



# Global Impacts of the COVID-19 pandemic on the Seafood Industry

## EXECUTIVE SUMMARY





**About Future of Fish**

Future of Fish is an international non-profit that supports small-scale fisheries and communities impacted by overfishing to build sustainable livelihoods while also protecting fish, a critical source of protein for billions of people worldwide. [www.futureoffish.org](http://www.futureoffish.org)

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**Disclaimer**

The following report relied on a combination of literature reviews, in-depth expert interviews, and original data analyses. We thank Dr. Easton White for analyses of Global Fishing Watch data and Google Search Trends data and contributions to interpretations of this work. We validated our pattern-finding analyses using the literature and interview content as cross-references. Fishery systems are dynamic in nature, and subject to rapid and sudden change; the COVID-19 pandemic has only accelerated this volatility. We present this work as a synthesis of current conditions, acknowledging that research content spans several months in time. Future of Fish welcomes feedback to improve the findings.

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# Introduction

For two years, fisheries and seafood supply chains have been forced to adjust and adapt to unprecedented conditions brought on by the COVID-19 pandemic. Fishers, communities, industry, and governments have developed an array of strategies, innovations, and coping mechanisms to ensure survival—of their communities and their businesses. Some responses have been more successful than others; some worked well at the beginning of the crisis but are now no longer as effective. Within this rapidly evolving frontier, vulnerabilities and opportunities have emerged. This study synthesizes the effects, and provides an overview of the current landscape of change (as of October, 2021). We explore which trends through 2021 appear as stop gaps, and which shifts are likely to persist and influence the future of seafood. Please note: references have been omitted in this Executive Summary; detailed references are provided in the footnotes of the full report available [here](#).

## Current Landscape: COVID-19 in 2021

For some segments of the seafood industry, the beginning of 2021 was a time of optimism, as news about effective vaccinations spread and individuals and businesses began to consider a “post-COVID-19” world. However, gross inequities in access to the vaccines and continued differences in government approaches to containing the virus meant that waves of outbreaks continued to ripple across the globe through 2021, exacerbated by the Delta variant. The result is a mosaic of contexts still in flux around the world. Here, we summarize dominant conditions and disruptions within the seafood supply chain as of Q3 2021.

### PRODUCTION

**Summary:** Ongoing logistic challenges have drastically increased the cost of international shipments while creating additional uncertainty around seafood exports; these conditions are exacerbated by a lack of supply in several major export products. Higher prices and reduced enforcement due to COVID-19 restrictions is also encouraging illegal activity in some locations, which could have long term negative impacts on fisheries.

While many industrial fisheries are back to near-normal operations, small scale fishers (SSF) continue to struggle to overcome the on-going slow-down of the Hotel, Restaurant, and Catering (HORECA) sector in regions as diverse as Indonesia, the USA, and the Caribbean. Many continue to turn to digital platforms to support direct-to-consumer sales (see Distribution section). Additionally, some SSF face increased competition from industrial fleets.

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*“The countries catching and producing tuna are all...very slow in getting access to vaccinations. When the boats come back from fishing, the fishermen have to quarantine for 2 weeks, meaning: Few fishermen want to go out at all because of the added danger of Covid and having to quarantine. Very few workers want to come in to work to process the fish that is brought in due to danger of Covid.”– Gordon Food Service Market Update September 2021.*

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In terms of fishing effort, the response has been highly variable across geographies. An analysis of Global Fishing Watch (GFW) data from 2019 compared with 2020 across seven countries reveals every combination of increase or decrease in effort inside and outside of the EEZ (Table 1). This analysis helps capture the dynamic and contradictory responses different regions have had to COVID-19, depending on government response, end markets (export vs. domestic), and fisher behavior in response to perceived health risks.

Production Highlights include:

- Due to on-going logistics and labor disruptions, seafood prices are high and supply is low for many species, including blue swimming crab, lobster, and tuna.
- Continued disruptions to tourism, public markets, and restaurant closures are creating low prices and lack of markets for small scale fishers. In response, fishers are reducing effort, further limiting supply and threatening livelihoods and food security.
- Industrial fishing activity has resumed in many parts of the world, with exceptions in some of the distant fishing fleets where travel and port restrictions have limited access to migrant labor.
- Industrial fleets have captured some traditional artisanal markets. Once those markets have been lost, it can be difficult for small-scale fishers to regain their foothold.

*Table 1. Summary of change in effort for different countries inside and outside of Exclusive Economic Zone (EEZ) between 2019 and 2020. GFW data for 2021 was not available at time of analysis. Indonesia had new data coming online in 2020 that makes comparisons with 2019 non-applicable. However, we can use these maps as a baseline against which to monitor future change, and to see how fishing activity was distributed within and outside the EEZ.*

Country	Inside EEZ	Outside EEZ	Observations
Canada	+11%	+14%	Overall, most effort was within EEZ and fishing effort increased both inside and outside of EEZ in 2020 compared with 2019
Chile	-15%	+140	Chile shares both AIS and VMS data for 2019 and 2020. Increase in activity outside the EEZ is from non-VMS vessels moving farther out in 2020 compared with 2019.
Indonesia	N/A	N/A	For Indonesia, 2020 is the first time VMS data was shared, so comparison with 2019 is artificially inflated. Instead, the 2020 data serves as a baseline against which future comparisons can be made. Large scale industrial fishing tended to occur farther offshore than small-scale fisheries but stayed within the Indian Ocean basin. Small scale fleets stayed closer to shore and fished in both the Indian and Pacific.
Mexico	-12.5%	-70%	Mexico's fleet fished mostly through the Eastern Tropical Pacific, where activity was down within and especially outside the EEZ.

Peru	+2%	+2.5%	The Peruvian fleet in general stays mostly within its EEZ; there was little change in effort observed between 2019 and 2020 which corroborates information from interviews and news reports that industry and government pushed for a return to “normal” rather early on in the pandemic. Fishmeal and fish oil production continued without too much disruption, but the human cost was significant, with multiple cases of deaths and illness within the fleet.
Spain	-5.7%	+6.5%	Fishing activity by Spanish vessels occurred worldwide, and vessels appear to have traveled further from home during 2020 compared with 2019. Effort within Spain’s EEZ declined in 2020, but to a lesser extent than seen in Mexico or Chile.
USA	+46%	-8.6%	Fishing activity by US vessels continued to cover large areas, especially across the Pacific, in 2020, but a significant portion of the fleet moved closer to home, increasing activity within the EEZ.

## PROCESSING AND DISTRIBUTION

**Summary:** Processors and distributors continue to struggle with high levels of uncertainty in supply and demand. Delays due to processing facility shutdowns, labor shortages (including for truck drivers), and lack of shipping containers continue to drive up prices, especially for imported products. In response, distributors are turning to domestic suppliers to source products.

Although imports from China are starting to increase for some species, demand for fresh and live product overall remains low. Instead, processors are focusing on servicing the growing digital retail sector, with a focus on frozen, canned, and single-serving or ready-to-eat products, investing in new equipment and building out new teams to support emerging client needs. This includes a trend among distributors to launch their own direct-to-consumer (D2C) brands. The focus on shelf-stable and ready-to-eat products has also spurred a surge in innovative product packaging to provide solutions for seafood sent through the mail.

In an effort to diversify and retain the new customers gained through online sales, some distributors are opening small brick and mortar shops that serve as places of connection and local fulfillment hubs that can support product delivery to a growing local market. This strategy reflects larger trends in grocery and retail around omnichannel business strategies for improved customer service and marketing.

For distribution reliant on air freight, reduced travel and tourism continues to limit market access. And in many Low and Middle Income Countries (LMICs), restrictions on movement significantly limit business for seafood processors, especially women.

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*“We, women professionals in the African artisanal fisheries sector, have never experienced a crisis that has affected our activities as profoundly as the Covid 19 pandemic.” –Statement issued by the African Confederation of Artisanal Fisheries Organizations (CAOPA) on International Women’s Day, March 2021.*

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Processing and Distribution Highlights include:

- Many small scale seafood processors and sellers continue to struggle with uncertain access to products and markets.
- COVID-19 cases continue to spike in major seafood producing and processing countries, such as Indonesia and Vietnam, disrupting supply.
- Producers are venturing into primary processing in combination with D2C sales;
- Processors are looking to build sales in local markets, especially via retail, and distributors are looking to local producers and processors for more stable supplies.
- Quality and appearance are critical for online seafood sales, and are driving innovations in new packaging technologies specifically designed to meet unique needs of seafood—namely, high water content and robust cold chain.
- A small, but growing, subsector of innovative packaging is focused on eco-friendly and biodegradable materials, especially those that can compost in non-commercial landfills.

## MARKETS

**Summary:** The explosion of online sale platforms supports new opportunities for seafood trade, within traditional retail and beyond. In the US, for example, dozens of companies now offer nationwide fish and seafood delivery, often overnight. The online seafood delivery space has grown so fast, 2021 started to see new “best seafood delivery companies” lists, to help customers navigate all the options. This growth is not limited to the US, as online seafood delivery companies have popped up all over the world, including Malaysia, Singapore, Canada, and the United Arab Emirates. In terms of consumer demand for seafood, a comparison across seven countries for online Google-based searches for the term “food” vs. “seafood” over the past 18 months showed that frequency of searches for “food” continued to be higher than before COVID-19 in all seven countries; in contrast, “seafood” remained higher in 2021 than before COVID-19 in the USA, Canada, Mexico, and Indonesia. In Spain, Chile, and Peru, searches for “seafood” did not change much over the course of the pandemic.

Retail continues to benefit from the increased sale of seafood in-store and online, absorbing market share from the food service industry. Growing acceptance of frozen—by consumers and chefs—is helping to drive some of the momentum in online sales and home delivery seafood growth.

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*“But now with pandemic, the best way to buy is frozen, because [they] only go once a week and they can keep it. And people realized the fish was great...That is a change that is going to stick. So much easier to buy frozen seafood fillet...” –Seafood Distributor, Mexico*

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Governments are also continuing to advance programs aiming to boost domestic consumption, such as by supporting marketing and branding of local seafood companies, directly purchasing domestic products for institutional food programs, and/or providing training to increase competitiveness of domestic seafood companies.

Overall demand for seafood remains mixed. Growing consumer interest in healthy eating has helped increase seafood demand in some regions of the world but only where it is also affordable. Loss of

income, continued closure of public markets, and in some cases, higher prices mean many consumers are not currently purchasing seafood due to cost and accessibility issues, increasing risk of malnutrition and food insecurity.

Market Highlights:

- Seafood companies that were well-positioned to take advantage of the surge in retail and online sales, and respond to demand for frozen products, have continued to experience record-breaking sales.
- Restaurants in the USA and EU started to bounce back during Q1 and Q2, but inflation, labor shortages, and the effects of the Delta variant have stymied this nascent recovery. Quick service restaurants fared well during the pandemic and continue to make gains.
- E-commerce continues to drive expansion of seafood sales, including seafood-focused online delivery companies, meal kits, and restaurant take-out.



# Existing Trends Accelerated by COVID-19

The COVID-19 pandemic helped accelerate four trends that were already gaining momentum prior to 2020. These four trends are:

## 1. Interest in traceability and transparency

Momentum for increased adoption and implementation of digital systems to support traceability was already on the rise within the seafood sector prior to COVID-19. The pandemic spurred seafood industry and government use of digital systems in response to a number of factors.

## 2. E-commerce and food delivery

In 2019, e-commerce for groceries was catching on, but still relatively niche compared with other sectors. Thanks to the pandemic, consumers quickly began to rely on the convenience and safety of online grocery shopping. In addition to rapid growth of Click and Collect (online ordering with in-person pick-up), the pandemic also accelerated an already robust restaurant and food delivery service sector.

## 3. Demand for ready-to-eat and packaged food

Prior to COVID-19, consumers around the world were already turning to packaged and ready-to-go products, driven by busy schedules and a desire for easy meals. The need for quick and safe choices during the pandemic, as well as increased online shopping, helped to accelerate trends favoring boxed, bottled, and canned goods in general.

## 4. Remote work and training

Acceptance and reliance on remote working conditions and virtual trainings is not unique to seafood, and was well underway prior to 2019. However, COVID-19 vastly accelerated the trend, including within the seafood sector in terms of off-site monitoring for operations and administrative activities.



# Emerging Seafood Sector Trends

In addition to the trends that were already underway, the pandemic also catalyzed four *emergent* trends. These emergent trends are:



## TREND 1:

### Diversification as Long-Term Strategy

#### What It Is:

Diversification strategies are occurring throughout the seafood sector, and look different across geographies and supply chain nodes. From the creation of **new D2C channels, to expansion in species or product forms** to innovative **preparations designed for cooking at home**, the industry has identified and quickly embraced diversification as a core element of long-term strategic survival and growth.

#### What It Looks Like:

**Production:** Fishers are **growing their portfolio of species**, providing **primary processing, exploring non-fisheries related income streams**, and exploring **direct sales**, especially via social media platforms.

**Processing/Distribution:** mid-chain companies continue to **expand their sourcing options, embrace retail, online, and food service clients**, and explore **direct online-sales** channels through partnerships and direct delivery services. Many processors also expanded product form (e.g. moving from whole/fresh to filleted/frozen) and value-add services. At a global scale, there is evidence of **increased demand for frozen products** driven by rising retail demand, and the desire to have more control over inventory.

**Markets:** Retailers and smaller seafood vendors are all stocking up on new **value-add, frozen, and ready-to-eat products** and expanding their **online offerings**. Restaurants continue to grow their **home delivery and take-out services**, especially through partnerships with third party logistics providers.



## TREND 2:

### Investment in "Buffers" to Build Resiliency

#### What It Is:

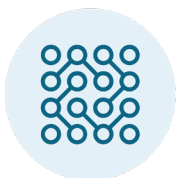
Individuals and companies that successfully pivoted their business models to survive during COVID-19 often were generally those who had cashflow and access to **financial resources, physical assets (such as equipment, inventory, quota), or strong networks and diverse partnerships**. Today, we see seafood actors building up these buffers as a learning and long-term strategic investment to build resilience to future shocks.

## What It Looks Like:

**Production:** Fishers continue to **rely on strong social capital** and community networks for D2C and online sales, while taking advantage of **investments into quota, and multiple licenses** to determine when, what, and how much to fish. Producers are also building up **financial reserves** via robust cash-flow management and investment into business planning and formal and informal savings initiatives.

**Processing/Distribution:** For processors/distributors, business buffers included not only access to local community sales, but elements such as: **stock on hand, investment into certifications for health and safety protocols, and the financial and logistical capacity** to both find new clients and adopt updated health and safety measures. Many smaller companies that lacked access to these buffers did not survive the pandemic.

**Markets:** Many of the buffers in the retail sector are related to the overall growth in e-commerce, with **investment into microfulfillment centers (including automation) and omnichannel sales strategies** that build capacity to respond to consumer expectations around in-person and online shopping needs. Grocery stores are also **stocking up more and earlier on supplies**. This trend is less-well represented in the food service sector; one exception is investment in robots and automation to buffer labor shortages.



## TREND 3:

### Fisheries and Seafood Are Going High Tech

#### What it Is:

As traditional supply chains shut down and in-person activities and interactions became increasingly limited, the **already growing trend of leveraging technology** to improve management and consumer access to verifiably safe and traceable seafood surged. From an increased interest and need for on-board cameras and e-reporting to the use of online communication, purchasing, and payment platforms, **technological innovations and dependencies continue to develop and deploy rapidly**.

#### What It Looks Like:

**Production:** From electronic reporting platforms to online marketing to high-tech microprocessing, fishers are embracing technology to stay afloat, and in some cases, thrive.

**Processing/Distribution:** Technological innovations to support increased worker safety, food safety, product quality, automation, and remote monitoring are all on the rise. Examples include implementation of GPS, AIS, eCDT, and AI, which can provide accurate information on worker contracts and conditions at sea and **digital traceability systems** that can prove product pedigree and safety, especially as logistical disruptions have forced reliance on new, often third-party providers.

**Markets:** There has been precipitous growth in the use of **online grocery platforms**, which has led to a rapid increase in **app use for both restaurant and retail sectors**. This shift has created both new business models as well as a new customer base for many in the seafood industry.



## TREND 4:

### Increased Focus on Local/Domestic Markets

#### What It Is:

Across the supply chain, forces are pushing seafood actors to reconsider the role of **domestic, and even hyper-local**, seafood markets as a growth opportunity and as a critical element of long-term resilience of food systems.

#### What It Looks Like:

**Production: Local D2C** initiatives that meet consumer demand for **products that are affordable, convenient, safe, and healthy**. Domestic market access *at scale* for fishers is largely dependent on **government support**, especially with safety to ensure fish markets are open and accessible, and growth of **online distribution channels** facilitating D2C across regional or national markets.

**Processing/Distribution:** Widespread pivots to create products for home delivery (ready to cook, frozen single servings) and **redirecting sales from export to local grocery stores or fast-food restaurants**. As demand for local seafood products has increased, some processors are continuing and expanding their domestic strategies.

**Markets:** Restaurant and retail market channels are leveraging consumers' association of seafood with healthy, and local with safe, to push more domestic seafood products, especially given continued uncertainties and high prices of foreign imports.

For each of the four emergent trends, we also identified major enabling conditions, challenges, and drivers (Table 2). Enabling conditions build the capacity for resilience—the potential to respond in a positive way to a shock. Challenges are barriers blocking progress towards resiliency and recovery—these are by definition, moveable barriers. Drivers are larger forces, often from outside the seafood system, that influence how actors and institutions may respond based on the momentum that is already in place.

Table 2. Summary of major enabling conditions, challenges and drivers for the four emergent trends in the seafood sector. Strong enabling conditions and drivers point towards greater durability.

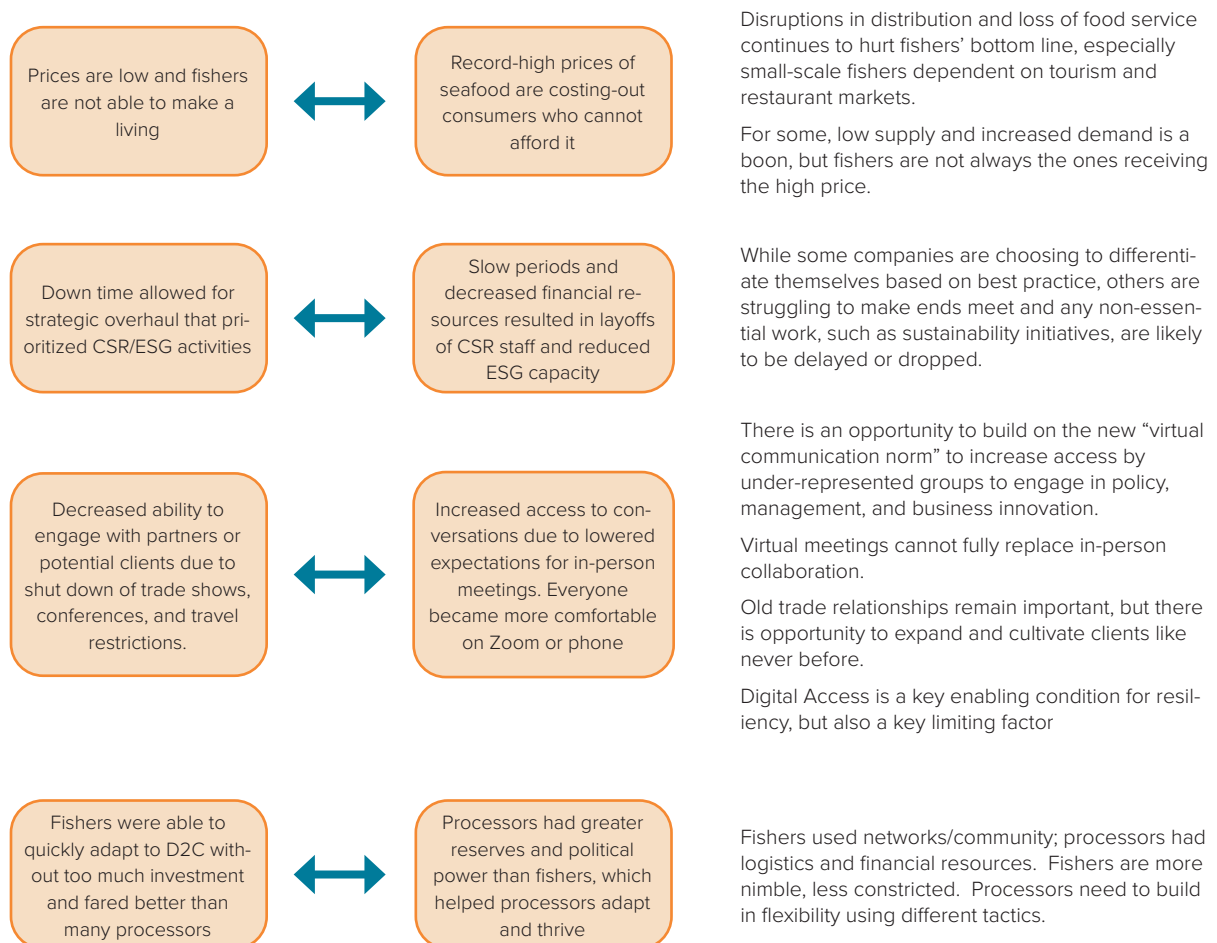
Trend	Enabling Conditions	Challenges	Drivers
Diversification as long-term strategy	<p>Management conditions that support flexibility, including ease of switching to new target species or expanding roles in the supply chain (i.e. selling fish in addition to catching it)</p> <p>Investment capital</p> <p>Infrastructure to support new logistics or product forms</p> <p>Reliable cold chain</p> <p>Innovation in packaging that supports seafood through the mail</p> <p>Biological: availability and access to new and different species</p> <p>Local processing options that fit need, price points, and were accessible</p> <p>Consumer willingness to try new products</p>	<p>Retail's higher bar makes diversification or pivots difficult</p> <p>Digital access is a major barrier and digital dependencies create vulnerability</p> <p>Shipping seafood through the mail is still in its infancy</p> <p>Regulations or lack of training/capital to facilitate fishers' transition to new species or new roles in the supply chain</p>	<p>Consumer expectations for:</p> <ul style="list-style-type: none"> <li>all options in terms of how to buy (in-store, online, pick-up)</li> <li>convenience (ready-to-eat, value-add, individual portions, frozen)</li> <li>Healthy, local</li> </ul> <p>On-going struggles and uncertainty in food service industry</p> <p>Technological developments for packaging that preserves quality; eco-friendly packaging</p> <p>Increasing momentum around Diversity, Equity, and Inclusiveness, with diversification (often processing) offering livelihoods for family and communities in small scale fisheries</p> <p>Consumer demand for online food delivery is still climbing.</p> <p>Improvement in third-party logistics</p>
Building Buffers	<p>Working capital and cash flow management to have finance reserves and liquidity to invest</p> <p>Multiple sourcing options</p> <p>Strong networks that facilitated new trade channels</p> <p>Capacity to leverage online/ social media for marketing and trade</p> <p>Available facilities, equipment</p>	<p>Labor shortages, high consumer demand, shipping delays, and poor catch are combining to create low supply and high costs</p> <p>Digital access is a major barrier and digital dependencies create vulnerability</p> <p>Retail's higher bar makes diversification or pivots difficult</p> <p>Loss of income means people can't afford seafood</p>	<p>Learning from past disruptions, such as natural disasters like hurricanes, buffers are needed</p> <p>Growth of savings clubs and Fair Trade as models that support fishing communities to build reserves</p> <p>Growing interest in alternative seafood networks (ASN)</p>
Seafood Going High Tech	<p>Investment capital</p> <p>Infrastructure—reliable electricity, internet connectivity, and speed</p> <p>Access to training and IT support</p> <p>Capacity to leverage online/ social media for marketing and trade</p> <p>Reliable options for logistics, especially for last mile</p>	<p>Digital access is a major barrier and digital dependencies create vulnerability</p> <p>Management and enforcement efforts continue to be compromised</p> <p>Safety is still not assured for people or products</p>	<p>Growth of "zoom culture" for online conferences and virtual communication increasing engagement, especially by fishers in policy and advocacy initiatives</p> <p>Consumer interest in product origin and convenience</p> <p>E-commerce boom</p> <p>Growth of low-cost digital infrastructure to support easy adoption of online marketplaces, reporting, and monitoring</p> <p>Growth of remote training and installations</p> <p>ESG and impact investing require greater transparency, traceability, and data</p>

Trend	Enabling Conditions	Challenges	Drivers
Focus on Domestic Markets	Local processing options that fit need, price points, and are available Multiple sourcing options Strong networks that facilitate new trade channels Consumer interest or willingness to try new species/products	Digital access is a major barrier and digital dependencies create vulnerability Retail's higher bar makes diversification or pivots difficult Labor shortages, high consumer demand, shipping delays, and poor catch are combining to create low supply and high costs Loss of income means people can't afford seafood Shipping seafood through the mail is still in its infancy	Continued Shipping delays and high costs of imported seafood Growing Nationalism Consumer perception of local/domestic as "safer" Government investment in marketplaces, campaigns, and food purchases that support domestic fisheries Growing research and development interest in the benefits of local food systems for resilience

## TENSIONS

In addition to patterns that show trends, such as increasing interest in domestic markets around the world and across the supply chain, the global seafood system also showed evidence of highly contradictory responses (Figure 1).

Figure 1. Tensions point to opposing forces or states in the system; these contradictions can be useful in identifying drivers for change and how different strategies emerge based on underlying enabling conditions.





# Labor and Finance: Disruptions and Innovations

## THE LABOR CRISIS

The pandemic continues to create acute labor challenges, as well as exacerbating chronic labor-related issues in the seafood sector and beyond, such as gender inequality. Risks to worker safety and health in particular are of ongoing concern. Landing sites, processing plants, and seafood markets continue to create high-risk environments for fishers and seafood workers, but shutdowns or restrictions lead to loss of income and threats to local food security.

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*“Most women carry out non-vessel based activities, including gleaning, processing and marketing...The women in these sectors have had to bear the brunt of the economic impacts of COVID-19 and are further exposed to the virus in their essential roles. In addition...women have taken up a disproportionate amount of domestic work and unpaid care. This is rolling back the progress that has been made towards gender equality and economic security for women.” –FAO News, March 8, 2021.*

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Processing plants have instituted several new operating protocols to allow for greater social distancing, are providing healthcare services such as on-site testing and space for quarantine, and enforcing hand-washing, mask wearing, and other preventative measures to protect workers. Investment into automation is also allowing some plants to operate at full production capacity with fewer staff. In the mid-chain, companies and associations recognize the need to provide a sense of security, safety, and social support for their employees to not only ensure staff continue to show up, but to also have high-functioning teams. The move to remote work options is meeting this need for many.

Downstream, global labor shortages are causing disruptions that affect seafood trade for both the retail and food service sectors. A number of factors are contributing to this labor crisis—which spreads far beyond the seafood industry. Long hours, difficult working conditions, and low wages for more than just these last 18 months have burned out individuals, from fishing crews to long-haul drivers to food workers to restaurant kitchen staff. Government unemployment benefits have provided opportunities for folks

to rethink their professions, and many individuals used the pandemic to reskill or upskill. Employers are having to pay higher wages and some are creating other incentives—such as hiring bonuses—to attract workers.

## FUNDING AND FINANCE

The COVID-19 pandemic has triggered the flow of trillions of dollars around the world. These financial resources—from both public and private sources—have significant influence over the long-term trajectory of individual businesses, as well as the seafood sector as a whole. We provide a high level summary of important trends in this sector as it may affect seafood.

A vast majority of public funds supported emergency relief, much of it in the form of wage payments. However, many government and development funds have been limited—and in many cases flawed. This includes the enormous number of workers and businesses in the seafood sector that continue to be unable to access relief because of their informal status. Support for projects such as cold storage or working waterfront upgrades, which could lend long-term resiliency, have not been part of the fisheries and seafood-related funding packages to date. And, on a global scale, a “green recovery” has not yet materialized, with a small fraction of funds going into projects that support the environment.

In terms of global finance, the pandemic has increased awareness about the need for impact, sustainable and responsible investment and, as a consequence, has accelerated the Environmental, Social and Governance (ESG) agenda, including the growing importance and adherence to the UN Principles for Responsible Investment. There has been a +40 percent growth in Assets Under Management in 2021 of ESG funds and Impact Investing funds respectively, which are also generally faring better during the pandemic.

But, a lack of capital flow evidences that current investment approaches are likely not enough to support COVID-19 resilience and recovery for a vibrant seafood industry; instead, there is need for different approaches to multilateral development cooperation. Related production sectors have similar needs, sparking some interesting new innovations, including: Blue Bonds, Nature-Based Solutions Finance, Transformation Finance, and Stakeholder Capitalism.

# Assessing Durability of Trends

## RESILIENCY

Food system literature defines resilience to mean “the capacity over time of a food system and its units at multiple levels, to provide sufficient, appropriate, and accessible food to all, in the face of various and even unforeseen disturbances” (Love et al., 2021). With over two billion people in the world dependent on wild capture seafood as a primary protein source, and millions more dependent on the seafood trade for their livelihoods, a thriving, equitable, and sustainable seafood industry is critical to long-term food security for the planet, healthy ocean ecosystems, and economic stability for coastal communities around the world.

We considered how emergent trends in the seafood industry align with concepts of food system resilience, specifically, we looked at how trends reflected or included reactive and/or more preventative responses, sensu Love et al., 2021 (Figure 4).

Figure 4. Emergent trends in Seafood and fit within the food system resilience action cycle.



### Diversification as long-term strategy

Reactive into Preventative: Initially a reactive strategy, new trade relationships and investment into diversified products are proving valuable and are perceived as critical to future risk mitigation throughout the supply chain. Fishers investing in microprocessing equipment or wholesalers hiring teams to support expanded sales channels are examples of diversification as a more preventative strategy. This includes investment in analyses that are informing which specific markets (value-add vs. frozen) to invest in specifically.

In particular, the ability to shift to direct-to-consumer models was critical for survival in the early stages of the pandemic. This trend is both reactive and preventative: processors and distributors also picked up on this trend as an early response to move inventory and to make up for losses due to food service shutdowns and international trade disruptions. Learnings from these early experiments have shaped larger strategic investments into direct-to-consumer models, which are still expanding and may reflect longer-term, positive capacity building for resilience.

Reactive into Preventative: Growing global demands for frozen seafood drove an immediate response from processors and distributors: for those already trading in frozen seafood, the capacity to increase sales in this category allowed for quick and positive response early on in the pandemic. For others, the shift to frozen required investment into infrastructure and teams and was based on lessons learned from watching the success of competitors (especially in their capacity to meet retail demands) and from the noticeable shift in consumer (and chef) acceptance of frozen as high-quality and safe. Actors noted frozen as a way to have more control over trade (able to store inventory) and access more types of markets (D2C, retail, and food service). However, a shift to frozen also meant that small-scale fishers who had built premium fresh markets were now either left without any market or had to accept much lower frozen-market prices, which had significant impacts on livelihoods.



### Investment into Buffers

Preventative: based on learnings from the pandemic, actors are better managing their working capital and investing in building inventory, social capital, and cash reserves to mitigate impact from future shocks. Investment into quota, such as through ITQs, and associated market-development is another example of a buffer that lends resilience capacity.

Reactive into Preventative: Networks have proven invaluable for helping fishers and seafood workers respond constructively and effectively to the pandemic and strengthening these ties will likely serve to build greater resiliency. The use of technology to support virtual meetings has helped increase capacity for fishers, seafood workers, and seafood companies to organize and participate in learning exchanges. New programs, such as Local Catch's Scale Your Catch is an example of network-based solution that aims to "reduce the learning curve for fishing communities by leveraging the collective experience of the Local Catch Network and partnering organizations through workshops, networking and mentorship opportunities, and digital tools."



### Seafood Going High Tech

Preventative: Technologies are providing better data, improved communication and connectivity, and smarter, more efficient operations, which all help build capacity for positive response. Learnings regarding how to mitigate for unintended consequences (i.e. increases in inequities due to variable access or increase of fraudulent data due to lack of verification systems) are needed for these strategies to result in greater resilience.



### Focus on Domestic Markets

Reactive into Preventative: the abrupt shutdown of international markets caused many suppliers to quickly pivot to domestic retail markets in order to move inventory and stay afloat. Today, these new trade relationships are proving profitable and companies continue to experiment and invest in the models, teams, packaging, and technology (incorporating learnings) to serve domestic markets, citing uncertainty with foreign exports and a desire for diversified strategies as drivers behind this response, which may help build resilience capacity at enterprise, community, and food-system levels.



## EFFECTS ON SOCIAL RESPONSIBILITY AND SUSTAINABILITY INITIATIVES

Healthy oceans and fish stocks, and healthy social conditions within the supply chain, are both critical to building resiliency. First, healthy ecosystems provide more buffers, and greater options for diversification and substitution, during difficult times. Second, improved social conditions allow for stronger cooperation, healthy competition, and access to support services—all of which can serve to increase resilience capacity. Unfortunately, despite the benefits that improved sustainability and social responsibility could bring, these elements are not necessarily emerging as part of the strategic response of actors to the pandemic. Instead, we see a Tension.

Prior to COVID-19, several factors were creating momentum for greater social and environmental traction in the sector, including the growth of ESG, continued buyer commitments, and new initiatives to address social conditions (RISE Platform, Monterey Framework, Triple Impact FIP movement). For some seafood actors, the pandemic has offered a chance to step back and reassess strategies, and emerge with stronger commitments and engagement.

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*“Our [sustainability] team actually grew. We hired a circular economy director, coastal ecosystem director, and a climate change manager all coming out of the pandemic. So you can see that futuristic vision.” –International Hospitality Business*

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For others, COVID-19 was a devastating blow that continues to push their business to the limits, leaving little room for consideration of anything but making it through the day. Under such a “survival mode” conditions, sustainability and social responsibility take a back seat, and layoffs often include Corporate Social Responsibility staff.

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*“Seafood sustainability is not the priority. The losses from COVID, if I need to buy farm salmon to get something on the menu at the right price point to just save my business and pay whoever I can get to show up for work, that is what I have to do.”- US Seafood Consultant*

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The result is a global stage riddled with both set-backs and opportunities for advancing sustainability and social responsibility objectives throughout the industry:

### Set-backs to Sustainability and Social Responsibility Movement

- *Lack of enforcement and significantly reduced monitoring, with concerns for:* worker safety at sea and in processing plants and increased rates of IUU
- *NGO and CSR staff layoffs mean fewer human resources dedicated to problem-solving* and pushing initiatives forward during 2020 and into 2021
- *High price of seafood currently undermines certifications*—due to increased demand, some fishers and distributors are receiving premiums without being certified, eroding the value proposition of these models.
- *Loss of food service disproportionately affects small scale fishers* who built businesses differentiating on values of local, quality, and responsible sourcing rewarded by chefs.
- *Logistics disruptions and high shipping costs* are forcing companies to find new sourcing options, which may not always be sustainable.

- *Enormous price sensitivity*, especially in food service, is affecting the ability to push sustainable products that come with premium prices.
- *Direct-to-Consumer and home-delivery growth is creating a packaging and waste crisis*, especially in Asia where most packaging is single-use plastics and styrofoam.

### **Opportunities for Advancing Sustainability and Social Responsibility**

In contrast to conditions that block or slow social and environmental initiatives, the following conditions have helped to support these efforts:

- *Growing consumer demand* for companies to not only provide safe and hygienic products, but also provide safe and healthy work environments for their employees.
- *Companies are doubling down on commitments to social and environmental criteria as a differentiator*. The burgeoning D2C and online space is getting crowded, forcing companies to look to more than price and quality to compete.
- *Online sales provide greater opportunity for education and engagement* with consumers.
- *Potential increase in accountability*, as companies embracing social media and online sales may be more susceptible to public scrutiny by consumers, especially via social media.
- *Greater demand for eco-friendly packaging by committed seafood companies* is helping to spur innovation—scaling these solutions requires continued demand and uptake.
- *Increased domestic market exposure to MSC and other certified products* that were rerouted to local markets could support greater market penetration long-term.
- *Traceability and transparency are buoyed* by: 1) increasing demand by consumers to know where their products are from; 2) stricter requirements of retail sector than food service.
- *Companies looking to streamline to stay afloat are reconsidering their “waste”* and driving innovation in recycling and byproduct development.
- *Growing consumer demand for environmental information*, and to a smaller extent, ethical and social information.

# Conclusion

The impacts of COVID-19 on individuals, families, communities, businesses, and local economies has been devastating. For the seafood industry, certain aspects of the sector made them particularly vulnerable, including: a dependence on complex global supply chains for distribution, a highly perishable product, a reliance on small-scale operators and migrant workers to support production, and crowded processing operations. There is an urgent need for resources and response efforts **to support long-term strategic planning and adaptation**, over short-term coping.

Several studies have already started to put forward recommendations for how the research, development, industry, and civil-society communities can work to help turn the challenges of COVID-19 into the change that is needed to ensure an environmentally sustainable, socially responsible, and economically viable wild capture seafood industry. We summarize these recommendations, according to common themes, here:

1. **Bridging the Digital Divide** is key to advancing business, social, and environmental benefits across the sector. From small scale to industrial fisheries, individual fish sellers to multinational corporations, the ability to leverage digital systems for communication, business planning, marketing, sales, and to access reliable, relevant information is vital for business success as well as improved management.
2. **Strengthen local seafood systems:** build infrastructure and provide resources to help small scale fishers, processors, and distributors diversify to better serve domestic markets and more effectively connect fishing hubs with nearby communities. This includes safeguarding working waterfronts and investment into physical and technological resources to support improved efficiencies, quality, and markets for local seafood trade.
3. **Create effective social safety net programs** to support small-scale fish producers and traders. This includes conducting research and designing and implementing programs.
4. **Invest in social capital and networks:** The emergence of networks and coalitions was a trend pre-COVID-19, but has proven invaluable for lending resilience at individual, institutional, and system levels. Continued use of digital platforms can help build participation and effectiveness of networks among enterprises and individuals, if digital access issues are addressed.
5. **Improve women's access to new opportunity areas:** COVID-19 hit women especially hard. There is urgent need to understand and design solutions that not only alleviate the immediate crisis many women seafood workers face, but also build strategies that help reposition women to better take advantage of new opportunities, such as digital marketing and logistics.
6. **Continue to focus on increasing value, not volume.** Alternative seafood networks and models that train and empower fishers and local communities to capture more value from the resource can help incentivize best practices on the water and distribute the benefits of the fishery to more members of the community, including women and youth.
7. **Leverage consumer trends to grow demand for (responsible) seafood.** From the USA to Chile to Europe to Asia, consumers are changing the way they shop, cook, and consume their meals, including seafood. These trends all can be leveraged to build awareness and consumer demand for responsible seafood.

**8. Unlock Finance for small scale fisheries via radical systemic approach:** Current financing is not enough; new approaches that build catalytic vehicles, similar to what is happening in other sectors such as with Climate KIC or 1000 Landscapes, is necessary.

## FINAL THOUGHTS

We caution against assumptions that things will ever “return to normal.” COVID-19 is far from over, particularly for the majority of producer nations, and there is no way to predict the likelihood or ferocity of future variants. Even once this particular crisis has passed, there is no avoiding the impacts to come of climate change; we are heading for a world with increased levels of resource scarcity, loss of income and food for local fishers and farmers, forced migrations, global political instability, and supply chain disruptions.

While the business impacts of COVID-19 have been devastating for many, this high pressure situation has also led to the creation of new, resilient innovations and models. The path to build forward better requires we ensure more resilient systems are created—we must continue to test and increase our understanding of what elements build resiliency and then act on that knowledge.





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