Focus Area: ECOSYSTEM AND NATURAL RESOURCE MANAGEMENT
Market Segment: FISHING & FISHERIES

SIC 311 (Wild Catch)
Segment Score: 15

Sample Investments:

- ***Private Sector:*** New or retrofit vessels for increased capacity, energy efficiency, zero emissions & worker safety. Data systems for direct sales & catch management.
- ***Public Sector:*** Fisheries management upgrades (vessels, data systems, personnel) to monitor & enforce science-based fishing quotas, achieve certification requirements.

1. **Relevance to ADB Ocean Action Plan?** ***(Score: High=3)***
    - **a.** High relevance for this traditional segment of the blue economy, providing jobs and nutrition to large population segments in DMCs. According to FAO, over 80% of global fish production (wildcatch and aquaculture) is based in Asia, employing 60mn people, 14% of whom are women. Asia ex-China's fish production value is approximately $40bn. Total global production is expected to grow by 20% to 2030, but the annual growth rate will decrease as population growth tapers off.
    - **b.** Ongoing risks include depletion of stocks by overfishing, unfair labor practices, male-dominated workforce, climate impacts on fish migration, CO2 emissions, quotas favouring large foreign vs small local fleets.

2. **Positive Environmental Impacts?** ***(Score: Low=1)***
    a. Many Asia-Pacific fisheries are vulnerable to 3 asset-destroying trends: Overfishing (due to unscientific quota systems), illegal fishing (due to lack of enforcement capabilities) and climate change (creating new species migration patterns - Indian Ocean is warming faster than other regional oceans).
    b. As low-carbon protein, fish are part of the nutrition transition supporting climate mitigation. But CO2 emissions by fishing fleets (with smaller vessels emitting more CO2 per catch ton than large vessels), make wild-catch more harmful to climate than aquaculture.
    c. Until regulatory frameworks and industry players become fully aligned with sustainability principles at all levels, wild-catch fishing will create net negative environmental impacts.

3. **Positive Social Impacts?** ***(Score: Medium=2)***
    a. *Poverty:* Fishing brings jobs, nutrition and community solidarity across the full value chain. This is tempered by issues of gender imbalance, unfair labor practices, illegal fishing and methods that damage or deplete ecosystems upon which communities depend. Loss of productive fisheries due to these causes, as well as climate change, accelerates poverty and migration. Protecting local fishermen, and productive fisheries, must be a high priority.

b. *Gender:* One data point shows only 14% of fishing and aquaculture jobs are held by women. However, this is contested - especially in aquaculture (see next chapter). Wildcatch fishing jobs require boating skills, time at sea and risk levels that favor men. Downstream activities, from processing to distribution, see greater levels of female workers. Management roles, ownership and access to finance, however, remain largely male-controlled. Women also tend to earn less than men in fishing due to unpaid work, lower-return work and lower rates of entrepreneurship.
c. *Covid19:* is affecting fisheries and aquaculture food systems with new sanitary measures, changing consumer demands, market access or logistical problems related to transportation and border restrictions. This in turn has a damaging effect on fishers and fish farmers' livelihoods, as well as on food security and nutrition for populations that rely heavily on fish for animal protein and essential micronutrients. Lockdowns and reduced demand for seafood have seen fishing activity fall by as much as 80%. Unemployment assistance should be increased and working conditions reviewed. On the positive side, this time gives fish stocks a much-needed reprieve (similar to WW2 when cod stocks recovered thanks to a long pause in fishing) which should be followed by implementing new science-based quota systems like Europe's MSY. See FAO report on Covid19 fisheries-aquaculture impacts

4. **Potential for Market Scalability?** ***(Score: Medium=2)***
   a. There is modest potential to scale without depleting fisheries (now at 90% fully or overfished status globally). FAO data shows 33% of stocks are now fished beyond biological sustainability. Global fish production peaked in 2016 (171mn tons), when aquaculture and wildcatch were equal. Since then, aquaculture production has increased to 60% while wildcatch has been flat.
   b. Scale is possible by aggregating regional fishery management schemes (eg, Nauru Agreement) and coordinating sustainable quota policies.
   c. To attract investment ex-industry, especially in local fleets, key policy safeguards are needed: secure tenure, predictable quotas, sustainability certifications on sourcing and labor/community impacts. Nominal prices are expected to increase during 2020-2030, driven by increased incomes, production and distribution channels.

5. **Capacity for Innovation and Growth?** ***(Score: Medium=2)***
   a. Innovation is focused on energy-efficient vessels, catch gear, digital tools to monitor catch, blockchain to sell directly to buyers (by-passing traders & auction markets). Many innovative fisheries observer programmes that help the industry collect vital data to enhance catch, enforce laws and protect endangered species have been suspended because of COVID-19. New AI-powered electronic monitoring systems can play a role in maintaining these data pipelines. Myriad other opportunities exist - from expanding machine learning-powered interpretation of satellite data and enhanced drones that can curtail illegal fishing in regions where COVID-19 has reduced conventional marine patrols to connecting sustainable fishers to local consumers via apps when restaurants and markets are closed.

b. Growth is flat for wild-catch industry vs aquaculture, making fishing less attractive for investment and job creation. In fact, Covid19 disruptions of the fishing trade may accelerate the replacement of fishing with aquaculture, filling the gap for nutrition and labor needs.

c. Improving seafood value chains by digitizing with blockchain is a major transformation underway, as noted in ADBs Development.Asia article.

6. **Benefit from Regional Governance Mechanisms?** ***(Score: High=3)***
    a. Yes but regional fishery management organisations (RFMOs) vary in effectiveness, funding and independence from industry.
    b. Some Asian countries (eg, China, South Korea, Taiwan, Thailand) are home to major industrial fishing players that dominate global and regional catch. Fisheries governance and value chains determine how well the interests of most DMCs are protected.
    c. Coordinated improvements among RFMOs, on both quota policy and enforcement, would benefit fish stocks, local benefits and investor confidence. Regional model is the 8 DMCs who formed the PNA Tuna consortium.

7. **Opportunity for SMEs?** ***(Score: Medium=2)***
    a. SME growth must be facilitated to achieve 3 goals: greater quota allocation, processing efficiency and market/pricing power.
    b. Four tools help achieve these goals: Fishing Cooperatives, Microfinance platforms, Sustainability Certifications, Data tools for boat-to-customer sales.

8. **Attract Private Investment?** ***(Score: Low=1)***
    a. Fishing has limited success in attracting private investment due to a need for high capex versus lack of certainty around: quotas, tenure, pricing, fuel opex.
    b. Industry investment dominates by seeking vertical (value chain) and horizontal (geographic) integrations.

REFERENCES: FISHING & FISHERIES

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Media

Seafood Intelligence
https://www.intrafish.com/
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APPENDIX

Figure 1: World's Marine Fish Stocks, 1974-2015. FAO

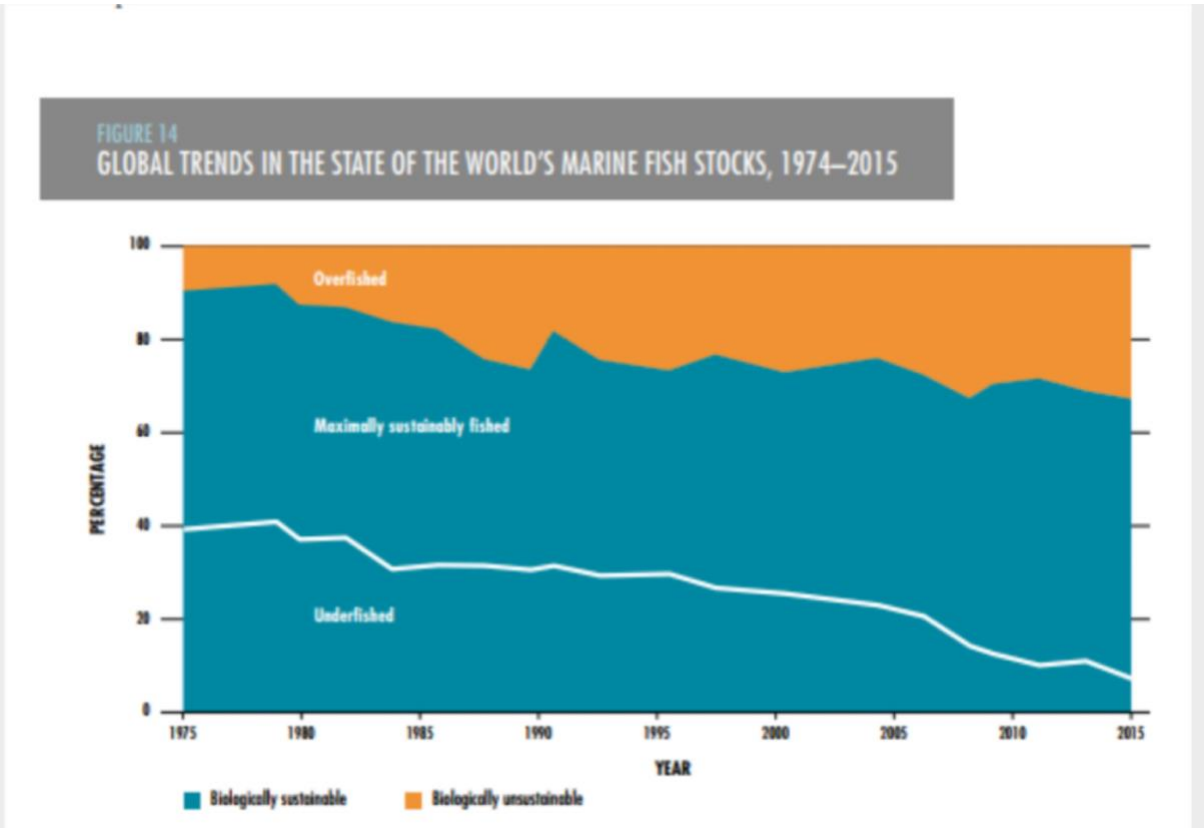

Figure 2: ***Lessons Learned. Sustainable Fisheries Financing Strategies. EKO Asset Management (Encourage Capital). 2014***

Challenge	Lessons Learned	Potential Risk Mgt
Overcoming Fishers' Aversion to Risk	Fishers are very risk averse in certain ways, especially when it comes to adopting new technologies, changing their practices, or capitalizing their businesses with long-term financing.	Help fishers understand the long-term benefits of fisheries reform and practice changes, and identify investment counterparties other than fishers that stand to benefit from reform to take on certain commercial counterparty risks.
Creating Alignment of Political Interests	Strategies that do not align with the interests of powerful	Find structures to give politically influential parties a

	stakeholders are vulnerable.	financial stake in the sustainability strategy.
Overcoming Lack of Price Transparency	The complexity and opacity of seafood supply chains often prohibit transparent price discovery, thereby discouraging investment.	Investors should seek ways to better value and monitor the pricing dynamics affecting their investments over time. Public auctions, fisheries indices, or futures exchanges may improve price discovery.
Define Investment Covenants	Local governance of commercial and investment entities can be inconsistent and often unstable. One promising strategy deteriorated when the governing board of the company redirected the strategy toward non-conservation oriented goals.	Develop strong legal and governance structures for commercial and investment entities that ensure strategies stay aligned with conservation or livelihood objectives.
Ensuring Community Support	Investments that do not have sufficient community sponsorship and engagement risk being undermined by commercial interests.	Invest in strategies with appropriate conservation or livelihood partners with credible holistic strategies that engage and mobilize community interests.
Identifying a Robust Pipeline of Investment Opportunities	Existing strategies have reported low numbers of investment opportunities. Funds with time-limited commitment periods find this especially challenging.	Investors could proactively structure and incubate opportunities before raising deployable capital instead of relying on traditional deal generation methods.
Exiting Portfolio Investments	Investors may find it difficult to exit certain investments, including illiquid holdings in small businesses or companies with no obvious buyers.	Structure investments to be self- amortizing over a specific time period. Structure investments around assets with transparent or ongoing value, such as long-term contracts or infrastructure investments.