLE CRAB
Snow Crabs **King Crabs**	Chionoecetes Lithodidea	China, Japan, Russia, Norway, U.S., Chile	●	●	
Mud Crabs	Scylla	SE Asia, China, India			●
Brown Crabs	Cancer	Europe, North America, Japan	●		●
Swimming Crabs	Portunus	SE Asia, China, India	●		●
Mangrove Crabs	Ucides	Brazil	●		●

INTERNATIONAL COMPETITION

In terms of international markets for crab and crab-meat products, the Mangue Strategy will compete with producer countries and companies that are active in crab processing and trade of similar products. Figure 12 summarizes this international competition, with the most directly competitive species, producing countries, and product types highlighted in gold.

The Mangue Strategy is most likely to compete with swimming crabs in the crabmeat market, and with swimming crabs and mud crabs in the whole crab market, which are both very similar to mangrove crab in taste and texture. Snow/king crab and brown crab generally grow in colder waters and have slightly different physical characteristics. (See images in Figure 13.)

As such, The Mangue Strategy expects that South-east Asia, China, and India would be its primary international competitors. To compete effectively with these low-cost countries, the Mangue Strategy recognizes the need to run a highly mechanized and streamlined processing operation.

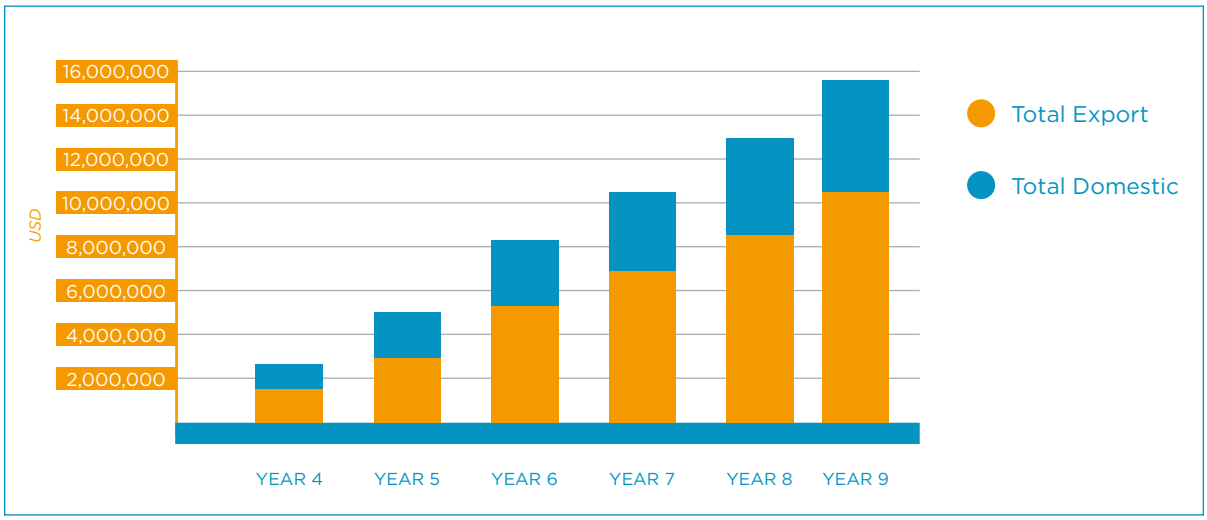
FIGURE 13: Competitor Crab Species

THE MANGUE STRATEGY FINANCIAL ASSUMPTIONS AND DRIVERS

REVENUE MODEL

The Mangue Strategy revenue, generated through CEB product sales, is projected to grow from $2.5 million in its first year of sales in Year 4 to $15.5 million by Year 9 (see Figure 14). International sales are projected to generate nearly $10.6 million, or 68% of total revenue, with domestic sales comprising the remaining $4.9 million (see Figure 15).

FIGURE 14: CEB Sales by Destination (USD)



The crabmeat products, composed of cooked leg, claw, and body meat, will constitute a majority of the revenue for both the international and the domestic segments. These higher-value products are expected to account for up to $13.2 million, or 85%, of the company's total revenue by 2024, with cooked and raw whole crab comprising the remainder (see Figure 16).

FIGURE 15: CEB Domestic Sales by Product Type (USD)

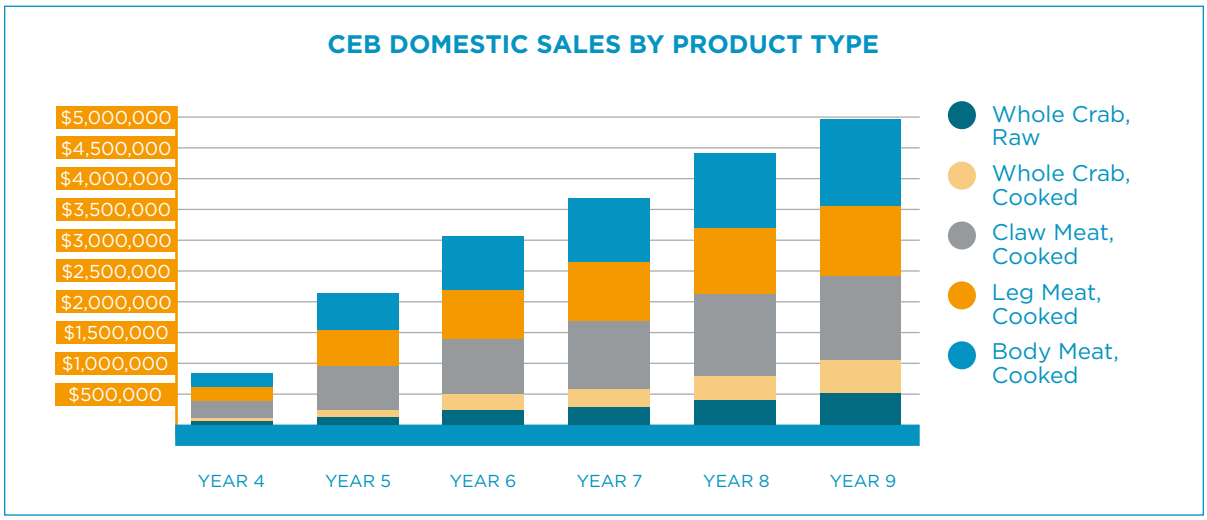
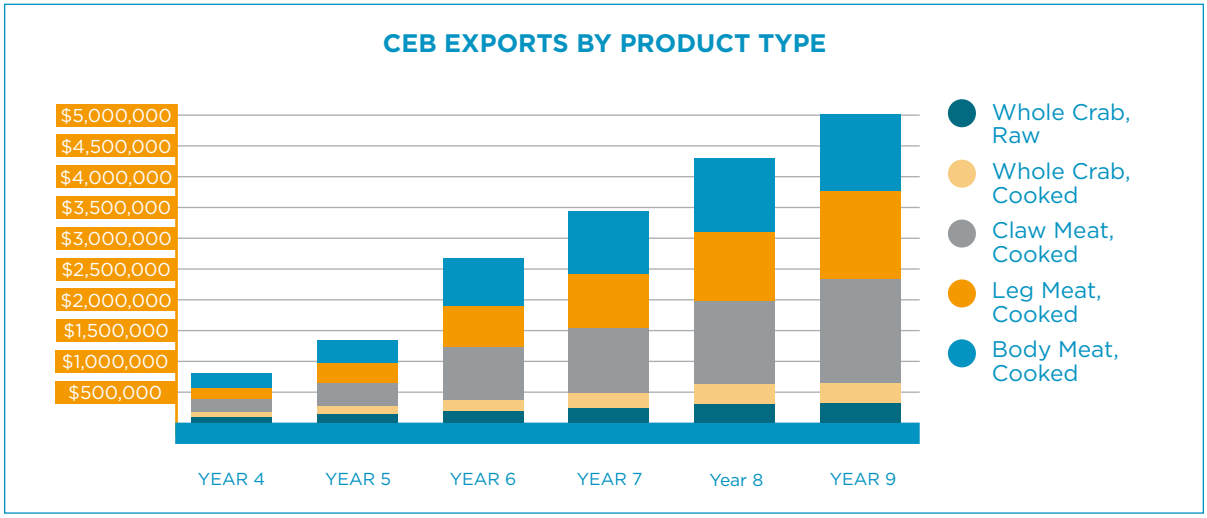


FIGURE 16: CEB Exports by Product Type (USD)



The most important revenue drivers for TMS are therefore the amount of raw material it can source to produce crabmeat (which in turn is dependent on the processing plant's being able to run smoothly) and the export price it can receive for its crabmeat products.

PRODUCT PRICING

In our analysis, we have assumed an annual 4.5% price increase in U.S. Dollar terms on products to be exported internationally as well as on those destined for the domestic market. As the international demand market for mangrove crab is currently untested, CEB has not assumed any premium in its export price even though it would be marketed as a sustainably harvested product. To be able to compete with swimming and mud crabs, the two closest competitive products, the Strategy is conservatively assuming that CEB's export price will be on the lower end of the export price range of swimming crabs from the Southeast Asian region (see Figure 17).

FIGURE 17: International Crab Price Reference Points

PRODUCT TYPE	PRODUCT TYPES	CRAB SPECIES/ ORIGIN	PRICE BENCHMARK FOB ($/KG NET)	CEB PROJECTED PRICE ($/KG NET)
Whole Crab	Raw Frozen	Swimming Crab/ SE Asia	$3.5–5.50	$3.65
	Cooked Frozen	Swimming Crab/ SE Asia	$3.5–5.50	$3.70
Crabmeat	Cooked Frozen Claw Meat	Swimming Crab/ SE Asia	$22.0–26.0	$21.50
	Cooked Frozen Leg Meat	Swimming Crab/ SE Asia	$15.0–22.00	$16.15
	Cooked Frozen Body Meat	Swimming Crab/ SE Asia	$15.0–22.00	$16.15

(FOB = Free on Board price)

CEB's domestic prices are also estimated to be similar to current local market prices as set by the existing processors (see Figure 18).

FIGURE 18: Domestic Crab Price Reference Points

PRODUCT TYPE	PRODUCT TYPES	CRAB SPECIES/ ORIGIN	PRICE BENCHMARK FOB ($/KG NET)	CEB PROJECTED PRICE ($/KG NET)
Whole Crab	Raw Frozen	Mangrove Crab/ Brazil	$2.00–2.50	$2.85
	Cooked Frozen	Mangrove Crab/ Brazil	$2.00–2.50	$2.90
Crabmeat	Cooked Frozen Claw Meat	Mangrove Crab/ Brazil	$16.60	$14.30
	Cooked Frozen Leg Meat	Mangrove Crab/ Brazil	$13.30	$11.70
	Cooked Frozen Body Meat	Mangrove Crab/ Brazil	$13.30	$11.70

(ExWorks = price of product ex-works or ex-factory in Brazil)

COST STRUCTURE

CEB's cost of goods sold (COGS) constitute 59% of the overall operational costs of the Mangue Strategy by Year 9 (see Figure 19), and of COGS, crab raw materials comprise 80% (see Figure 20).

FIGURE 19: CEB Projected Operating Cost Allocation

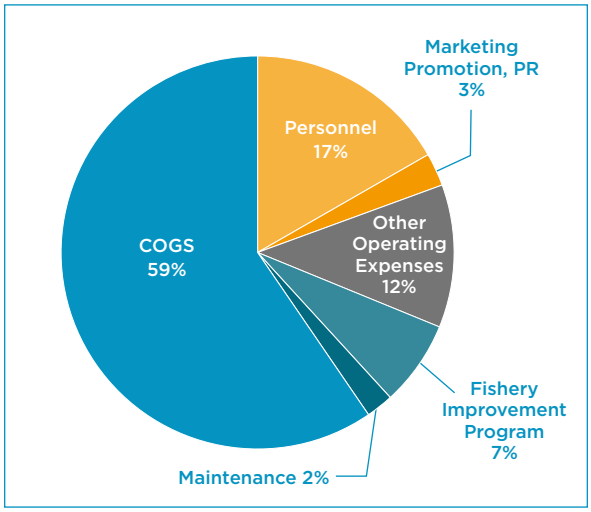
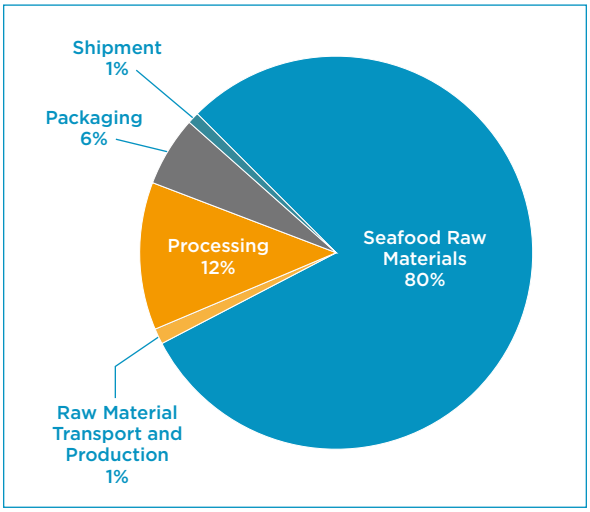


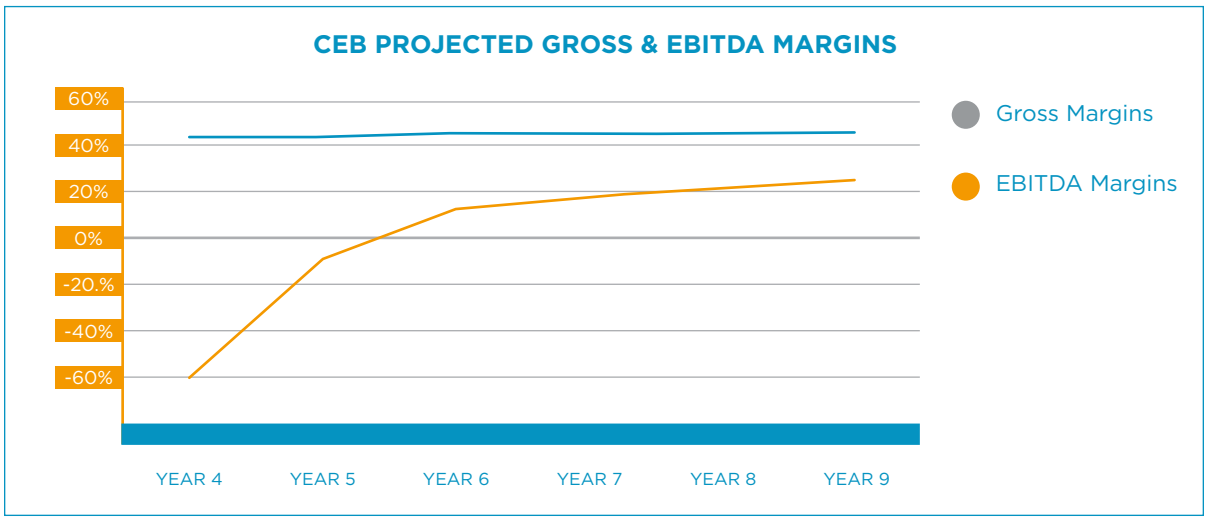
FIGURE 20: CEB Projected Cost of Goods Sold Breakout



GROSS PROFIT AND EBITDA MARGINS

CEB is projected to generate a gross profit margin of 45.4% by Year 9, and is expected to become profitable on an EBITDA (earnings before interest, tax, depreciation & amortization) basis by Year 6, the third year after initial sales, with a targeted EBITDA margin of above 12.1% in that year (see Figure 21). EBITDA margins would ultimately reach 25% by Year 9.

FIGURE 21: CEB Projected Gross and EBITDA Margins



TRANSACTION STRUCTURE

SOURCES AND USES OF FUNDS

The Mangue Strategy proposes a $15.0 million initial greenfield investment, including a Series A investment of $8.5 million in sponsor equity, $4 million in Program Related Investment (PRI), and $2.5 million in grants. In addition to the capital investment, the project will eventually seek credit guarantees from development finance institutions with a strategic focus on the Amazon region or coastal resources, such as USAID's Development Credit Authority, Inter-American Development Bank, or OPIC. These guarantee agreements encourage private lenders to extend financing to underserved borrowers in new sectors and regions. The table below summarizes the proposed uses of funds and the capital structure of the deal:

USES OF INVESTMENT PROCEEDS	
Cash	$4,980,000
Buying Stations - CAPEX	500,000
Processing Facility - CAPEX	5,800,000
Fisher Community Trust	2,500,000
FMI Implementation	1,000,000
Financing Fees	40,000
Legal Fees	150,000
Travel Fees and Expenses	30,000
Total	$15,000,000

SOURCES OF INVESTMENT PROCEEDS	
Foundation Grant	$1,250,000
Government Grant	1,250,000
Revolver (BNDES - Subsidized)	–
Foundation PRI	4,000,000
Sponsor Equity	8,500,000
Total	$15,000,000

The Mangue Strategy's capital investments are split between (a) fishery improvements and community development activities and (b) the commercial infrastructure and operations.

The commercial investment would fund the project and company development, which in the first 18 months will include the preconstruction modeling, planning, licensing, and design work, followed by construction of the central processing facility and 10 regional buying stations. Due to the long lead-times required for establishing new businesses and developing projects in Brazil, particularly where foreign investment is involved, the anticipated facility commercial operation date (COD) is not until Year 2. However, fishery improvement development and implementation will kick off immediately, and be funded in parallel with the commercial activities, so that the social infrastructure is sufficiently organized by the time production begins.

Following COD, the project would seek to secure a revolving credit facility to finance the significant and highly variable working capital needs of a business of this nature, but this would be added to the capital structure in Year 3 (ideally as part of a loan guarantee package).

While the Mangue Strategy carries substantial development risk during the first 18 months, the favorable impact profile of this business, together with a proven, viable route-to-market strategy and seasoned management team, requires an impact oriented equity investor with long-time horizons (10 to 12 years) and a willingness to take on outsized risk if a commercial return can be attained, together with a significant and scalable environmental and social impact. The share of sponsor equity is assumed to be about 57% of the total capital contributed.

It is expected that access to commercial lines of credit are not realistic until the business is fully operational, and even then will require strong credit guarantees until the business is able to establish a five-year track record and achieve a stable credit profile. However, assuming that credit enhancement is achieved, a revolving credit facility of $1 million should be secured to ensure coverage of working capital requirements, which will be especially important during the early years. BNDES, the Brazilian Development Bank, offers subsidized credit facilities, at a discount of up to 500 basis points (bps) to the SELIC rate targeted by the Bank of Brazil (analogous to the Fed Funds Rate in the U.S., currently at approximately 14.0%).

Though no commercial debt will be sought in the development of the business, there is an important opportunity to leverage Program Related Investment as a source of low-cost capital focused purely on social and environmental impact. Specifically, this $4 million tranche would be used to pay for the fishery management improvements and social engagement activities, which by themselves are not a source of financial return. This is critical during the development phase, as equity would be cost prohibitive for such early stage noncommercial investments, yet this is a critical step in ensuring the long-term impact returns sought by the Mangue Strategy. By serving as low-cost debt with a patient time horizon, PRI would enable the project to develop its impact-oriented activities and pay back the PRI loan, with interest, out of the commercial earnings once CEB is fully running. The PRI investment would constitute approximately 30% of the investment capital, and while terms will depend on the funder and specific deal structure, the current model assumes the entire principal to be repaid at the end of a ten-year term, with an annual interest rate of 2.5%.

Because CEB will not be sufficiently profitable to capitalize the FCT with its own earnings until well into the project, the Mangue Strategy would initially capitalize the FCT with $2.5 million in grant funds. Grant funds are ideally suited for this purpose given that the FCT would be used to incentivize and promote primarily conservation rather than commercial outcomes.

OWNERSHIP STRUCTURE AND GOVERNANCE

Under Brazilian law, the most efficient structure for private equity foreign investments is to establish a Brazilian-domiciled investment shell company under the "limitada" structure, which would then make investments into local activities. The sponsor equity under the Mangue Strategy would own 65% of the equity and control four of six board seats, with two seats to management, which will own 15% of the equity. The Fishing Community Trust would be allocated 20% of the equity and would hold one board-observer seat, which would rotate every two years among leaders of that entity.

CEB would also manage the fisheries management activities, and would engage an advisory committee made up of academic experts, industry leaders, policy experts, crabbers, 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.

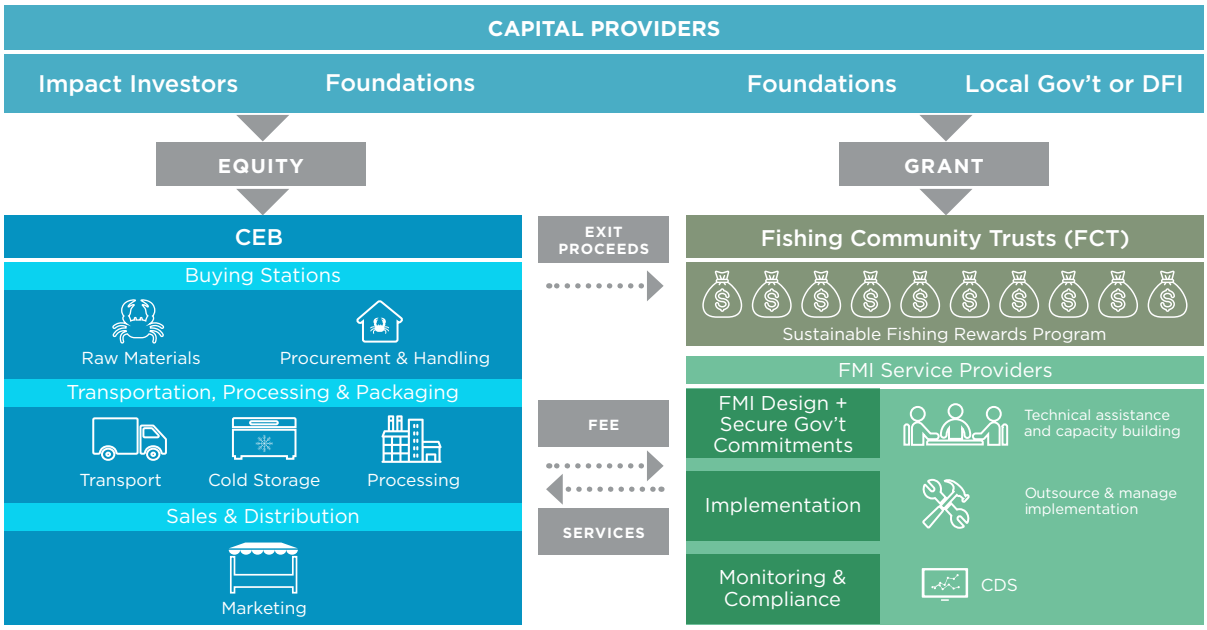


Photo credit Agência Pará

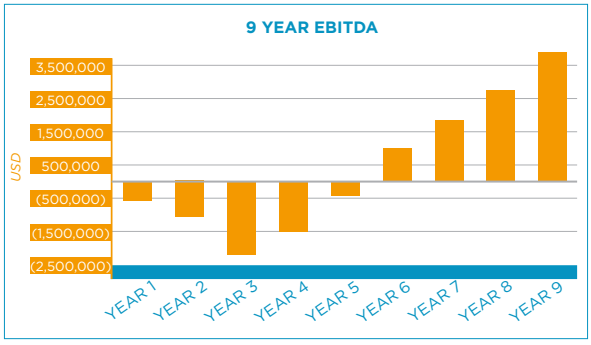
SUMMARY OF EXIT AND RETURNS

To be conservative, CEB is assumed to be sold at a 6x multiple of EBITDA to a strategic buyer in Year 9. CEB would provide an attractive opportunity to strategic buyers to lock in additional supply of high-quality crab meat, particularly as demand for responsibly and sustainably sourced seafood increases.

The following table shows a summary of the most relevant financial, social, and environmental impact metrics of Project Mangue:

SUMMARY OF BASE CASE FINANCIAL RETURNS

Total Sponsor Equity Investment	$8,500,000
Time Horizon (years)	9.0
Total Leverage Level	26.7%
Equity IRR	12.3%
9-Year EBITDA CAGR	26.0%



SUMMARY OF BASE CASE IMPACT RETURNS

Total Marketable Landings Increase (MT)	5,538
Total Avoided Bycatch	N/A
Total Habitat Protected (hectares)	195,294
Total Income Increase (%)	33.2%
Total Income Increase to Fishers – 9 yrs	$4,394,889
Contributions to Fisher Community Trust	$2,500,000
Total Fishers Incorporated	1,260
Total Extractive Reserves (RESEX) Engaged	10
Total Communities Engaged	98
Spoilage Reduction (whole fishery)	58.5%
Additional Meals-to-Market (run-rate meals/yr)	2,376,563

SENSITIVITY ANALYSIS

Several key inputs have a particularly pronounced effect on the financial return of the project. As such, the model has been forecasted under multiple scenarios, flexing the following key variables:

Annual Changes in Sales Prices: The cash flows of CEB are highly sensitive to the changes in sales price of the finished goods, and as these prices change over time, the IRR is impacted markedly. The base case scenario assumes 4.5% growth in export market prices, and 4.5% price inflation in domestic markets in U.S. Dollar terms, and the corresponding levered IRR is 12.3%. The management case assumes zero inflation, leaving the project with a levered IRR of 2.3%. In the downside case, prices deflate 1% annually upon the start of product sales, yielding a -4.7 % IRR.

Cost of Raw Materials: is to be expected in any processing and distribution business, changes in cost of raw materials have a significant impact on revenues and returns. The raw materials costs in the model are based on current prices and thorough diligence on the costs of crabmeat harvest in Brazil. The base case assumes 4.5% raw materials cost inflation. In the management case, raw material prices remain constant, which brings the IRR up to 22.1%. In the downside case, however, assumed 5.5% cost inflation drives the IRR down to 8.5%.

Capex Investments: Because of the structure of the strategy and the upfront costs associated with launching CEB and the associated processing facility asset, Capex investments constitute a significant portion of the costs of this strategy. Whether these costs are higher or lower than expected naturally affects the IRR. In the base case, a total of $7.4 million in expenditures is assumed. In the management case, Capex is assumed to be 13% lower, at $6.5 million, which increases IRR by 1.6% to 13.9%. In the downside case, Capex investment costs are 8.7% above management case projections at $8.1 million, decreasing levered IRR to 11.1%.

BASE CASE LEVERED IRR	**12.3%**				
SENSITIVITY ANALYSIS		**SCENARIOS**		**IRR IMPACT**	
	Base	*Downside*	*Management*	*Downside*	*Management*
Annual Changes in Sales Price	4.5%	(1.0)%	0.0%	(4.7)%	2.3%
Raw Material Cost Inflation	4.5%	5.5%	0.0%	8.5%	22.1%
Capital Expenditures (million USD)	$7.4m	$8.1m	$6.5m	11.1%	13.9%

The model has been forecasted under multiple scenarios, flexing the following key variables: Annual Changes in Sales Prices, Cost of Raw Materials, and Capex Investments.

KEY RISKS AND MITIGANTS

The Mangue Strategy presents a range of potential risks that require mitigation or incorporation into the investment and valuation analysis, as follows:

RISK	DESCRIPTION	MITIGANTS
Key Risks Impacting Fishery Management Improvements		
Reliance on securing government commitments for fishery management improvement success	Prior to investing in commercial operations, the Mangue Strategy would need to secure specific commitments from Brazilian fisheries authorities to (a) establish a system of fisher licensing and registration, (b) increase enforcement resources to reduce illegal fishing, (c) create a cap on total allowable harvest, and (d) prohibit the sale of illegally harvested crab.	The recent disbanding of the Ministry of Fisheries is widely seen as positive step for improving the regulation of the sector. The Strategy assumes that through a combination of this renewed focus on improving fishery management in the country, combined with deliberate efforts from local NGOs and the community to advocate for the project, it will be possible to secure these commitments from the government. If this is not possible, the Strategy may need to be attempted elsewhere.
Challenge in identifying and working with the local fishery management improvement partner	It would be CEB's goal to partner with a trustworthy NGO based in Pará that would act as the local fishery management improvement implementation partner, but this local partner has yet to be identified.	CEB's commercial operations would not begin until Year 4, affording ample time for the Company to identify the partner, establish relationships with fishing communities, and begin incorporating them into CEB's sourcing portfolio.
Reliance on fishery management improvement partners	CEB cannot control the fisheries management implementation process, and partners could fail to execute on implementation.	A variety of potential fishery management improvement implementation partners currently operate in the region, allowing the Mangue Strategy to choose the most closely aligned and effective one from among this network.
Crab stock declines, despite efforts to utilize sustainable practices and maintain healthy levels	Community fishery management improvements may fail to protect the stock, or the stocks may be under more pressure than initially accounted for.	The Mangue Strategy will look to other domestic crab fisheries in order to diversify against biological risk, and will work to secure government commitments and work with local and international fisheries experts to gather and employ best-in-class science to inform fishery management efforts.

RISK	DESCRIPTION	MITIGANTS
Key Risks Affecting Raw Material Sourcing Volume and Costs		
Uncertain supply of labor	The Mangue Strategy may find that if and when the Brazilian economy improves, fewer residents want to partake in the unpleasant job of crabbing. This form of employment to-date comes without government benefits and has some negative stigma associated with it. Also, many young workers are moving to the growing cities nearby to find work.	The strategy prioritizes professionalizing the crabbing business and empowering crabbers by facilitating the formation of more cohesive associations of crabbers. Paying higher wages and price premiums may also make the job more attractive.
Localized environmental risks	In the Amazon region, there is risk of pollutants entering the mangrove ecosystem due to local stresses on the landscape, such as mining and timber operations.	The Mangue Strategy anticipates a strengthened political presence as a result of community-building measures in the Strategy. This increased agency may lead to a stronger ability to resist mining and timber operations' encroaching on the area.
Climate risk	There is a possibility of declining catch volumes due to climate change or associated adverse weather events.	The Mangue Strategy will look to other domestic crab fisheries in order to diversify against potential regional effects of climate change and related weather events.
Threats to mangroves/ habitat destruction	Large-scale deforestation is common in the Amazon region, and mangrove forests can be clear-cut or used for other purposes, like aquaculture.	By professionalizing and making more profitable the sustainable extraction of mangrove crab, the Mangue Strategy provides a development model for generating potentially significant economic value from intact mangrove that may deter deforestation.
Key Risks Affecting Revenue		
Demand for mangrove crab in the international market is largely untested	The Brazilian mangrove crab is currently only consumed domestically, particularly in northeast Brazil. CEB will be offering mangrove crab as a new seafood product in the international export market.	There is already demand in the international markets that CEB will be targeting, albeit for different crab species. Mangrove crab has a similar taste and texture profile to other mass market crabs, like swimming crab and mud crab. With CEB's marketing efforts around the high quality and sustainability of its products, CEB should eventually be able to fetch a premium over other competing crab products. In addition, CEB plans to price its products at the same level as swimming crab, which it sees as its closest competing product and already has demand internationally.

RISK	DESCRIPTION	MITIGANTS
Uncertainty around actual volumes of mangrove crab landings and raw material availability	The Brazilian government stopped tracking landings by species and state in 2008. Total raw material available for sourcing by CEB is based on landings data collected through 2007 and local academic information, both of which may be unreliable and inconsistent.	The CEB business plan assumes that the company would ultimately source a maximum amount of 4,000 mt of mangrove crab per year as the fishery management improvement program expands, which falls below estimates of the total extent of the resource across the 10 RESEX zones.
High cost-structure compared to other crab-producing countries	Brazil is one of the most expensive countries in South America in which to do business. The Mangue Strategy anticipates higher labor costs than in swimming crab and mud crab exporting regions, like Southeast Asia, China, and India.	CEB anticipates that having a mechanized and streamlined manufacturing process will make it competitive on cost. Moreover, with CEB's marketing efforts around the high quality and sustainability of its products, CEB should eventually be able to fetch a premium over other competing crab products.
Lack of barriers to entry in the market	Because the market is currently unoccupied by a company of CEB's size, in theory another company could attempt to match the scale of CEB and attempt to undercut prices.	The Mangue Strategy prioritizes the development of unique relationships with the RESEX communities and offers FCT benefits that other companies would be hard-pressed to match. The local communities also stand to gain significant political capital by participating in CEB's supply chain and being organized into more formalized fishing communities.
Commodity price risk	Crabmeat is a commodity, and mangrove crabmeat is similar enough to its mass-market equivalents that it can also be subject to global price swings.	CEB will pursue branding opportunities and attempt to differentiate the product in order to insulate it against price swings.
Key Risks Affecting Business Execution		
Startup and implementation risk	Because CEB is a greenfield venture, there are risks associated with the lack of precedent for initiating business in Brazil.	In the early stages of CEB's business, lots of attention is paid to developing relationships with local entities. Also, the Mangue Strategy would ensure that a network of consultants and a management team with local expertise and experience will mitigate startup risk.
Scaling/growth risk	The anticipated rapid growth of CEB presents some uncertainty, as it would in any quickly expanding business.	An experienced management team would mitigate this risk.

RISK	DESCRIPTION	MITIGANTS
Operational execution risk	Because of poor infrastructure in Pará and the high number of communities, there is significant business execution risk.	The Mangue Strategy tries to address this risk by using buying stations to consolidate pressures on infrastructure and streamline the transport network. This model has been proven in similar ventures in other nations with challenging infrastructure, like the Philippines.
Processing technology specifically for mangrove crab does not yet exist	There are existing crab processing facilities and requisite technology for other crab species but not yet for mangrove crab. CEB will most likely be the first business in the world to adapt existing industrial crab processing technologies to use on mangrove crab.	CEB intends to contract specialists and engineering firms in Chile, Canada, and the U.S. that operate in the spaces of crabmeat processing, crabmeat manufacturing machinery, and plant design. CEB has conservatively allocated almost three years to create and test its processing operations before officially starting commercial manufacturing in Year 4.
Key Risks Affecting General Business Environment		
Bureaucracy, corruption, and fraud	Despite its economic progress in the last decade, Brazil is still known for its troublesome bureaucracy, especially when dealing with the government, and continues to have pockets of corruption. CEB and the fishery management improvement implementation would have to work with a number of government agencies and local authorities to obtain the necessary support, buy-in, and permits in order to operate and export domestically and internationally. Fraud by local partners and employees is also possible in Brazil.	Given the challenges of working in Brazil, conservative project timelines have been assumed. Moreover, the proposed CEB management team has extensive experience managing seafood businesses in other emerging economies from which valuable lessons can be drawn and applied in the Brazilian context.
Inflation and currency risks	The Brazilian economy has weakened since 2011 and its currency has been volatile. In the last five years, the Brazilian Real has fallen against the U.S. dollar. While this could make Brazilian exports more attractive, it has also resulted in high inflation in the country. Average inflation in local currency terms was between 5 and 6% per year for the last three years. 2015 inflation is expected to hit 9%, largely driven by the weakening currency.[30]	The Mangue Strategy has attempted to make reasonably conservative assumptions in the financial modeling around these parameters, plus a mix of domestic and export markets for the product acts as a hedge against currency and inflation fluctuations. In U.S. Dollar terms, the Mangue Strategy has assumed 4.5% annual inflation, which is reasonable based on local currency inflation of 4%–6% over the past decade.

[21] Instituto Brasileiro de Geografia e Estatistica (IBGE), Inflation Statistics 1980–2015, September, 2015.

APPENDIX

THE MANGUE STRATEGY FINANCIAL PROJECTIONS

	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9
# of Fishing Communities	-	49	74	98	98	98	98	98	98
# of Fishers	-	-	-	267	485	775	921	1,115	1,260
# of Vessels	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SALES VOLUME (mt)									
Live Weight Equivalent	-	-	-	640	1,237	2,004	2,402	2,812	3,211
Finished Product	-	-	-	223	406	650	772	934	1,056
REVENUES									
Export Sales	-	-	-	$1,613,584	$2,677,511	$5,326,478	$6,873,632	$8,571,205	$10,628,024
Domestic Sales	-	-	-	834,667	2,122,465	3,039,755	3,652,790	4,380,515	4,925,401
Total	**-**	**-**	**-**	**$2,448,251**	**$4,799,976**	**$8,366,232**	**$10,526,422**	**$12,951,720**	**$15,553,425**
YoY Growth in Sales	*N/A*	*N/A*	*N/A*	*N/A*	*96.1%*	*74.3%*	*25.8%*	*23.0%*	*20.1%*
OPERATING EXPENSES									
Cost of Goods Sold									
Raw Materials	-	-	-	(1,080,515)	(2,184,332)	(3,696,941)	(4,631,502)	(5,666,001)	(6,759,864)
Process & Packaging	-	-	-	-	(260,548)	(495,861)	(829,359)	(1,029,456)	(1,301,058)
Distribution	-	-	-	-	(31,988)	(61,309)	(103,692)	(129,994)	(161,309)
Total COGS	**-**	**-**	**-**	**($1,080,515)**	**($2,476,868)**	**($4,254,112)**	**($5,564,553)**	**($6,825,451)**	**($8,222,231)**
% Sales	*N/A*	*N/A*	*N/A*	*44.1%*	*51.6%*	*50.8%*	*52.9%*	*52.7%*	*52.9%*
SG&A	(552,502)	(1,011,485)	(2,218,687)	(2,555,205)	(2,473,396)	(2,722,688)	(2,898,453)	(3,073,759)	(3,180,483)
EBITDA	**(552,502)**	**(1,011,485)**	**(2,218,687)**	**(1,480,006)**	**(414,922)**	**1,013,553**	**1,837,017**	**2,749,593**	**(3,884,320)**
EBITDA Margin	*N/A*	*N/A*	*N/A*	*(60.5%)*	*(8.6%)*	*12.1%*	*17.5%*	*21.2%*	*25.0%*
CAPITAL EXPENDITURES									
New Processing Plant	-	$89,700	$6,550,860	$24,150	$45,540	$3,450	$3,450	-	-
New Buying Stations	-	-	513,388	-	17,197	17,971	18,870	19,625	20,508
Materials and Equipment	-	-	-	-	17,197	17,971	18,870	19,625	20,508
FIP CAPEX	-	-	-	-	-	-	-	-	-
Total CAPEX	**-**	**$89,700**	**$7,064,248**	**$24,150**	**$79,935**	**$39,392**	**$41,010**	**$39,250**	**$41,016**

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