

**DEVELOPING IMPACT INVESTMENT OPPORTUNITIES
FOR RETURN-SEEKING CAPITAL
IN SUSTAINABLE MARINE CAPTURE FISHERIES**

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DEFINITION OF TERMS

Fishery: A fishery is the combination of fish and fishers in a region, the latter fishing for similar or the same species with similar or the same gear types (NOAA Fisheries 2006).

Wild capture fisheries or capture fisheries: Capture fisheries are fishing activities that involve the catching of wild fish and shellfish, using a broad range of gear types in fleets ranging from industrial to artisanal. It does not include aquaculture of any form.

Sustainable fishery: A sustainable fishery is one whose practices do not reduce the targeted species' ability to maintain its population at healthy levels, and does not adversely impact on other species and the health of the wider ecosystem.

Fisheries management: Fisheries management is the legal and regulatory mechanism for ensuring fishery sustainability. It establishes, implements, manages, and enforces fishing rules and regulations at a level and in a manner that is reasonably believed to be indefinitely sustainable.

Fish stock: A biological fish stock is a group of fish of the same species that live in the same geographic area and mix enough to breed with each other when mature. A management stock may refer to a biological stock or a multispecies complex that is managed as a single unit (NOAA Fisheries 2012).

Return-seeking investment: An investment occurs when groups or individuals put cash or capital into an asset or public or private entity (a government or business) to realize future **financial** gain based on an increase in value of the asset or business. Investors typically demand financial returns that are adjusted for the risk of their investment (higher returns for riskier investments). Different types of investors may demand different levels of financial return; tolerate different levels of risk; have additional requirements of social, economic, and/or environmental outcomes; and/or have

different timelines in which they expect to realize financial gains.

Impact investment: An investment that actively achieves positive (and measurable) social or environmental results while generating financial returns. To achieve these other objectives, impact investors are sometimes willing to wait longer for financial returns (patient capital), accept a lower return than commercial rates, or accept more risk. Impact capital usually flows to projects in several ways:

- **Equity financing:** A company sells stock or shares to investors.
- **Fixed income/debt financing:** Companies or governments borrow money from investors or financial institutions with an obligation to pay back the principal plus interest (also referred to as **debt financing**; this includes the **sale of bonds**).
- **Lines of credit:** Investors arrange for a line of credit to be extended to the borrower.
- **Loan guarantees:** Investors assume all or a portion of the debt obligation of a borrower if the borrower were to default.
- **Hybrid investments:** A combination of debt and equity.

Non-return-seeking funding: This funding provides financial support to groups or individuals within and outside government working on a specific project. Funders/donors do not expect a direct financial return from these financial contributions but seek to generate economic, environmental, and/or social outcomes. This support typically takes the form of financial aid, technical assistance, and/or grants from philanthropies, governments, or development banks.

Philanthropic funding: These are grants or donation of money to individuals or organizations to achieve social or environmental goals. In sustainable fisheries, philanthropic funding typically takes the form of grants to individuals, nonprofit nongovernmental organizations (NGOs), and academic institutions.

Public spending: This is government spending used to implement policy and achieve social, economic development, and/or environmental goals. It is usually deployed through government agencies and may or may not generate a direct financial gain from the investment.

Triple bottom line: Triple bottom line is a phrase introduced in 1994 by John Elkington and later used in his 1997 book *Cannibals with Forks: The Triple Bottom Line of 21st Century Business*, which seeks to broaden the focus on the financial bottom line by businesses to include social and environmental responsibilities. A triple bottom line measures a company's degree of social responsibility, its economic value, and its environmental impact.

ACRONYMS

BSI	Bali Seafood International
CFF	California Fisheries Fund
EDF	Environmental Defense Fund
FAO	Food and Agriculture Organization
FIP	fishery improvement project
FPI	fishery performance indicator
GEF	Global Environment Facility
GIIN	Global Impact Investing Network
ISVC	international seafood value chain
IUU	illegal, unregulated, or unreported
MBFT	Monterey Bay Fisheries Trust
MSC	Marine Stewardship Council
SDG	Sustainable Development Goal
SMEs	small and medium enterprises
TNC	The Nature Conservancy

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OVERVIEW

The Food and Agriculture Organization (FAO) of the United Nations estimates that fisheries and aquaculture assure the livelihoods of 10–12 percent of the world’s population, with more than 90 percent of those employed by capture fisheries working in small-scale operations in developing countries (FAO 2014). Oceans are equally important for food security and jobs. In 2012, fisheries and aquaculture produced roughly 160 million tons of fish and generated over US\$129 billion in exports while securing access to nutrition for billions of people and accounting for about 17 percent of total global animal protein.

Overfishing causes economic losses of US\$83 billion each year (World Bank 2017). Rising global demand for seafood combined with a lack of effective management has already led to the decline or collapse of 40 percent of the world’s fisheries (Costello et al. 2012). While a number of fisheries are rebounding, continued overfishing puts food security and livelihoods at risk for millions of vulnerable people (World Bank 2017). The potential to generate increasingly sizable environmental, social, and financial returns from the ocean can only be achieved if fisheries are managed in a sustainable and responsible manner.

Several papers have analyzed the potential social, ecological, and economic benefits of fishery reform (CEA 2012; Costello et al. 2016; World Bank 2017) and the conclusions are clear: in nearly every country in the world, allowing fisheries to recover would increase both the abundance of fish and catch levels for fishers, and consequently the economic gains derived from global fisheries (Costello et al. 2016). Rebuilding overfished stocks could increase production by 16.5 million tons and annual rent by US\$32 billion (Ye et al. 2013).

There is increasing international consensus around the need to rebuild overfished stocks, and the world’s marine fisheries are well poised to seize on this attention and awareness to make tangible progress toward long-term sustainability (FAO 2014). The 2015 United Nations Climate Change Conference (COP 21) prominently featured the role of oceans, inland waters, and aquatic ecosystems for temperature regulation and carbon sequestration and highlighted the urgency of reversing the current trend of overexploitation and pollution to restore aquatic ecosystem services and the productive capacity of the oceans. In addition, in 2015 Member States of the United Nations adopted the 2030 Agenda for Sustainable Development and the Sustainable Development Goals (SDGs), a set of 17 aspirational objectives with 169 targets expected to guide actions of governments, international agencies, civil society, and other institutions over the next 15 years (2016–2030). Several SDGs are directly relevant to fisheries and aquaculture and to the sustainable development of the sector. One goal expressly focuses on the oceans (SDG 14 Conserve and sustainably use the oceans, seas and marine resources for sustainable development) (FAO 2016).

The transition from current practices to sustainable fishing has substantial costs related primarily with sector reform, ensuring fish stocks/natural capital are rebuilt and mitigating lost short-term revenue. While many types of capital especially private—already substantially participate in the global fish economy, much of this investment fails to support sustainability. Also in many cases, government budgets are not properly directed, which has the potential to exacerbate overfishing (World Bank 2017). Current investments made by philanthropic or development aid donors are

essential but often insufficient to address all the costs associated with sector reform.¹ Moreover, the projects funded with these grants and concessional loans are often not designed to stimulate follow-on capital investment given that many fisheries are already overcapitalized and because commercial investors have traditionally financed activities that do not necessarily advance social and environmental resilience (Holmes et al. 2014). The central challenge for the sector then is not how to attract financing—it is ***how to apply early-stage (grant and concessional capital) to attract sustainably minded commercial investment that will reinforce the transition to sustainable fisheries.***

Against this backdrop, the financial sector has been experiencing an evolution in its desire to merge returns with social impact and experimenting with different funding models to meet the needs of some of the world's biggest challenges. A growing number of investors actively seek both financial returns and positive social and environmental impact through their investments. These investors are generally referred to as *impact investors*. They are increasingly interested in projects aimed at curbing poverty, increasing food security, and protecting the environment. The impact capital market offers a variety of opportunities for the private sector and governments to work together to advance solutions to environmental and social challenges.

A subset of impact investors are increasingly interested in sustainable fisheries, recognizing a real opportunity to realize potentially attractive financial returns as well as social and environmental impacts. Research shows that impact-oriented business models benefiting from better fisheries management, including in particular secure tenure, have the potential to generate equity returns between 5 and 35 percent, using conservative growth and exit assumptions. These returns are driven primarily by increased volumes linked to stock recoveries, improvements in supply chain efficiency, access to higher-value markets, and reductions in raw material supply volatility.

Impact capital can play several key roles in advancing sustainable fisheries. Investors' holistic approach and return-seeking discipline can foster greater accountability in the design of sector reforms leading to fisheries management improvements, by aligning financial performance to successful fisheries management. Private investors can also fill funding gaps that government and/or philanthropy is unable or unwilling to address. Most important, private investors, in aggregate, have sufficient funds to scale fishery management efforts far more broadly (Encourage Capital 2016).

How then can governments, development banks, philanthropic grant makers, and nonprofit organizations use their funds to create conditions that encourage and enable impact investment in sustainable fisheries? There first must be an understanding of the barriers that prevent impact investors from financing sustainable fisheries (and the transition to them). ***Understanding the concerns and needs of impact investors will allow development organizations, NGOs, and others, to better design their interventions (that is, through their risk instruments, matching capital, public and concessional financing, technical assistance, and macro-level reforms, and policy initiatives) to encourage private sector participation while leveraging and preserving scarce public dollars for critical public investments.***

¹ Marine conservation grants in 2015 totaled more than US\$800 million, with about half of those funds originating from mostly US-based philanthropies and the rest from official development assistance from bilateral and multilateral aid agencies (CEA 2017).

This paper provides an overview for international development organizations, development finance institutions, NGOs, and the governments they work with of (i) the key concerns that impact investors may have when considering the financing of sustainable fisheries, and (ii) potential approaches for public-private partnerships to overcome these obstacles. It is intended as a primer for these actors, to understand the perspective of the commercial impact investor.

This paper explains the central challenges that keep impact investors from participating in sustainable fisheries, and is structured along four main barriers:

1. A lack of reliable fishery data
2. Ineffective fisheries management
3. Unreliable infrastructure systems
4. A paucity of investment-ready enterprises

It then proposes three models for sequencing and combining different sources of capital to overcome these obstacles:

- **Serial approach:** Public and philanthropic funders first support the establishment of strong governance arrangements, improved data collection, and fishery management. Once these initiatives mitigate some of the risk associated with a fishery investment, then return-seeking investors are incentivized to finance sustainable infrastructure projects (often through public-private partnerships) and/or enterprises along the value chain, focused on outcomes that achieve a triple bottom line: social responsibility, economic value, and environmental impact.
- **Consolidated approach:** Governments negotiate agreements with a single private sector entity or cooperative to delegate fishery management responsibilities. The private firm or cooperative then simultaneously invests in fishery data, management, infrastructure, and triple bottom line enterprises.
- **Parallel approach:** A range of investors and other stakeholders (for example, governments, nonprofit organizations, fishing collectives) develop coordinated investments to improve fisheries data, management, infrastructure, and triple bottom line enterprises. Efforts can be separately funded, but they work in tandem and share the ultimate goal of achieving sustainable catch with an appropriately capitalized and profitable fishing sector.

Each of these sequencing models presents particular challenges and opportunities. Structuring investments to achieve triple bottom line outcomes is still a new idea within the fisheries sector. There is growing evidence from other sectors, however, including agriculture and forestry, that these types of investments are achievable. Examples include the Moringa Fund² and Livelihood Funds,³ which bring together public institutions, private investors, and NGOs, using innovative

² The Moringa Fund is a EUR 84 million investment fund that targets profitable large-scale agroforestry projects with high environmental and social impact in Latin America and Sub-Saharan Africa. The fund makes equity investments of EUR 4–10 million per project and adds value through its technical skills, environmental and social expertise, and global network.

³ The Livelihood Funds are a series of investment funds created by Danone, which brings together investors—including Schneider Electric, Crédit Agricole S. A., Michelin, Hermès, SAP, CDC Climat, La Poste, Firmenich, and Voyageurs du Monde—to invest over EUR 40 million to finance nine on-the-ground programs for mangrove restoration, agroforestry, and rural energy.

investment models to simultaneously address environmental degradation, climate change, and rural poverty while helping businesses become more sustainable. Attracting impact investments is critical for the future of fishery recovery and expansion—these projects cannot rely on short-term loans and grants; they need longer-term finance that is committed to sustainability and responsibility.

As the approaches illustrate, and as noted by Holmes et al. (2014), all actors have a role to play in the development and implementation of sustainable fisheries. Project developers and the fishing industry can create investable propositions out of fishery transition plans. Governments can establish the enabling conditions for sustainable and profitable fisheries. Investors can work together to develop innovative ways to appropriately combine sources of capital. Critically, all of these actors can work together to implement “proof of concepts” and from there, develop a pipeline of projects. There is no one-size-fits-all approach to fisheries management and attracting the investment necessary to take it to scale. Country contexts vary widely and, consequently, so will the requirements of investors. ***Development organizations, NGOs, and other noncommercial actors have a critical and catalytic role to play in crowding-in impact investment for sustainable fisheries by sharing risk with the private sector, promoting policy reforms, and funding interventions (through either concessional lending, grants, and/or technical assistance) with the intention of removing the barriers to impact investment.***

BACKGROUND AND CONTEXT

Capture Fisheries: Importance and Trends

There are thousands of fisheries worldwide, ranging from small, artisanal fisheries that function at the household level and feed local communities to large-scale industrial fleets that catch large volumes of fish to sell in international markets. These fisheries pulled in more than 80 million metric tons of fish and shellfish in 2013, contributing more than US\$274 billion to global gross domestic product (FAO 2016; World Bank 2012).

The social impact of fishing activities is large, especially for small-scale fishers in developing nations. In 2014, capture fisheries collectively employed more than 37 million fishers worldwide (FAO 2016). Ninety percent of capture fisheries employment is in small-scale fisheries, many of which are based in developing countries (FAO 2012). These fisheries generate important hard currency and much needed government revenue: fish is one of the most traded food commodities globally, and developing countries account for over half of fishery exports by value (US\$80 billion out of US\$148 billion total; FAO 2016).

Fish also provide a vital source of protein for nearly 3 billion people worldwide. About 17 percent of the animal protein humans consume at the global level comes from fish, but in many of the world’s least-developed countries, this number exceeds 50 percent (FAO 2016). Its high nutritional value adds to its importance as a source of food and sustenance—especially in poor coastal communities—and contributes to rising demand in many developed nations (FAO 2012).

Global per capita fish consumption rose to an all-time high in 2016, and demand for seafood is expected to continue to grow, driven by population growth, demographic changes that allow more people to afford and access fish, and increasing awareness about the health benefits of

seafood (FAO 2016). Demand for sustainably caught seafood is also on the rise, particularly in North America and Europe (ISSD 2016). However, despite the emergence of several sustainable seafood labeling schemes, buyer demand for sustainable seafood is still nascent in many large markets, particularly in Asian countries, where roughly 70 percent of the world's seafood will be consumed in 2030 (FAO 2014).

Overfishing Undercuts Long-Term Value and Prevents Realization of Full Economic Potential

Rising demand for seafood combined with limited public spending on fishery management systems has led to overfishing, undercutting fisheries' ability to provide long-term social and economic benefits. As of 2013, almost a third (31.4 percent) of fish stocks were fished at biologically unsustainable levels, a 10 percent increase since 1974 (FAO 2016). In 2016, just over 58 percent of fisheries were considered fully exploited, with no expected room for further expansion (FAO 2016). Recent research indicates that these numbers are actually underestimated: thousands of small-scale fisheries, recreational fishing, accidental catch of non-target species, and illegal fishing are not measured and therefore are absent from FAO statistics (Costello et al. 2012; Pauly and Zeller 2016). In addition, global trends mask the fact that many individual fisheries have collapsed and fishing boats have moved on to exploit new species (CEA 2012).

Over the past half century, the misallocation of capital has stimulated overfishing translating to an estimated annual loss of US\$83 billion to the global economy (World Bank 2017). Fleet overcapitalization has led to an excessive fishing effort that dissipates the potential economic benefits of fisheries (World Bank 2017). In 1974, the FAO estimated that 60 percent of the world's fish stocks were "underperforming assets," meaning that they were not generating expected returns because of the misallocation of capital. Thirty years later, despite advances in understanding fish biology, ecosystem interactions, and improvements in fishing and cold storage in the supply chain, that number increased to 75 percent (World Bank 2017). With fewer fish in the sea, fishers are spending more time on the water, with more powerful fishing technology, and still not increasing global catch (CEA 2012).

The long-term ecological implications of this rate of fishing are severe. They include collapse of target species populations, bycatch species extinctions, extensive habitat destruction, and ecosystem degradation. The social implications are also considerable. Industrial fleets from many developed nations have expanded into developing nation waters where they threaten to devastate local fisheries and outcompete artisanal fishers (Pauly and Zeller 2016). Once a fishery has collapsed, it can take many decades to recover and may not do so at all, thus destroying its economic and social benefits. Fishery collapses are particularly devastating in poor communities that rely on fishing for sustenance and may have limited nutritional and economic alternatives.

Transitioning to Sustainable Fisheries Requires Resources

Despite the decline of fisheries, there are many examples of fisheries that are sustainable or recovering as a result of dedicated resources to targeted interventions (CEA 2012; World Bank 2017). The Ben Tre community clam fishery in Vietnam is operated by 11 local cooperatives that provide close management and surveillance of the broodstock and harvestable clams within their area. Over 9,000 community members have secured tenure of their marine resources and now

ensure its long-term sustainability. Similarly, in Baja California, Mexico, a federation of 19 cooperatives has exclusive concessions to catch rock lobster for export to high-value markets in China, and this has a positive impact on the lives of approximately 1,300 lobster fishermen and their families. In 2008, the Peruvian anchoveta fishery was overcapitalized and threatened with collapse. Today, it is the world's largest fishery and well managed, with much greater oversight that limits fishing capacity and catches. These success stories illustrate that data collection efforts, effective management practices, and sustainable catch methods can effectively aid recovery and improve profitability in fisheries.

Unfortunately, many countries, especially in the developing world, have neither the financial resources nor the technical capacity to establish and implement the strong fisheries management measures needed to ensure fishery recovery. Some estimates place the cost of improving fisheries management globally in excess of US\$100 billion, with a potential net gain of US\$600–\$1,400 billion in present value over 50 years after rebuilding fish stocks (Sumaila et al. 2012).

Despite the long-term benefits being well documented, the transition to sustainable fisheries also necessitates a strong level of political opportunity and will—especially given the often-contentious nature of some of the interventions. To enable stock recovery, there must be a period in which fishing is reduced or even stopped. Without investment (both public and private) in generating new sources of income along with benefit-sharing innovations, this could entail temporary but significant losses in revenues for many fishers who rely on fishing as their sole livelihood. Reaching agreement with stakeholders on strong fishery management and compensation for temporary losses can be time-consuming. These challenges contribute to the perception many investors have that the sector is complex and risky. However, the right combination of political will and technical and financial resources can help mitigate these risks.

Helping Fisheries Rebound Can Increase Catch and Revenue

While many of the world's fisheries are in decline, most still hold the potential to rebound: restoration of capture fisheries can positively affect both economic performance and food security (Costello et al. 2012; World Bank 2013). If they are allowed to recover, fishery scientists and economists estimate that the fish brought to shore could increase 8 to 40 percent on average—and double in some areas—compared to yields predicted under current fishing trends (Costello et al. 2012). One study estimates that bringing global fisheries to sustainable levels could help 20 million people avoid undernourishment (cited in CEA 2012).

Improvements in stock health also lead to long-term stability and availability of fish for businesses throughout the value chain. With more abundant fish and healthy populations, catch levels become larger, more predictable, and less volatile, thus reducing supply uncertainty for processors and buyers throughout the value chain and drawing in more investment in the sector.

Beyond the revenue increases associated with rebuilding fish stocks and catching more fish, commercial investments in the fisheries sector can also generate returns by increasing the value of fish, making operations more efficient, and reducing waste and product loss. In fact, these very opportunities for marginal gains without addressing sustainability contribute to overfishing. The opportunity for greater profits in the value chain often leads buyers to incentivize fishermen to deliver more product, which in turn drives investments (often by the buyers themselves) in greater fishing capacity. As mentioned above, this misallocation of capital may generate profits

for some actors in the short-to-medium term, but it eventually results in lower catches, lower profits, and continued poverty among many fishermen in poor countries. The challenge facing any philanthropy, development bank, or private investor interested in long-term returns is to create an alternative financial model applying the various types of capital targeting the relevant set of public and private institutions.

Participating in international seafood value chains (ISVCs) that are increasingly governed by sustainability standards could link improved pricing with sustainable practices. International trade is extremely relevant to commercial fisheries at all scales, from artisanal to industrial. In 2014, seafood exports from developing economies represented 54 percent of world trade by value and 60 percent of the quantity (live weight). This was valued at US\$80 billion, with net export revenues (exports minus imports) reaching US\$42 billion, higher than the combined value of other major agricultural commodities (such as meat, tobacco, rice, and sugar) (FAO, 2016). This suggests that many small-scale fishermen as well as small and medium enterprises (SMEs) in the fisheries sector likely are already participating in ISVCs. Both voluntary and mandatory social and environmental standards are well established in the European Union, the world's largest seafood market. This represents an opportunity for small-scale fishermen able to operate as SMEs (including cooperatives) to benefit more from ISVCs, but meeting these rigorous standards represents significant costs for not only the fishing and value chain SMEs but also governments. In fact, it is often weak governance and public sector capacity that limits the potential for fisheries SMEs to meet the robust social and environmental standards of high-value ISVC.

Growing Interest from Impact Investors

It is difficult to quantify the exact total market of global impact investments: the Forum for Sustainable and Responsible Investment estimates that the overall total of impact assets in the United States alone was US\$6.57 trillion at the beginning of 2014; the Global Impact Investing Network (GIIN) annual survey of 209 impact investors reports US\$114 billion in impact investment assets under management in 2016 with US\$22 billion committed to impact investments; and the Monitor Institute estimates that the market could be as large as US\$500 billion by 2020 (GIIN 2017; Monitor Institute 2009; US SIF 2014). Impact investors reported over US\$564 million in investments in sustainable agriculture in 2014: a small amount in relative volume (approximately 1 percent) but important as a catalyst to prepare smallholder farmers for further investment (CSAF 2015; Goldman et al. 2016). More than traditional commercial investors, impact investors need to be able to monitor progress on the projects they invest in and be able to use information and data to determine the extent to which their actions are achieving social and environmental goals.

In addition to the financial returns mentioned above, capture fisheries also deal with a number of social and environmental issues, including community development, food security, sustainable food production, climate change, wildlife protection, technology sharing, and human rights in the workplace. An impact investor would expect their capital to drive measurable improvements in one or more of these issues.

Several new financial intermediaries, including the Meloy Fund, Encourage Capital, and Althelia's Sustainable Ocean Fund, have recently announced plans to raise capital and invest in wild capture fishery recovery. Encourage Capital, for example, has announced its intention to invest US\$17.5 million in the recovery of Chile's common hake fishery, which collapsed in the early 2000s. These

organizations attempt to address the high risks associated with investing in wild capture fisheries by raising funds from private commercial investors who have strong interests in sustainable fisheries and who are willing to accept lower financial returns in the early stages of investment. They also partner with both philanthropic and public capital providers. These new financial intermediaries are proposing and developing investment approaches and instruments tailored to sustainable fisheries.

These new financing models operate on the premise that the timeline for recovery of fisheries can generally align well with investment horizons, given proper management and incentives for fishers and stakeholders. A bio-economic model developed by researchers at two universities and the Environmental Defense Fund (EDF) shows that with 10 years of sustainable management, as much as 79 percent of the world's fisheries could recover, resulting in US\$51 billion in increased annual profits. By 2050, the research indicates, millions more tons of seafood could be harvested every year—while still leaving significantly increased wild fish populations.⁴

Box 1. Examples of Financial Intermediaries Investing in Sustainable Fisheries

Rabo Rural Fund: This fund is part of the Rabobank Group; Rabobank Foundation, Cordaid, and the Dutch Ministry of Foreign Affairs contribute to financing the fund. The Rabo Rural Fund bridges the gap between microcredit and bank loans for small and medium enterprises and cooperatives in developing countries by providing short-term financing (one year) and guarantees for loans generally between EUR 200,000 and EUR 1.5 million. They also provide management training to borrowers.

California Fisheries Fund: The California Fisheries Fund (CFF) is a revolving capital investment tool aimed at supporting the transition to more stable and profitable fisheries. It uses a revolving loan fund to fill a gap left by financial institutions that have been reluctant to extend loans to commercial fishers because of a lack of track record among borrowers, lack of assets that the banks will consider as collateral, and unpredictable results under traditional fisheries management. The fund has provided over US\$3 million in loans ranging from US\$50,000 to US\$350,000 to fishers transitioning to a more sustainable quota management system. Loans are used for vessels, permits, equipment, and working capital. They accept fishery quota as collateral. The nonprofit EDF developed and operates the CFF.

Althelia's **Sustainable Ocean Fund** (supported financially by Conservation International and with technical and scientific advice from EDF), **Encourage Capital**, and the **Meloy Fund** (executed by the NGO RARE with funding from Conservation International and the Global Environment Facility [GEF]) are three new intermediaries that seek to deploy capital in the sustainable wild capture fisheries sector. They are in the process of developing investment criteria and no transactions have been completed at the time of writing.

Current Paths for Investment

There are currently two main paths for commercial investors to participate in the fisheries sector. The traditional approach is through commercial investments in fishing or seafood supply chain businesses. Examples at the fisher level include funding for fishing companies or cooperatives to purchase more sustainable fishing gear (for example, gear that excludes bycatch or protects ocean habitats); improve vessels; or buy cold storage equipment. Examples further up the supply chain include investments in businesses that help sustainable fishers make their products more valuable and/or provide services that help fishers reduce waste and transport fish. Return on these

⁴ <http://impactalpha.com/is-the-recovery-of-wild-fisheries-the-new-j-curve-for-impact-investors/>.

investments stems from increased productivity and/or efficiency of fishing, improved efficiency in the supply chain, and/or higher product values.

The second way commercial investors can engage with fisheries is at the resource level. For example, in some fisheries, commercial investors can purchase rights to fish with the potential to sell or lease these rights for environmental, social, and/or financial benefit in the future—similar to purchasing equity or stock in a company, but in this case, it is equity in the right to fish in a limited-access fishery. Examples include tradable fishing licenses, effort quota (such as vessel days), and fishing quota. Return on these investments relies on fish populations maintaining or increasing in abundance and availability in the future.

These resource-level investments require policy interventions to develop legally enforceable rights and robust tenure systems. As such, they currently exist almost exclusively in developed-country fisheries that have robust ocean policies and strong legal systems to create, manage, and enforce ownership and transfer of fishing rights.

Box 2. A Note on Fishery Improvement Projects

In an effort to take advantage of the growing demand in Western markets for more environmentally friendly seafood, several environmental conservation organizations have engaged major seafood buyers, encouraging them to work with their suppliers to improve the sustainability practices of the fisheries they source from. The buyers and conservation organizations then work with fisheries and other stakeholders to develop fishery improvement projects (FIPs). These projects lay out a path for a fishery to become more sustainable and have specific requirements to be considered credible by the conservation community (CASS 2016).

Some FIPs represent a firm-level strategy to retain an existing market—or secure a new market—through measurable progress on sustainability. However, FIPs alone are not a good proxy measure of triple bottom line investability: FIPs do not yet address social impact and they do not guarantee environmental sustainability if only one of several fisheries affecting a fish stock is implementing an FIP. In such cases, while one buyer’s seafood suppliers may catch fish using more sustainable practices, the overall resource is still at risk from a lack of responsible management by others.

While FIPs can serve an important role in engaging stakeholders and improving fishing practices, there is considerable variation among FIPs. This variability means that investors cannot directly compare them across fisheries—and simply having an FIP in a fishery is not substantial enough information to judge environmental and social outcomes (Sampson et al. 2015).

INCREASING IMPACT INVESTMENT IN SUSTAINABLE FISHERIES: MITIGATING CONSTRAINTS

How can governments, development organizations, and others interested in transitioning fisheries to a sector with long-term economic viability attract and accelerate impact investments? How can public and philanthropic actors ensure that these private investments contribute to the long-term health of fisheries? What challenges could impact investors face when trying to finance sustainable fisheries?

There are a number of risks that keep impact investors from investing in fisheries. Some of these issues, such as politics, policy, enforcement, and environmental uncertainty, are common across sectors such as agriculture and forestry. However, capture fisheries pose a number of unique and complex challenges for impact investors interested in sustainability.

A review of current literature and data, as well as a survey of financial professionals with experience in environmental and conservation investment,⁵ indicates that there are four main constraints: fishery data, fishery management, fishery infrastructure, and investment/project pipeline. ***The following section presents an overview of each major constraint, including an explanation of its significance and a sample of due diligence questions that impact investors might ask before making an investment.*** Note that many of the due diligence questions can be answered by fishery performance indicators (FPIs) data (discussed in the next section), if available (Anderson et al. 2015).

1. Fishery Data

Investment constraint: A lack of reliable data on stock health, fishing effort, and pricing

Effect: Impact investors cannot adequately assess and mitigate risk

What is it?

Fishery data include information related to fish stock abundance, the level of fishing effort, and the volume of fish being caught and landed. The data help scientists determine likely trends in stock status and thus the biological and ecological health of the fishery. Scientists use data from fish stock assessments, catch logs, and the biology of the species to create models that predict future population levels. These models can be used to estimate how different levels of fishing effort and catch will affect the future health of target fish stocks (as well as non-target species or bycatch) and thus the investment risk associated with a particular species. Fishery managers also use these models to determine the long-term catch potential for a fishery and set catch limits.

Why does it matter to impact investors?

Impact investors need to be able to realistically assess risk and return. A lack of quality data on fish populations, fishing effort, and risk pricing related to particular investments increases the risk associated with the investment and thus limits an impact investor's ability to understand stock status and gauge the potential returns on their investment. For example, many fisheries around the world are not monitored—investors have no way to predict how close to collapse a fishery might be, how many boats will enter the fishery, or how much these fish will be worth in the marketplace from year to year. Without clear information, it is difficult for commercial investors to assess and mitigate risks, evaluate business plans, or structure investments to account for potential fluctuations in fish populations.

⁵ As part of the development of the GEF Coastal Fisheries Initiative Challenge Fund, a survey conducted of financial professionals in Europe, the United States, Mexico, and Indonesia—including managers of ocean conservation investment funds, social and environmental impact funders, philanthropic funders, and commercial bankers—yielded the same conclusions: there are few, if any, entities in fisheries that are perceived as investable. Others have also noted the lack of impact or conservation investment prospects, including EKO Asset Management, NatureVest, EDF, the International Sustainability Group, the Monitor Group, and Acumen Fund.

What is the current context?

Traditional stock assessments are costly and require significant amounts of data that can be difficult to reliably collect. Nearly 80 percent of the world's fisheries, mostly small-scale fisheries in developing nations, remain unassessed because they lack reliable information and have little funding for science (Costello et al. 2012). However, fisheries scientists are developing new, cost-effective methods for approximating stock status in data-limited fisheries (Apel, Fujita, and Karr 2013; Costello et al. 2016). These methods hold potential to increase managers', fishers', and investors' understanding of the stock status of fisheries.

FPIs are one promising mechanism for evaluating and comparing fisheries. Recently developed by a group of 26 biologists, economists, and social scientists, FPIs provide a peer-reviewed tool for rapidly and cost-effectively rating fisheries (Anderson et al. 2015). They are based on 122 metrics and provide ratings for eight indicators, including stock level, quality and type of management systems, and catch levels; each FPI is rated on a scale from one to five, along with an accompanying letter grade (A, B, C, and so on), for how confident the reviewers are in the accuracy of the underlying data (Anderson et al. 2015). FPIs can be used to compare fisheries, evaluate relative risk, and identify correlations between environmental and economic success. FPI studies have been conducted in over 100 fisheries in 20 countries (Anderson et al. 2015). While the fisheries with FPIs represent a cross-section of the world's fisheries, they are only a fraction of the fisheries worldwide.

Who typically finances this intervention? Governments, philanthropies

What questions will investors ask?

- Are fishery stock data available?
- Is the fishery overfished? How bad is the overfishing?
- How much of the catch is thought to be illegal, unregulated, or unreported (IUU)?⁶
- What evidence is there that the stock is declining, stable, or rebuilding?
- What is the regeneration ability of the stock? Can it rebuild in 18 months, or does it require 10 years?
- If there is more than one stock being assessed as part of the fishery, how many are overfished?
- What is known about fleet composition? Is it primarily artisanal or industrial? Or mixed?
- What gear types are used?

⁶ Many of these questions are based on the FPIs. More can be read about FPIs here: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC4422616/#pone.0122809.s004>.

- What is known about the catch methods and fishing effort? How targeted are these efforts? Is the fishing gear highly selective?
- Do current catch methods generate negative environmental impacts on natural habitats?
- How much of the catch is made up of non-target species?

Box 3. Climate Change and Fisheries

Comprehensive reviews of existing climate change research show that ocean warming and associated changes in ocean chemistry have already contributed to species extinctions, habitat degradation, and shifts in the geographic distributions of some fish populations (IUCN 2016). Scientists expect climate change to affect future catch levels and rates of recovery for fisheries as it shifts the availability of food, habitat, and appropriate ocean conditions for fish stocks (IUCN 2016). This, in turn, will affect expected social, environmental, and financial investment returns. Given these potential changes, fishery managers and investors will need to incorporate climate change variables into their fishery production models, management structures, and financial evaluations.

2. Fishery Management

Investment constraint: An absence of fishery policies and management programs to establish, monitor, and enforce sustainable catch levels and tenure rights

Effect: Impact investors have difficulty realizing triple bottom line returns

What is it?

As defined in the overview, effective fisheries management achieves positive environmental, social, and economic outcomes. To achieve all of these goals and be attractive to private investors, effective management generally includes three elements: secure tenure, sustainable catches, and robust monitoring and enforcement (see Box 4 for further discussion). All three of these elements are needed to ensure that underlying marine resources are not overexploited and will be caught in a manner that assures their long-term availability (Holmes et al. 2014). Without the health of the underlying asset, a fishery cannot be financially viable in the long term (Holmes et al. 2014).

No one system of tenure fits all fisheries (Besley and Ghatak 2009), and access rights can be difficult to establish for a wild resource that is generally considered a public good. Fishery rights currently take various forms in different fisheries, including limited licensing, fishing quotas within an overall catch limit, and access rights to specific fishing grounds. Examples include territorial use rights for fishing (TURFs), concessions, individual transferrable quota (ITQ), individual vessel quota (IVQ), and effort quota management (EQM) systems, such as the Parties to the Naru Agreement Vessel Day Schemes.

Box 4. Elements of Financially Viable Fisheries

In the 2014 report “Towards Investment in Sustainable Fisheries: A Framework for Financing the Transition,” Holmes et al. outline three elements of financially viable fisheries.

Secure tenure: The report authors define secure tenure as a model that “provides fishers with a long-term vested interest in the health of the resource by providing access and exclusivity to secure, long-term returns, which are essential for increasing the value of fisheries.” Tenure systems allocate a secure area, or share of the catch, to those who operate within the fishery and whose business depends on the fish stocks. Secure tenure can be allocated to groups of fishers, such as cooperatives, or individuals.

Sustainable catches: Limiting or maintaining catch to a level that promotes sustainable use of the resource and allows for stock recovery requires compliance with established controls. A sustainable fishing plan is based primarily on the current health of the population and the biology of the fish species. To be able to set sustainable catch limits, collecting reliable data, analysis, modeling, and interpreting the results are necessary. This requires up-front and ongoing investment.

Robust monitoring and enforcement: Effective monitoring and enforcement systems help ensure the value and cash flows generated from a productive fishery are secure into the future. Systems must be in place to ensure legal fishery participants comply with rules and regulations, such as catch limits, while also preventing illegal fishing activity from those encroaching on the regulated sector.

Why does it matter to impact investors?

Several recent reports highlight secure tenure as a precursor for return-seeking investment in sustainable fisheries (Besley and Ghatak 2009; CEA 2012; Holmes et al. 2014). Simply put, without secure and enforceable rights to a fishery (by effort, catch volume, or place), commercial investors cannot confidently invest in the catching sector. Consistent with this observation, access rights, fishing rights, and the use of data in management are among the FPIs most strongly associated with good ecological and economic outcomes (Anderson et al. 2016).

Effective fishery management is also necessary to provide businesses and investors with the confidence to take a long-term view of their business plans and investments. This long-term approach is especially important in fisheries, given how long it takes some fish stocks to recover to a healthy level—in some cases, in excess of 10 years. Robust management includes setting and enforcing scientifically based limits on total catch, tracking the health of fish stocks, and monitoring the volume of fish brought to shore. Clear and enforceable fishery management policies can not only prevent overfishing but also reduce uncertainty and risks associated with variable future catch levels, creating a more favorable atmosphere for business development. Conversely, the absence of strong management systems has resulted in a comparatively uncertain investment climate focused on the “race to fish.”

While limiting both catch and access are central to positive environmental and economic outcomes, they may cause short-term hardship for fishers. Rebuilding the stock may mean that fishing is no longer economically viable for some fishers and a subset may have to leave the fishery until stocks recover. This period is generally defined by the biological characteristics of the stocks in question and how quickly decision makers wish to rebuild a stock. Investments in alternative and complementary livelihoods along with other types of assistance to address this transition period are important to the ultimate success of management efforts.

What is the current context?

Poor or no management has led to overfishing and collapse in an increasing number of the world's fisheries (WWF 2012). These declines are often masked in aggregated global statistics that do not consider collapses of specific species or increased fishing effort for others. While the collapse of some fisheries, like the iconic U.S. cod industry, are well documented, many other depletions go unnoticed as the seafood industry substitutes one species for another.

In nations such as Iceland, New Zealand, the United States, and Australia—places with the human and financial resources needed for public investments in effective management—many fisheries have seen an increase in abundance (CEA 2012; FAO 2014). These areas have also seen the largest number of new businesses developing around sustainable fisheries: in fact, recent analyses of FPIs conducted in 80 fisheries showed that only those fisheries with robust fishery management mechanisms had positive ecological and economic outcomes (Anderson et al. 2016). A separate evaluation of investment opportunities in sustainable fisheries also found the strongest pool of viable investment opportunities in fisheries with strong management (Wilderness Markets 2016).

Who typically finances this intervention? Governments, philanthropies

What questions will investors ask?

- Who currently accesses the fishery—that is, who is allowed to fish, how is this determined, and how much IUU fishing is taking place?
- Who issues licenses/permits and how transparently are they issued?
- Is it legal to create a system of secure tenure for fisheries?
- Is the existing tenure system legally enforceable?
- If access to a fishery is restricted to a community, cooperative, or group of individuals, how effectively is this monitored and enforced?
- If access to the fishery is limited, how is the landings value distributed among individuals or groups?
- How secure and flexible is access to the fishery, and for how many years is access guaranteed?
- Is there a robust regulatory framework for monitoring and enforcement?
- How effective are the monitoring and enforcement efforts?

3. Fishery Infrastructure

Investment constraint: Lack of access to reliable infrastructure and equipment to transport and keep high-value seafood fresh

Effect: Impact investors have difficulty recovering costs and realizing returns

What is it?

Infrastructure refers to the physical and organizational structures and facilities that allow an enterprise to operate. In the context of the fisheries supply chain, strong infrastructure enables fish to travel through the supply chain without becoming rancid or contaminated or otherwise losing quality in freshness and appearance. Bringing sustainable, high-quality fish to market requires access to landing areas, ports, or similar facilities in which to unload fish from boats; ice and cold storage to keep fish fresh; roads or airways to transport product (while maintaining freshness and sanitary standards); clean water; electricity; and communication networks that allow businesses to coordinate the transfer of products and information. These facilities are typically publicly owned but can be privately owned or financed and operated through public-private partnerships.

Why does it matter to impact investors?

Given the highly perishable nature of most fishery catches, the availability of and access to reliable infrastructure and effective cold storage throughout the supply chain are critical to achieving these objectives. Reliable infrastructure allows seafood businesses to address health and sanitation requirements as well as ensure product quality. Lack of access to infrastructure poses a significant investment risk if not adequately addressed in business planning. Poor infrastructure may also result in higher costs of operation, making investments uneconomical.

What is the current context?

Globally, most fishers do not have ready access to basic infrastructure logistics and cold storage (Knútsson, Kristófersson, and Gestsson 2015). This lack of physical infrastructure destroys the value of their fish (for example, if spoiled or damaged), thus preventing them from selling to markets willing to pay more for high-quality products. The importance of access to infrastructure is particularly evident in developing countries. For example, in Indonesia tuna fishermen with access to ice and a buyer with adequate refrigeration garner US\$4 per kilogram, while those without these services see only US\$1–\$2 per kilogram of tuna (Inamdar and Tullos Anderson 2016). Even in developed nations like the United States, a lack of easy access to cold storage on land often impedes fishers' ability to garner higher prices for their fish (Inamdar and Tullos Anderson 2016).

The absence of reliable systems to bring high-value products to market poses a significant risk for fishing and seafood businesses (for example, product spoiling in transit), and it hampers their ability to generate revenue—thus decreasing their attractiveness to investors.

Some commercial investors may see opportunity in this need for better infrastructure in the seafood supply chain and consider investing in businesses or cooperatives that provide infrastructure facilities and/or services to fishers. An important challenge with these investments is to ensure that they achieve triple bottom line outcomes: if advances in infrastructure are not coupled with strong management systems including limits on fishery access or catch levels, infrastructure investments can result in unchecked expansion of the fishery and accelerate overexploitation of the resource. Investors may see financial returns in the short term, but they will eventually undercut the value of the fishery as a whole if overfishing persists. In addition, if a single private entity controls access to critical infrastructure facilities (for example, all cold storage

at a port), fishers may lack negotiating power and end up with lower prices for their fish, despite increases in product quality (Wilderness Markets 2016).

Who typically finances this intervention? Governments, development finance institutions, private investors, banks, and other private financial institutions

What questions will investors ask?

- Does the fishery have access to good public infrastructure (ports, landing sites, roads, utilities, and communications)?
- Does the fishery have access to cold storage facilities throughout the supply chain?
- What is the ease of access to important markets?
- Are there knowledgeable supply chain partners in the current or proposed fishery that would reduce the risk of enterprise failure because of lack of market access or effective enterprise management?

4. Pipeline

Investment constraint: A paucity of viable, commercial investment-ready businesses and other investment vehicles

Effect: Impact investors cannot build robust portfolios of sustainable fisheries investments

What is it?

Impact investors seeking to generate sound social, environmental, and financial returns from capture fisheries must have a strong pool of viable, investment-ready businesses or some type of tradable effort or catch quota in which to invest. When evaluating the investment-readiness of a business or investment vehicle from a financial standpoint, commercial investors examine a broad range of issues, including the strength, track record, and collateral of recipients, as well as the characteristics of a pool of investments along with the growth potential of both the business model (or asset, in the case of investment vehicles) and its leaders. The legal and governance systems in which the entity or investment operates are also critical to assessing the potential success and risk associated with a potential business or investment vehicle.

The relatively small number of businesses and viable investment vehicles with track records in sustainable fishing, combined with investors' own lack of experience and expertise in the sector, keep many return-seeking investors from feeling confident about investing in fisheries. Most commercial banks and financial institutions do not have the resources to integrate fisheries management factors into their risk evaluation metrics and often are unable to secure accurate data on stock health. Consequently, they assume that the historical cash flow, based on past catch levels, will remain constant. This assumption exposes them to significant risk, as it fails to account for the fundamental biology underpinning capture fisheries, the impact of increased fishing effort, and the likely effects of climate change.

All of these factors can result in large drops in fish stocks and contribute to diminishing landings, potentially bringing at-risk investments into an investor's portfolio. Thus, few invest commercially, and those that do often mitigate this risk by only doing so short term and charging higher interest rates. In open-access fisheries that tend to operate with small profit margins, this type of commercial investment can push fishing businesses to increase fishing efforts, putting additional pressure on the underlying resource.

Why does it matter to impact investors?

Return-seeking investors prefer to invest in businesses and investment vehicles in markets where adequate data on business performance can inform their investment decisions. Ideally, the historical performance of similar commercial investments in the sector, similar businesses, and markets helps investors reliably assess expected levels of risk, return, and variability in the performance of the investment or business they are considering. With this information, they can also develop appropriate business risk mitigation strategies. The overall size of the current or potential market is also important—in terms of both understanding potential investment returns and building sector knowledge.

What is the current context?

Impact investors report that it is difficult to find fishing and seafood businesses that have a clear legal structure, strong financial track record, business-savvy leaders, strong potential for growth, and triple bottom line outcomes (Wilderness Markets 2015). This trend is especially true in many developing countries where fishers are not even considered a legal business entity. This status effectively excludes them from any economic activity other than as a provider of raw material. In addition, fishers across the globe have not typically organized into effective cooperatives or other groups to aggregate product, jointly negotiate fish prices, pursue secure tenure, or distribute costs for cold storage and other critical equipment that could be shared among fishers. The fragmented nature of fishing operations keeps them from achieving economies of scale needed to secure commercial investment.

A recent pipeline assessment of investment-ready enterprises in the six countries in the GEF Coastal Fisheries Initiative (CFI) program revealed many local “fisheries projects” but few investable business opportunities (Inamdar and Tullos Anderson 2016). Of the 15 investment-ready fishery projects, only five aimed to produce triple bottom line outcomes, and most focused almost exclusively on improvements in the value chain. They did not address the risks associated with the drivers of stock health (overfishing, excess fishing capacity, open access to the stock) (Inamdar and Tullos Anderson 2016). In addition, potential financial returns from these investments were rarely high enough to outweigh the potential risk of investment (Inamdar and Tullos Anderson 2016).

A lack of legal requirements for tracking seafood as it moves through the supply chain and the relative ease of substituting one fish species for another—or using the same species but from a different geography or fishery—pose a significant challenge for fishing enterprises. Together, they make it difficult for fishing businesses to differentiate their products in the marketplace and negotiate higher prices, often limiting their growth potential.

Two forms of substitution exist. The first happens when seafood buyers simply purchase a cheaper product that meets the needs of their end customers. For example, large seafood processors may purchase and combine a variety of species from different fisheries to package and resell as “whitefish” products. In the absence of regulatory requirements or an end market that cares about how or where a seafood product originated, these processors have little incentive to distinguish among fish, and they base their purchases mainly on finding the lowest price. This trend makes it difficult for businesses to compete on product attributes like sustainability and garner price premiums for fish caught with sound ecological and social practices.

The second form of seafood substitution occurs through seafood fraud, wherein buyers unknowingly purchase lower-value products. In this example, seafood buyers may purchase fish that are not actually the species they purport to be and/or are not supplied by legal or sustainable sources. A 2016 report by the nonprofit Oceana found that, on average, 1 in 5 of more than 25,000 samples tested worldwide was mislabeled (Warner et al. 2016). Fraud reportedly occurred at all levels of the value chain, leading the authors to recommend requiring key identifying information to follow seafood from boat to plate.

In most fisheries with effective management and enforcement, the additional effort associated with sustainable practices has resulted in higher costs of production, whether from switching to more selective fishing gear or higher compliance and reporting requirements. To incentivize these efforts and help fishers profit from efforts to improve ecological and social practices, a combination of philanthropies, nonprofits, and business interests have funded efforts to raise consumer demand for sustainable seafood, improve chain of custody tracking, and help fisheries differentiate sustainable products through eco-labels. The United States and other governments are also paying increasing attention to combating seafood fraud and developing traceability programs (NOAA Fisheries 2016).

In response to growing demand for sustainable seafood in Western markets, more than 300 fisheries in 80 countries have received Marine Stewardship Council (MSC), Fair Trade, or other eco-labels that require chain of custody tracking and seek to create differentiation in the marketplace (MSC 2016). Examples include the MSC-certified pole-and-line-caught tuna that garners a price premium in Western markets; wild-caught Alaskan salmon that has successfully branded its product in conjunction with its reputation as the gold standard in fisheries management; and the Parties to the Nauru Agreement’s MSC-certified, FAD-free canned tuna fishery that controls a significant percentage of global tuna catches.

These successes highlight the potential benefits of marketing and branding efforts that differentiate products based on sustainability: in many cases, gaining sustainability certification has helped fishing enterprises secure existing customers and break into new markets that care about sustainability.

Who typically finances this intervention? Private investors, banks and financial institutions, governments, cooperatives

What questions will investors ask?

- Is the enterprise legally recognized in the country?

- What is the experience level of enterprise management?
- Has the enterprise been profitable?
- Does the enterprise have a viable financial plan, including annualized investment returns, financing history, financial projections (profit and loss/balance sheet), and collateral?
- Does the enterprise have a viable operational plan, including strong customer base, clear value proposition, geographic and business risk mitigation strategies, scalability, a well-developed and tested business case, firm-level and market-level upgrading strategies and premiums (including certification options), and market analysis?
- Will the activities of the enterprise have both measurable and meaningful environmental outcomes and socioeconomic outcomes for the local community?
- Are there clear opportunities to create value by improving the supply chain?
- To what degree do local fishers influence management and access?
- Is there a strong recognized leader or leaders in the fishing community who influence management and stakeholders?
- Has a financial model based on the biology and fishing efforts been completed for the fishery that shows returns?

OPPORTUNITIES FOR IMPACT INVESTMENT IN SUSTAINABLE FISHERIES

Building on the growing role of impact capital and commercial banks in supporting SMEs and sustainable smallholder agriculture across the developing world, there is increasing interest in using commercial capital to help restore fisheries.

Governments, development banks, philanthropies, and nonprofit organizations can help attract impact investments in fisheries by

1. Understanding the risk and return requirements of different types of return-seeking investors;
2. Aligning their own work to address constraints in fishery data collection, fishery management, fishery infrastructure, and pipeline development (discussed above) that keep private investors from contributing to sustainable fisheries; and
3. Researching and supporting the development of investment-ready projects in sustainable fisheries; exploring and testing different investment models and approaches for sequencing capital.

Table 1 outlines specific investment needs for fishery data, management, infrastructure, and pipeline. Creating sustainable fisheries requires investment and technical expertise in all four of

these categories. Transforming fisheries will likely entail longer-term horizons and multiple sources of capital, as well as considerable political will. Table 1 includes examples of where different types of capital providers, ranging from philanthropic grant makers to venture capitalists, can participate based on their requirements for risk and return.

Table 1. Investment Requirements

	Overview	Examples	Types of Capital and Typical Investors	Opportunities for Private, Return-Seeking investment
Data	Typically, government and philanthropic investments in policy (for example, to require data reporting); collection; and support. These investments aim to improve data collection, availability, reliability, and consistency, with the ultimate goal of accurately predicting stock levels, fishing effort, and pricing. This information is needed to inform management and business planning.	<ul style="list-style-type: none"> • Research to develop faster, cost-effective stock assessments • Software and equipment for consistent data collection • Mechanisms for housing and sharing data 	<p>Types of capital:</p> <ul style="list-style-type: none"> • Government funding • Philanthropic grants <p>Typical investors:</p> <ul style="list-style-type: none"> • Governments • Philanthropies • Nonprofits 	While there are a few companies developing data systems, these represent enterprise-level investments in individual businesses. There are no existing opportunities for return-seeking investments at the larger, comprehensive level most useful for management. Clear policies on data requirements and formats are a prerequisite for broader business development and investment at all levels of the value chain.
Management	Typically, the “soft” investments that help establish an effective management system and provide ongoing monitoring and enforcement of fishery rules and ownership. Effective management includes tenure systems, scientifically determined catch limits and harvest rules, and mechanisms for enforcement. These investments are often embedded in a time-consuming, complex, and often political process whose outcomes are uncertain but create broad benefits for fisheries and sustainable business development if successful.	<ul style="list-style-type: none"> • Management efforts to develop, implement, and enforce access; tenure and/or fishery rights on the water and in courts • Science tools and personnel to analyze fishery data, determine sustainable catch levels, and evaluate management efforts • Collaborative meetings and multistakeholder initiatives to engage stakeholders in developing regulations • Patrol boats and legal enforcement to combat illegal and unreported fishing 	<p>Types of capital:</p> <ul style="list-style-type: none"> • Government funding • Philanthropic grants <p>Typical investors:</p> <ul style="list-style-type: none"> • Governments • Philanthropies • Nonprofits 	Depending on the financial sector sophistication and capacity of a country, mechanisms for return-seeking capital can include sovereign bonds focused on financing improved management.

	Overview	Examples	Types of Capital and Typical Investors	Opportunities for Private, Return-Seeking investment
Infrastructure	Investments associated with public infrastructure costs for roads, ports, electricity, and communication	<ul style="list-style-type: none"> • Ocean and/or air shipping services • Port facilities (wharf, unloading, ice, and cold storage) • Utility access (electricity, water, and sewer) • Technology, including mobile phones networks • High-quality paved roads and extensive highways 	<p>Types of capital:</p> <ul style="list-style-type: none"> • Government funding • Public debt • Private investment (debt and equity) <p>Typical investors:</p> <ul style="list-style-type: none"> • Governments • Development finance institutions • Private investors • Banks and other private financial institutions 	<p>A range of well-defined, legally recognized investment instruments exist in most markets, including the following:</p> <ul style="list-style-type: none"> • Private-public partnerships • Build-operate transfer agreements for infrastructure facilities • Infrastructure bonds • Infrastructure equity investments • Guarantees
Pipeline	<p>Investments in businesses to execute firm- and market-level strategies that contribute to sustainable fisheries, including the following:</p> <ul style="list-style-type: none"> • Reducing ecological impacts • Improving harvest efficiency • Improving product quality • Gaining access to new or higher-value markets for sustainable products • Improving the efficiency and reducing waste in supply chains • Tracking and differentiating sustainable products in the 	<ul style="list-style-type: none"> • Firm-level upgrading strategies on the water: Vessel and gear improvements, installation and operation of monitoring equipment, potential fleet rationalization through vessel buybacks • Firm-level upgrading strategies on the shore: Improved ice and refrigeration, processing, packaging, transportation, branding, and marketing • Market-level upgrading strategies on the shore: Branding and marketing 	<p>Types of capital:</p> <ul style="list-style-type: none"> • Public debt • Private investment (debt and equity) <p>Typical investors:</p> <ul style="list-style-type: none"> • Private investors • Banks and financial institutions • Governments • Cooperatives 	<p>A range of well-defined, legally recognized instruments exist in most markets, including the following:</p> <ul style="list-style-type: none"> • Stocks • Bonds • Private equity • Loans and other debt instruments • Guarantees

	Overview	Examples	Types of Capital and Typical Investors	Opportunities for Private, Return-Seeking investment
	marketplace (includes traceability investments)			

SEQUENCING OF INVESTMENTS

Sequencing investments in data, management, infrastructure, and pipeline development can help address risks associated with investing in sustainable fisheries and create conditions for increased investment.

The most common sequencing observed in developed countries occurs when governments provide initial funding for the collection and improvement of fishery data, management, and infrastructure to prevent or stop overfishing and to support the long-term growth of the industry. In the developing world context, such funds typically come from government budgets, grants made by bilateral development agencies, or concessional lending and technical support from multilateral development banks. Philanthropies, through their support of nonprofits, also participate in these efforts, funding the development of innovative data collection and analysis models that they hope will be scalable. Once data, management, enforcement, and infrastructure are stabilized, business innovations grounded in sustainable catches begin to increase, creating opportunities for return-seeking private capital.

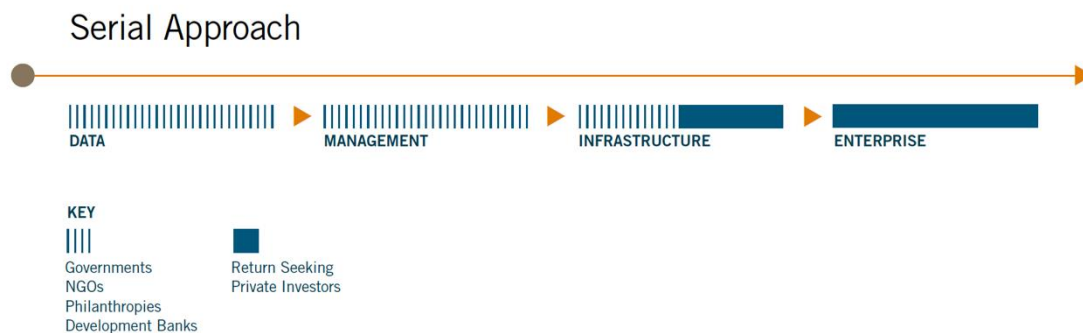
This process can take many decades—a time frame that may prove too long to restore fish stocks that are in grave danger and experiencing rapid declines (Costello et al. 2012) and result in significant loss of economic value (World Bank 2017). It may also require severe limits on fishing, imposing high social and economic costs on fishers in the short run.

How might different types of capital work in concert to accelerate this transition to sustainable fisheries, smooth the economic transition for fishers, and attract more private capital to the sustainable fishing sector?

Below are three potential models for sequencing investments—serial, consolidated, and parallel—with a discussion of the benefits and challenges of each. Current examples of sustainable fishing efforts that reflect these different sequencing models are also discussed, acknowledging that many are in the early stages of development.

Serial Approach

Figure 1. Serial Approach



The serial approach (Figure 1) reflects the sequencing seen mostly in developed-country fisheries: public and philanthropic funders first support the establishment of strong governance, data collection, and management of a fishery. These efforts serve to reduce risk for return-seeking investors, who can subsequently fund sustainable infrastructure projects (often through public-private partnerships) and/or enterprises secure in the knowledge that the fish stocks (which underpin the financial returns) in a well-managed fishery are likely to be available in the long term.

This approach does involve a long timeline for change and a potentially high, up-front impact on fishing communities, as managers may initially seek to constrain all fishing effort for a period to allow stocks to recover. Because of this, governments will need to make a concerted effort to inform and consult stakeholders and make appropriate plans. The uncertainty associated with new management provisions and their ability to provide better fishing in the future may lead fishers to actively oppose policy changes. To avoid these challenges, donors and governments will need to apply mechanisms to compensate historically active fishers for lost income in the short run and help them adopt a long-term view of their financial situation.

Through early investments in effective management by governments (and local stakeholders), this approach ensures that return-seeking investors' expectations of catch levels match the biological realities of a sustainable fishery. Clear, established, and enforced policies reduce regulatory risk for both businesses and investors. With science-based management and decision making in place to set environmental regulations before return-seeking investors enter the fishery, the serial approach reduces the potential for overcapitalizing infrastructure and enterprise investments. This sequencing helps prevent unsustainable pressure on the ecosystem.

Examples

The U.S. Magnuson-Stevens Fishery Conservation and Management Act (first passed in 1976 and amended in 1996 and 2007) legally mandates that managers use science-based assessments of fish stocks to set annual catch limits for each species in the fishery. Several conservation groups backed by philanthropic support, including The Nature Conservancy (TNC) and EDF, worked with fishers, fishery managers, and policy makers to design a rights-based management system that gives individual fishers and community organizations the opportunity to buy a portion—or share—of the total allowable catch in the fishery. Fishery participants also agreed in advance on how they would respond to signs of overfishing and stock depletions.

This new management system, adopted in 2001, combined with subsequent enforcement mechanisms, has been a clear environmental success. Fish stocks in the West Coast groundfish fishery went from near collapse in 2000 to an annual total catch of approximately 41 million pounds in the five-year period ending in 2013 (MSC 2014). They are no longer overfished. In 2014, less than 15 years after the West Coast groundfish fishery was declared a disaster, 21 species in the fishery have received “green, best choice” or “yellow, good alternative” on the Monterey Bay Aquarium’s Seafood Watch program’s ratings, and 13 stocks have gained Marine Stewardship Council certification (EDF 2014), providing a potential avenue for fishers to differentiate their catch in the marketplace.

The recovery of the fishery and clear mechanisms for exclusive fishing rights are now attracting return-seeking investments that contribute to triple bottom line outcomes in the fishery. To ensure positive social and economic outcomes for smaller-scale operations, nonprofits such as

TNC and EDF have been working with community leaders to develop and support innovative financial mechanisms to help fishers cover the costs of more sustainable practices and compete in the seafood market.

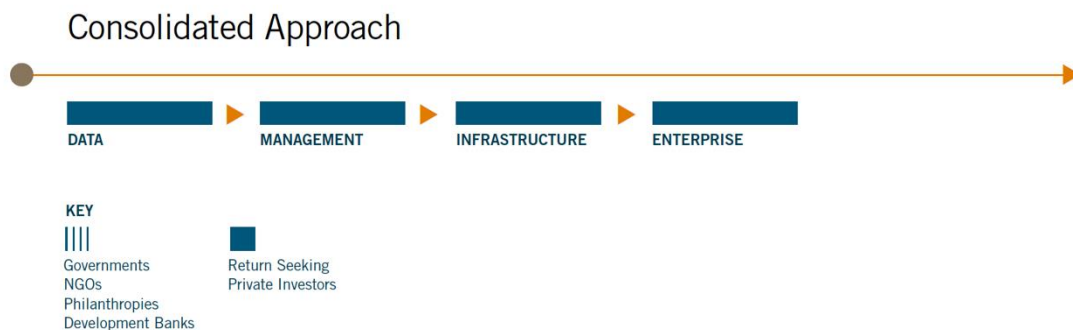
Developed by the EDF, the California Fisheries Fund, which offers loans to enterprises involved in the sustainable seafood sector, invested in the Monterey Bay Fisheries Trust (MBFT), which in turn created a community quota fund to secure historic fishing rights for local fishers while continuing to incentivize sustainable fishing. With the support of TNC, the MBFT used a combination of philanthropic grants and funding from return-seeking investors to purchase fishing quota rights. The MBFT now leases portions of this quota to local fishers at a time and scale that works for local fishing businesses. The MBFT only leases quota to local fishers who use sustainable fishing practices—hence investing in sustainable innovations at the enterprise level and providing a mechanism to maintain positive social outcomes at the community level.

With a more reliable supply of fish available, the California Fisheries Fund and other return-seeking investors are expanding their lending to a burgeoning group of social and environmental entrepreneurs who are using it to buy quota, build storage and processing facilities at local ports, develop direct sales channels for sustainably caught fish, and conduct marketing services that help fishers produce and sell higher-value products—thus increasing revenue for sustainably caught fish (Wilderness Markets 2015).

In this serial approach example, up-front investments of public and philanthropic funds addressed management and governance risks by requiring data collection, instituting clear fishing rights, and enforcing fishing restrictions. Because fish stocks have recovered, commercial investments in infrastructure and enterprises can now follow in a sustainable manner.

Consolidated Approach

Figure 2. Consolidated Approach



At the other end of the spectrum, investments in fishery data, management, infrastructure, and pipeline happen simultaneously through a single private sector entity or cooperative. This consolidated approach (Figure 2) assumes limited public sector involvement and requires governments to delegate management responsibility to a private company. Based on the assumption that the value of the recovery exceeds the costs of implementing this approach, the company then raises the necessary capital from a variety of commercial investors to address the management, infrastructure, and pipeline needs as appropriate. The company deploys this capital

“stack” (grants, public funding, and return-seeking capital) through a vertically integrated business model that integrates data collection, fisheries management and enforcement, processing, transportation, and sales all under one roof. The company recovers its investment in sustainability and increases its profit by improving the efficiency of the supply chain, expanding into new markets, and/or negotiating higher price levels for sustainably caught fish, and reaping the benefits of healthy fish populations that are more stable and produce more fish in the long run.

In this approach, the social and economic impact on fishers will depend, in large part, on the extent to which the government and/or the firm invest in mitigating some or all of the impacts on fishers, such as lost income from reduced fishing effort. Some of this should be included in the terms and conditions of the agreement that delegates resource management and access to the private sector partner. For example, fishers could become shareholders in the business. The firm leading this approach may also help the government secure appropriate investments from development banks or other impact investors to support alternative livelihoods and address other social impacts while it raises capital to implement management efforts.

The significant resources (human and financial) to establish, monitor, and enforce management provisions typically represent significant up-front costs and hinge on the reliability of long-term (presumably exclusive) rights to a recovering resource base to recoup costs. It may be difficult to recruit investors willing to accept the low returns and high risks associated with taking on this management responsibility, particularly in low-value fisheries in need of reform. Innovative financial products such as credit guarantees and insurance products can help mitigate political and climate risk to help capital flow.

The consolidated approach will require strong political will because it devolves the right to benefit from a traditionally public resource to a private entity. This can be difficult to accept for resource managers, fishing communities, and other stakeholders, especially if there is the potential for them to be edged out of traditional roles. To achieve triple bottom line outcomes, the consolidated approach may require complex deal structures and community agreements to ensure social and economic benefits for local fishers affected by government-issued concessions.

In addition, governments will need to invest in robust monitoring of the firm’s economic, environmental, and social objectives. Timelines will need to be carefully specified and a transparent auditing system imposed to determine to what extent milestones such as the number of fishing jobs or the state of stock recovery have been achieved. Results-based financing such as impact bonds may be helpful here.

This model may be most effective with high-value fisheries products such as crab, lobster, sea cucumber, some gastropods, and grouper species with low levels of mobility. The consolidated approach is appealing to investors because it allows stronger control over all aspects of sustainable fishing and vertically integrates the supply chain under one entity. This consolidation provides the business, and its investors, with tighter control over quality; reduces costs associated with the flow of information; and improves profits by removing middlemen in the supply chain.

Because of this streamlining, the consolidated approach may drive the transition to sustainable fisheries faster than the serial approach, thus realizing the financial, ecological, and social benefits of healthy fish stocks in shorter time frames. Depending on the leading firm’s management

decisions, the short-term impact on fishers may be tempered by financial incentives for sustainable practices and therefore be less severe than in the serial approach.

Example

Hypothetically, a fishing company could obtain the rights from a government to fish for a particular species in a defined geography (for example, through a concession). This company would then be responsible for raising money from public, philanthropic, and private sources to pay for collecting fishery data; using the data to produce and implement a sustainable fishing plan; and monitoring and enforcing this plan. The company would also raise funds to improve the infrastructure for unloading and storing fish at shore and implement its business plan for bringing these fish to market. This plan would likely include additional enterprise-level investments in fishing equipment, processing, shipping, marketing, and sales. Investments in better fishing practices, infrastructure to keep the fish fresh, and a more efficient supply chain would allow them to reduce waste and provide fresher, higher-quality seafood. This increased value, combined with the ability to differentiate their fish as sustainable or socially responsible, would improve market competitiveness of the company. The company would continue to actively manage the fishery to the long-term viability of both the resource and the business.

An example beginning to resemble the consolidated approach is the Lesser Sunda Sustainable Fisheries Initiative in Indonesia, pioneered by Bali Seafood International (BSI), part of North Atlantic, Inc., with funding from impact investors Aavishkaar and Rabo Rural Fund.

BSI—and its return-seeking investors—sees a financial opportunity in Indonesian fisheries: it estimates 50 percent losses (by volume) in the current fishing industry because of inefficient handling of fish (J. Knecht, personal communication 2016). Even a modest 20 percent improvement should result in a value improvement of US\$5 million, a little over a fifth of the current US\$24 million first sale value of fish in the region.

While it does not have an outright concession, BSI will collaborate with the national and provincial government to manage the fisheries around the island of Sumbawa in Indonesia. BSI will own half of the management entity, Sumbawa Fisheries Management Company, and the fishers will own the other half. This public-private partnership for management and joint ownership with fishers is designed to allay concerns about private ownership of the resource and promote positive social engagement in developing management rules.

To promote compliance with management, BSI intends to develop shareholding arrangements with local communities and fishers. These agreements incentivize sustainable fishing practices by providing dividends to local communities linked to BSI's profitability, which ultimately depends on the long-term health of fish stocks. While BSI works with select nonprofit organizations in the region, it does not rely on them for success and is not in a financial partnership with them.

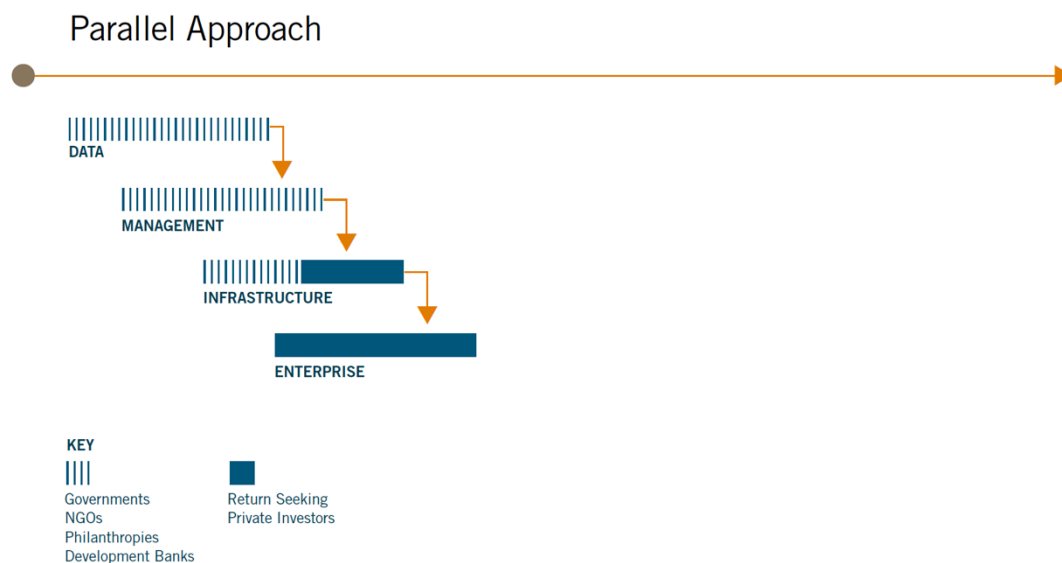
BSI plans to stage investment in management, infrastructure, and new enterprises in three progressive parts. This is similar to the serial approach, but it operates faster under a single business model that BSI intends to replicate, and hence scale, across the Pacific. As part of its first-stage activities, BSI is

- Investing in fishery data and management by instituting a fish traceability and vessel registry system and developing models for fisher and community engagement;
- Investing in infrastructure by constructing a fisheries center for processing and operation; and
- Investing in fishing enterprises by piloting supply agreements with fishers and conducting processing training.

It plans to have a fully operationally and fiscally sustainable system that is producing financial returns and improving fishery stock status within five years.

Parallel Approach

Figure 3. Parallel Approach



The parallel approach (Figure 3) is a hybrid that exists between the serial and consolidated approaches. In this approach, a diverse set of investors come together with fishery stakeholders (for example, governments, nonprofit organizations, fishing collectives) to address constraints to sustainable fishing. They develop concurrent and highly coordinated investments in fishery management, infrastructure, and enterprises. Each effort is separately funded using different types of capital, but they work in tandem and share the ultimate goal of achieving sustainable catches within an appropriately capitalized and profitable fishing sector.

The parallel approach is similar to the consolidated approach in that it relies on the promise of return-seeking investment and market rewards for sustainably caught fish to drive support for—and compliance with—management reforms. However, while the parallel approach requires investors to work together closely, their efforts are not bound and funded by a single entity as they would be in the consolidated approach.

As in the serial approach, in the parallel approach government budgets (often backed by multilateral concessional loans) would fund policy reform and management to conduct stock assessments, set catch limits, enforce fishing rules, and invest in major infrastructure. Grants from philanthropic organizations and bilateral aid agencies would provide capacity building and technical assistance for local communities to transition to new sustainable fishing practices, meet reporting requirements, and develop viable, alternative livelihood options where necessary. Return-seeking investors would, for example, finance cold storage and firm-level efforts to increase social, environmental, and economic value.

In contrast to the serial approach, return-seeking investments in sustainable infrastructure and business enterprises take place in conjunction with improvements in management rather than afterward. Funding of each component in a parallel approach would be staggered over time and conditional on demonstrably improving fishing practices that result in stock recovery. For example, a return-seeking investor might commit to fund improvements in cold storage facilities for a fishery if fishers can show that they have established, and are abiding by, scientifically determined catch limits set by the government. At the same time, a public-private partnership might commit to improving access to electricity at a local port to power these facilities as they expand. The critical component is to clearly define milestones and investment eligibility criteria so that investments can only take place when management reform has sufficiently advanced to prevent infrastructure and enterprise investments from stimulating additional pressure on an already depleted resource.

In the parallel approach, philanthropic and development funding could assist in the development of alternative livelihood options for those unable to fish in the short run, thus easing the social and economic costs of transition to sustainable fisheries from a poverty alleviation and shared prosperity perspective.

In comparison to the serial approach, the parallel approach, in theory, requires less time to see results. In comparison to the consolidated approach, it is driven by a strategic blending of capital, including grants and concessional lending to governments. Multiple sources of capital allow for a broader array of stakeholder involvement opportunities, a system of checks and balances for social and environmental considerations, and a mechanism for potentially resolving conflict, thus producing stronger support in local communities. The parallel approach also creates space for a greater number of smaller investments to take place, broadening the potential pool of investors who might engage with the fishery and fund different components of the transition.

The parallel approach will require more consensus building and coordination among multiple groups with different objectives and funding cycles. For example, enterprise-focused investors may be willing to advance investments based on economic and social outcomes, while governments may prioritize social and development objectives by investing in infrastructure, and environmental nonprofits may prefer to ensure ecological outcomes. Generating a “shared vision” of success that incorporates these different objectives will be important for all parties.

In this approach, the social and economic impact on fishers is likely to be more gradual than in the other approaches: fishers are involved in the development and implementation of management decisions. The collaborative underpinning of the parallel approach provides more time for the development of alternative livelihood opportunities, as effort and access restrictions are likely to come into force over longer periods.

Examples

Few, if any, examples of the parallel approach currently exist, illustrating the high costs of coordination. Some philanthropies and project developers are exploring this model, but they have been constrained by low product values and the lack of existing investment in data, governance, infrastructure, and enterprise capacity. New fisheries investment funds exploring this model (for example, Althelia's Sustainable Ocean Fund and Encourage Capital) face the same challenges.

A theoretical example of this approach in a developing country fishery would be a multipart agreement between a private sector investor, government agencies, and nonprofit partners working in the same fishery. The government would ensure that stock data are collected, analyzed, and used to design and enforce sustainable catch limits. Using this information as a foundation, they would work with fishing communities to define catch parameters, an appropriate harvest strategy, and predetermined responses to fluctuations in stock status. Governments and fishing communities would also commit to enforcement efforts to prevent illegal fishing. At the same time, a private sector partner, perhaps an existing fish processor or distributor, would agree to invest in ice machines and coolers for storing the product, provided that fishers agreed to and abided by effective management and enforcement measures by a specific deadline. This private sector partner would also train artisanal fishers in catch and storage methods to ensure delivery of quality products that can be sold to a discerning, higher-value market. This commitment by the processor or distributor would provide an economic incentive for fishermen to support the establishment of new management efforts, change fishing practices, and comply with new regulations. Simultaneously, philanthropic grants would be deployed to support one or more nonprofit organizations to provide technical assistance to the fishing community so that they could develop effective cooperatives to negotiate higher prices and produce more product to scale their operations as stocks rebound. Other nonprofits would work with development banks to explore and implement alternative livelihood options for fishers who might temporarily reduce fishing or leave the fishery.

Table 2. Comparison of Investment Sequencing Options

	Serial	Parallel	Consolidated
Summary	Fishing effort curtailed until stocks recover under a scientific and data-driven management approach	Fishing effort continues, but impact and effort gradually curtailed by incentivizing positive practices through a coalition of partners	Fishing effort, management, data, infrastructure, and enterprise investment delegated to a private sector partner to manage
Sequencing	Fishery data and management costs first; infrastructure and enterprise investment after fishery management implemented	Fishery data and management funded at same time as infrastructure and enterprise investments, but with “ladder approach” of incentives	Management costs, infrastructure, and enterprise investments funded through one funding vehicle or related vehicles that may fund data, management, and infrastructure in succession or simultaneously
Key Participants	<ul style="list-style-type: none"> • Government • Private sector • Fishers 	<ul style="list-style-type: none"> • Philanthropies • Nonprofits • Government • Private sector • Fishers 	<ul style="list-style-type: none"> • Private sector • Government • Fishers
Type of Fisheries Value Chain (high value/medium value/commodity value)	Can be applied to all fisheries value chains by virtue of government establishing stock recovery as a policy priority	Can be applied to a range of value chains, depending on philanthropic and government budgets Most relevant for low-value artisanal fisheries	Most appropriate for high-value fisheries where costs of data, management, and infrastructure can (eventually) be recovered from commercial sales
Legal	More likely to be legally enforceable if based on policy and legislation	Seldom legally enforceable—more likely dependent on social contract	Dependent on terms and conditions negotiated between private sector and relevant government authorities
Timeline for Investment Return	Potentially longer timeline because of need to establish appropriate data and fishery management policies and practices Investment returns realized after stocks recover	Potentially shorter timeline to investment return than serial approach, but still slow due to coalition approach because of the number of investors involved	Potentially shorter timeline to investment return than serial and parallel approaches because of consolidated decision making
Risk of Overfishing Resources	Low	Medium/high	Medium/high

	Serial	Parallel	Consolidated
	Infrastructure and enterprise investments occur after fishery recovery because of good management and data.	Infrastructure and enterprise investments may occur before stocks effectively recover or before adequate access and effort controls are in place.	Checks and balances to ensure infrastructure and enterprise investments do not contribute to overfishing may not be in place.
Impact on Fishers	Potentially high in the short term as effort is restricted to permit stocks to recover	Gradual as effort and access restrictions come into force over time	Dependent upon terms and conditions of the agreement delegating resource management to the private sector
Need for Alternative Livelihood Options for Fishers	High at the outset	Gradually increasing as effort and access restrictions come into force	Dependent upon terms and conditions of the agreement delegating resource management to private sector
Checks and Balances	Driven by stock recovery, data, and policy	Negotiated among several stakeholders (nonprofit, communities, government, commercial)	Dependent upon the agreement negotiated between commercial, government, and community

MOVING FORWARD

As the world's population reaches 9.7 billion by 2050, the number of underperforming fisheries, and the pressure on fisheries, is almost certain to increase. The scale of investment needed to restore global fisheries is significant, and the needs are varied enough to justify coordinated public, philanthropic, and private sector interventions. Indeed, the need is so great that all three are necessary. However, return-seeking private capital is currently constrained by the significant risks associated with the sector.

Governments, development banks, philanthropies, and nonprofits can grow and accelerate impact investment into sustainable fisheries. These groups should work together in a variety of ways: to reduce financial risk for private investors through guarantees, insurance, and other credit enhancements, and also through grants, lending, and technical assistance provided to governments and other fisheries actors to address deficiencies in fishery data, management, and infrastructure that currently hamper sustainable business development and investment. It is critical to structure public and private investments so that strong data and management programs form the foundation for other investments: this sequencing provides boundaries on catch levels, keeping infrastructure and commercial investments aligned with the biological reality of stocks, and avoids overfishing as a result of overcapitalization.

The three approaches to sequencing investment in sustainable fisheries presented here are considered archetypical models. Variations of these approaches could and should be conceived and tailored to specific circumstances. Governments, development finance institutions, bilateral development agencies, organizations, and philanthropies should work with impact investors, industry, enterprises, and fishing communities to develop and rigorously test these models. Social and economic conditions, investor risk tolerance, and specific recovery goals will determine whether a serial, parallel, or consolidated approach is the most appropriate for any given fishery. Thoughtfully deploying and tracking the success of these approaches will allow for the identification of best practices that accelerate the transition to sustainable fishing and ease the associated short-term social, political, and economic costs.

The capacity of governments to effectively address data and management issues across their jurisdictions is a key consideration. Where governance frameworks are weak, a serial approach focused on building public sector capacity first may be most appropriate. It may also be most strategic and politically feasible in these circumstances to first demonstrate success (a financially, socially, and environmentally self-sustaining fishery having benefited from private investment) at a modest scale. Such successful demonstration projects could then be replicated, gradually building a track record for that type of investment that could reduce its perception of risk for commercial investors. In contrast, fishery authorities and stakeholders in countries with more robust governance structures in place may be able to work with various capital providers at a larger scale earlier on, transitioning a nationwide fishery or multiple fisheries at once. Where the legal basis for clear tenure rights and effective rule of law exist, innovative financial mechanisms such as community fishing trusts (which hold both fishing quota and capital on behalf of the community) could also be tested relatively quickly.

Impact investment in capture fisheries has great potential but is in its infancy. This nascence provides an opportune moment for governments, development organizations, NGOs, and other

actors to apply thoughtful and coordinated strategies that crowd in private investment to develop the sector sustainably. Private investment has a financial role to play, as well as a substantive one: the requirements of private and institutional investors can help impose disciplined implementation and monitoring of early interventions—a rigor that can lead to a more efficient use of development assistance, and build the capacity of implementing entities within governments, which can then be extended to other fisheries and countries. Building on the work by others (Holmes et al. 2014; Encourage Capital 2016), this paper seeks to advance and distill the discussion of how to generate financial returns from sustainable fisheries management by providing the perspective of the impact investor and how governments, development organizations, and other actors can work to crowd them in. Finding effective ways to combine public and private financing and coordinate interventions will help ensure that capture fisheries continue to provide long-term economic benefits and remain plentiful for the millions of people who depend on fish for food and livelihoods.

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