Fish 2.0 Market Report:

Traceability

An Investor Update on Sustainable Seafood

Traceability: Seafood Tracking and Monitoring Comes of Age

Traceability is a key factor in regulatory and cultural shifts that are reshaping the food production and consumption landscape. There's a growing market for tools enabling food traceability—the capacity to track a product's movements from origin to consumer—due to a surge in consumer demand for food safety and production information. The food traceability market is expected to reach a value of $14.1 billion by 2019—a 9% annual growth rate.

The global seafood industry, worth approximately $500 billion, faces an especially difficult traceability challenge given its long and complex supply chain. Determining product origin can be difficult since many fish are caught far offshore, and, once processed, similar seafood species can be impossible to differentiate without traceability data.

The market opportunity for businesses able to improve seafood traceability is significant: for example, in the US, 90% of seafood is imported, yet the Food and Drug Administration (FDA) inspects only 1%–2%. In the thin-margin seafood industry, where cents per pound makes the difference between profit and loss, traceability can add value to products by giving them an origin story and thus de-commoditizing them.

Implementing traceability is fundamentally about capturing and sharing data that provides transparency and builds trust. Investors can see opportunities in emerging technology ventures that will help the seafood industry increase its revenues, improve trade flows and create positive consumer health, environmental and social impacts. Promising technologies that emerging ventures are creating will:

- Improve tracking technologies (both hardware and software based) from origin to table.
- Integrate DNA and biological testing services into supply chains.
- Provide software, data collection platforms and sharing tools that create efficiencies.
- Allow CPG companies to build brands based on sustainable, traceable fish products.

Marketplace Drives Demand

Demand for seafood traceability originates from multiple sources, including retailers, consumers, government agencies and nonprofits focused on public health and environmental sustainability. Key demand drivers include:

- **Growing Market Risk of Illegal Fishing:** Illegal, unreported and underreported (IUU) fishing undermines the entire industry. Many businesses trading IUU goods also create damaging environmental and social impacts by fishing inside protected marine areas, fishing out of season or without permits, or using forced labor. These and other types of illegal fishing hamper trade agreements and fair price competition.
- **Risk of Seafood Fraud:** A large number of the fish captured, both legally and illegally, are mislabeled. For example, a 2013 Oceana study found that one-third of all seafood at grocery stores and restaurants in the US was mislabeled. This creates issues for pricing, retail and restaurant buyers, and consumers.
- **The Need for Sustainability Information to Manage Stocks:** Traceability that extends to the farm or boat, rather than just to processors, would provide data governments need to manage fishery stocks and help reduce the costs of enforcing fishery laws.
- **Expanding Market and Regulatory Requirements:** Voluntary standards set by large buyers and regulatory requirements established by governments, including export and trade rules, generate a growing need for product information that traceability can provide.
- **Shifting Consumer Attitudes:** Consumer demand for sustainable seafood products is increasing, requiring traceability to verify sustainability claims.
- **The Need for More-Efficient Operations Management:** Currently, both wild catch and aquaculture operations tend to use highly manual processes to record data. Businesses that integrate traceability technologies can automate these manual processes, providing better information access and revealing operational efficiencies. An example of a label providing traceability information is provided below.

Source: Trackwell

Implementing Traceability for Seafood Is Complex

Since the mid-20th century, there has been a great deal of technological progress with respect to fish capture, processing and transport. However, in the same time period, the capacity for tracing and monitoring specific seafood trade flows has remained relatively unchanged.

Seafood supply chains are among the most fragmented of all food supply chains, with some products changing hands 5 to 15 times before reaching the consumer. Also, the lack of global records for all fishing vessels makes it difficult to identify the first actor in the supply chain. The lack of transparency in the seafood supply chain is an underlying facilitator of illicit activities in the industry and makes it difficult to purchase fish products responsibly.

The responsibility for traceability in the seafood industry has generally resided with distributors and wholesalers, who record product information on paper in isolation from others in the same supply chain. Mistakes, oversights and record losses resulting from these paper transactions mean that many trades along the supply chain are not accounted for—and the seafood coming out of the chain has no clear history.

Figure 1 offers an example of wild catch chain complexity, illustrating how products travel across borders. It's easy to see how paper-based records would not be complete at the end of these supply chains.

Figure 1. Wild Seafood Supply Chain Complexity

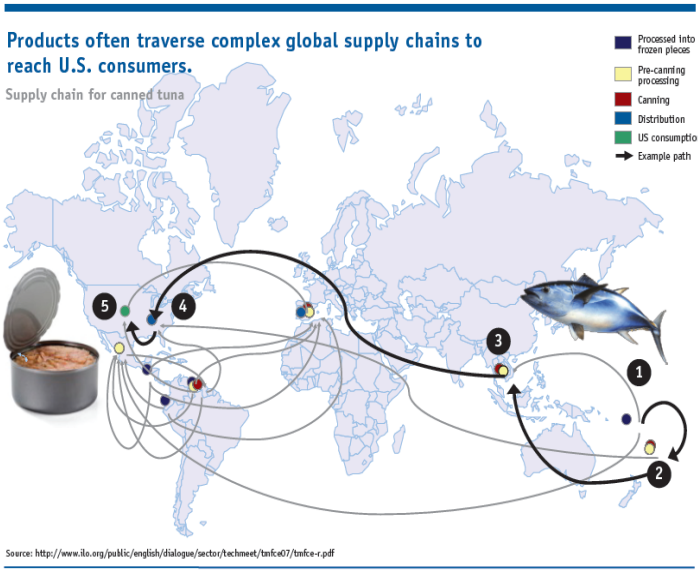
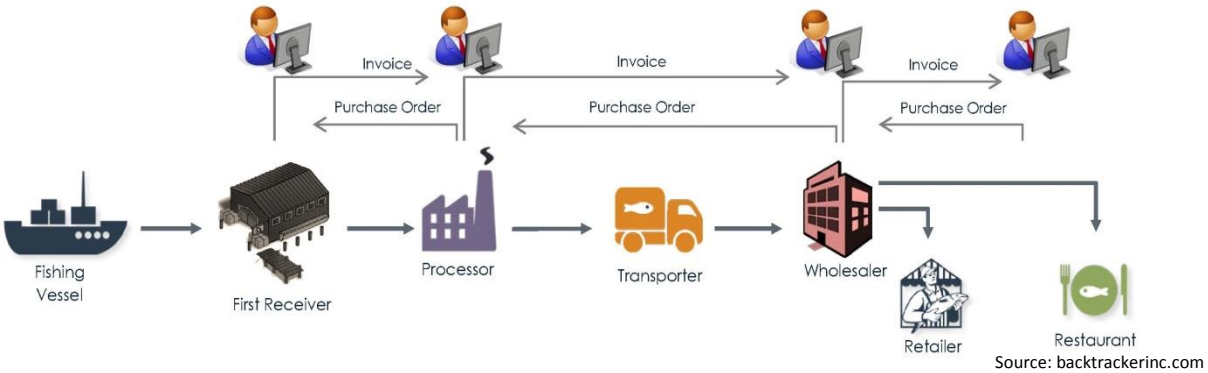


Figure 2. Current Manual Process and Key information Exchange Points



Source: backtrackerinc.com

Obstacles to Widespread Implementation

Achieving comprehensive traceability will require engagement and collaboration among all parties along the entire supply chain. Following are the main obstacles to industry-wide traceability for seafood:

- **Inconsistent Industry Data Standards:** Inconsistent standards across the industry have delayed traceability integration. This is changing now as the industry itself is calling for standardization.
- **Poor Data Capture and Management:** Current seafood practices are outdated, with much recording done manually on paper, which is extremely inefficient, prone to error, unsecured and forgeable. Low-cost, user-friendly technologies are needed for both small- and large-scale operations to make the business case to upgrade from paper to computers, including costs of equipment and training.
- **Gaps in the Value Chain:** Traceability at mixing points, such as processing, auctions and transshipment points, is difficult to achieve, particularly in developing markets. It will require significant resources in terms of training and equipment, as well as regulation, to ensure that information collected is accurate. To achieve scale, government agencies will likely have to be onboard with traceability solutions.

Business Benefits of Implementing Traceability

Effective traceability practices require disciplined data collection, management and analysis along an industry's complete value chain. As a result, businesses implementing these practices will be more financially and environmentally sustainable. Some benefits that businesses will see are:

- **Better Market Intelligence:** A good system should track information such as pricing, origin, quality and quantity to create value for distributors and buyers. Though competition may preclude sharing this information between buyers, it is internally valuable.
- **Improved Value Chain Quality:** Existing data shows that information sharing among industry players and coordinated implementation of traceability protocols has an overall positive effect on quality in seafood industry value chains. In a recent industry survey, 92% of respondents indicated that traceability effectively improves product quality as fishermen know that buyers will be able to attribute products directly to them and will also know the date of capture.
- **More-Efficient Internal Operations:** Inventory management systems have been proven to reduce overall operating costs for businesses through reduced product recalls, improved tracking and food safety, and risk mitigation. For example, a wild-catch seafood

Policy Support for Traceability Is Building

Although market infrastructure is in place to connect the technology to users, there is no policy to clarify the standards required, the data rules that apply and the groups that must meet these requirements. Policy makers are now making efforts to move seafood traceability to the next level. Examples of recent initiatives include:

- The US established a Presidential Taskforce to develop a national strategy for enhancing seafood traceability and transparency. The National Ocean Council Committee is now working to design and implement a more effective seafood traceability program that will include operational standards related to collecting, verifying and securing relevant data.
- The EU has implemented laws making food traceability, including seafood, compulsory. Additionally, it has implemented vessel registry and catch certificate requirements to combat IUU challenges. Recent EU traceability regulations address documentation of product origin, whole chain transparency and counteracting illegal trade.

By defining consistent and verifiable standards across seafood markets and fostering increased industry cooperation, policy makers can increase investment flow into seafood traceability.

processing and distribution company reduced monthly overtime from 1,600 hours to fewer than 100 hours by implementing a traceability system.

- **Product and Brand Differentiation:** Telling stories about fishermen or farmers on product packaging allows for increased prices and promotes brand loyalty with consumers. For example, small-scale fishing organizations that have implemented consumer-facing traceability systems have seen increases of 18%–30% in margins. Figure 3 shows a consumer accessing seafood traceability information from a QR code via a mobile phone at the seafood counter.

Figure 3. Traceability Information via QR Code

Source: thisfish.info

Source: Trackwell

Investment Opportunities Arise from New Technologies

The seafood industry is developing numerous solutions to solve the challenge of traceability—boat hardware, mobile phone applications, DNA testing and other technologies. Four focal areas for investment include:

1. **Companies Developing Hardware and Software Tracking Technologies.** A number of companies are developing traceability solutions applicable to both large- and small-scale fishing operations. Current products include boat hardware such as video monitors and GPS devices, mobile apps and scanners. Developing a cost-effective solution that participants can apply across industry segments will allow for integrated traceability across the value chain.
2. **Biotech Firms Integrating DNA and Biological Testing Services into the Supply Chain.** Companies that offer solutions for product verification along the supply chain where there is high risk for misinformation or mixing are in high demand. For example, traceability standards to combat IUU fishing and fish fraud rely on biological testing to verify species and origin. As industry standards increasingly focus on these challenges, biotechnology companies that provide these services are primed for growth.
3. **Companies Building Out Efficient Data Collection Tools.** Modern data collection tools and methods will protect seafood businesses against unnecessary expense and risk. Furthermore, the data gathered and aggregated can provide important insights to run these businesses more cost-effectively.
4. **CPG Businesses Distributing Sustainable and Traceable Branded Products.** Traceability de-commoditizes fish and thus supports a premium pricing model. An increasing number of CPG businesses have increased revenues and market share by providing traceability and sustainability information with products. As consumers continue to demand more information about products and like learning about their foods' origins, traceability offers an opportunity for forward-looking branded manufacturers to stay competitive.

Key Sources

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