

TAKING THE FIRST STEPS TOWARDS FULL-CHAIN SEAFOOD TRACEABILITY: A PRELIMINARY GUIDE FOR INDUSTRY

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Developed by:



Future of Fish, [in collaboration](#) with FishWise, Global Food Traceability Center, and WWF, developed this document to address two questions commonly posed by actors within the seafood industry:

1. When a company wishes to implement seafood traceability, what is the best way to determine the technology that will most effectively help them achieve this goal?
2. How can companies seeking to implement seafood supply chain traceability better understand the potential return on investment regarding traceability technologies?

New regulations such as the [US Seafood Import Monitoring Program \(SIMP\)](#) and [EU Illegal, Unreported, and Unregulated \(IUU\) Regulations](#), along with changing industry and consumer expectations, have increased the need for robust traceability within seafood supply chains. In response, many companies within the seafood industry are interested in understanding and implementing traceability technology systems that can meet current and future requirements.

Unfortunately, there is no single solution that can satisfy this need. Just as seafood supply chains are extremely diverse, so too is the universe of traceability technology. Currently, no one technology provider or system can meet all traceability functions that are needed to verify sustainability commitments or identify risks associated with IUU fishing, mislabeling, and human rights abuses in global seafood supply chains. However, there are combinations of technologies that, when applied within and

across trading partners, can provide end-to-end solutions for seafood companies and their supply chains.

To determine the “appropriate” set of technology solutions, a company must determine what is needed within the walls of their business (internal traceability), as well as

understand needs of trading partners up and down their supply chains (external traceability). The following guide provides information and specific actions to support companies as they embark on a path towards implementing robust traceability within their supply chains.



STEP 1. UNDERSTANDING TRACEABILITY: DEFINITIONS AND FULL-CHAIN FUNCTIONS

“Traceability” as defined by [Borit & Olsen \(2013\)](#) is “... the systematic ability to access any of all information relating to a food under consideration, throughout its entire life cycle, by means of recorded identifications.” “Full-chain traceability” in seafood describes the complete supply chain from the ocean, farm, or feed and stock inputs to farm (point of capture) all the way to the consumer (point of final sale).

For aquaculture products, we recommend that companies collect data to ensure traceability to the farm(s), as well as to the feed and stock inputs to the farm(s).

In an industry where supply chain information is often closely guarded, traceability, especially the implementation of verifiable full-chain traceability, is the prerequisite to ensure that key data elements (KDEs) are accessible or flowing from point of capture to point of final sale. However, not all traceability systems are alike, nor do they have to be. Rather, the goal is to implement a supply-chain specific system

designed to enable its users to meet their data needs and sustainability commitments. Several guidelines currently exist to help identify what is needed to ensure an effective traceability system for both wild as well as aquaculture supply chains.

WWF has detailed 6 principles that benchmark the core attributes of a traceability system for wild-capture fisheries in their publication [Traceability Principles for Wild-Caught Fish Products](#).

1. Wild-caught fish product traceability systems should provide rapid access to reliable information that is sufficient to assess the compliance of the fish product under consideration with all applicable legal requirements.
2. All wild-caught fish product traceability systems should be able to provide ‘full-chain’ traceability from the point of catch to the point of final sale, and should be able to establish a verifiable and complete

chain of custody/ownership of the product as it moves through the supply chain.

3. All wild-caught fish product traceability systems should record tracking of product transformations and information on the location of the product sufficiently to ensure that the legal origin of products can be readily established at the final point of sale, and that claims related to sustainability and fishing methods are readily verifiable.
4. Wild-caught fish product traceability systems should employ electronic recording of data, labeling, and track standard data formats from point of capture to point of final sale.
5. All wild-caught fish product traceability systems and all claims based on them must be subject to credible and transparent external verification mechanisms and regular independent audits, including effective governmental oversight and enforcement, as well as credible third-party verification when applicable.
6. All wild-caught fish product traceability systems should be as transparent as possible and should provide consumers and other stakeholders with information needed to inform responsible choices.

Because there is no equivalent best practice report for aquaculture products at this time, we suggest that companies refer to the [Common Vision for Sustainable Seafood](#) KDEs which include aquaculture (we recommend companies refer to both the basic KDE list as well as the KDEs listed in the Common Vision as “additional important information”).

Full-chain traceability requires that each business in a supply chain have robust *internal and external* traceability capabilities. [Future of Fish’s five core functions of traceability](#) provide an overview of these components, and can be applied to both wild-capture and aquaculture fisheries:

1. VESSEL-DOCK DATA CAPTURE

Verifiable, accurate, and traceable data starts

with the capture of catch information at the point of harvest or with the first receiver.

2. PRODUCT-DATA PAIRING

Once data has been captured at the source, the physical attachment of the information about the product to the product itself is critical for preserving the integrity of that data. A barcode, [RFID chip](#), [QR code](#), or alphanumeric (human-readable) code can all achieve this function. As product moves through the supply chain, new data is accumulated and added to these codes at each step, eliminating the problem of data attrition that occurs when only internal traceability is in place.

3. INTERNAL TRACEABILITY

Also known as one-up, one-down product tracking, internal traceability assists with basic supply chain management and is required by multiple regulatory agencies for food safety compliance. Many IT companies have their roots in this form of traceability, such as Enterprise Resource Planning (ERP) systems that can support inventory control and product recalls. Internal traceability alone is not sufficient for rooting out IUU from supply chains.

4. SUPPLY CHAIN TRANSPARENCY

Information about the companies supplying products (where they are located, what they do, how they do it, and whether their licenses and practices fall within legal limits) all fall under supply chain transparency data. This data exists at the company- or facility-level, not at the product-level, and its key value is proof of compliance such as with import requirements or sustainability certifications and risk management. The notion of commercial transparency (sharing only essential data) is important to understanding that a company can share key product information with their trading partners and other stakeholders while retaining the proprietary data that is key to their business.

5. VERIFICATION

The capacity to cross check product- and/or company-level information at any point in the supply chain with data supplied by other players or vetted by third parties is critical for proving the legitimacy of the data and

for preventing what will inevitably develop as traceability fraud. Verification can include but is not limited to: mass-balance, data entry checks, prohibition of belated data deletions and modifications, verification of data accuracy via fish tickets or landing documents, verification of legal fishing through vessel AIS operation, certificate status for sustainability or health code compliance.

There are multiple ways to implement traceability while meeting these six principles and five core functions. Full-chain traceability requires engaging your complete supply chain(s) and most likely, multiple technology companies, each of which may provide one or more of these core functions. Implementing systems in stages over time is often a necessity.



STEP 2. SELF-ANALYSIS: ESTABLISHING A BASELINE

For businesses looking to implement traceability systems, we suggest starting with a review of the company's current internal and external traceability capacity and practices. There are multiple approaches to such a review, including the application of proprietary and publicly available risk assessment and benchmarking tools, such as the [Advisory Note for the UK Supply Chain](#) developed by the British Retail Consortium, the Environmental Justice Foundation, and WWF. In addition, the following questions can help determine whether a company's current internal traceability system can be scaled to enable full-chain traceability down the road.

ORGANIZATIONAL TRACEABILITY CAPACITY QUESTIONNAIRE

Assessing Internal Traceability Capacity

1. Does your organization utilize an electronic Enterprise Resource Planning (ERP) or Warehouse Management System (WMS)?
2. Are you aware of the Key Data Elements (KDEs) that your business and/or supply chain requires in order to meet its traceability needs (lot number, date of processing, food recall data, etc...)?
3. Does your current system collect the KDEs identified in question 2, above?

4. Does your system provide complete internal traceability (i.e. at any stage of ownership or production, can you trace a given product back to when and from whom you purchased it)?
5. Does your system provide traceability for all of the seafood products your business carries and across all aspects of your business (or, is traceability lost at any point during your ownership/handling of a product)?
6. Do you use a mass balance approach or volume in/volume out method to keep track of your incoming and outgoing products? If so, that is inadequate for the purpose of comprehensive traceability.
7. Does the system allow for product-data pairing?
8. Does your system allow for interoperability between internal systems such as procurement and finance/accounting systems?

Once the company has established the internal traceability mechanisms that best meet the needs and goals of the business, the next step is to begin working towards the implementation of external full-chain traceability systems. Here again, the use of formal risk assessment and system benchmarking tools should be

considered. As a starting place, the business and its supply chain partners should begin a series of inquiries including: what is their intent for the traceability system they seek to implement? What are they seeking to gain from it (i.e. the opening of new markets, or adapting to new regulations, or meeting sustainability or transparency goals)? It is important to establish the intent and needs, and to ensure that each supply chain business is aligned on working towards those goals.

Another key step is to map the supply chain (i.e. documenting each step that the seafood product takes from point of capture, through the supply chain businesses and finally to the customer). This is a necessary step that will help businesses determine what type of traceability solutions are required to meet their traceability goals.

When mapping supply chains, businesses should carefully consider the following questions.

Assessing External Traceability Capacity

9. What government systems can I / am I obliged to integrate with?
10. What buyers and suppliers do I regularly trade with?
11. What are the traceability goals of your supply chain partners?
12. Does your system allow for supply chain transparency (i.e. key data can flow between supply chain nodes)?
13. Does your system meet your business's current external traceability needs (i.e. client information demands, regulatory requirements, etc.)?

14. Does your system allow for interoperability with other systems in your supply chain (i.e.: Do you have the ability to electronically transfer data between supply chain businesses? Can you receive and send data)?
15. Does your system allow for data to be received, created within your facility, and sent to the next supply chain business to be verified?
16. What KDEs are your supply chain members collecting?
17. Do your supply chain partners have internal traceability systems? If yes, what technology are they using?
18. What capacity do your supply chain partners have to pass KDEs onto you that matter to your business? Are your systems interoperable (have an API that allows them to share data)?
19. Does the system link incoming ingredients from your suppliers and outgoing shipments to your customers with your internal processes?

Moving forward, companies may wish to ensure they are utilizing technology that can meet the five core functions of traceability and positively answer the questions above—this will greatly increase the likelihood of effectively meeting regulatory needs and sustainability commitments now and into the future.

The steps and resources outlined above are a preliminary guide. Each of the groups involved in our collaboration have developed additional tools and expertise to further assist companies in their efforts to improve seafood industry traceability practices.



STEP 3. EXPERTISE FOR ACTIVE ENGAGEMENT

The resources created by [the four groups involved in our collaborative work](#) include educational resources about traceability, tools to help industry assess company-level or supply chain-specific traceability needs and requirements, and educational activities to help guide individual companies or groups of trading partners through the educational and implementation process. A few specific tools and resources are already available or soon to come online:

THE TRACEABILITY TOOLKIT

[An industry-specific toolkit](#) that will help seafood companies to more effectively and efficiently navigate the complexity of adopting traceability. Modelled around the NGO Traceability Toolkit, this project aims to provide the necessary information and tools for industry to understand the rapidly shifting landscape of seafood traceability. This toolkit will help companies find seafood traceability solutions that they can easily adopt with the goal of speeding up the adoption of traceability by giving companies a starter kit that outlines potential returns on investment and a decision-making framework to help inform their implementation process.

THE GLOBAL DIALOGUE ON SEAFOOD TRACEABILITY

[A new, international business-to-business platform](#) established to advance a unified framework for seafood traceability practices. The Dialogue brings together a broad spectrum of seafood industry stakeholders from across different parts of the supply chain, as well as relevant civil society experts from diverse regions. This initiative is actively working to establish global voluntary standards and guidelines to support reliable, affordable, and

interoperable seafood traceability systems. [Here's how to get involved.](#)

KEY DATA ELEMENTS: A COMPILATION OF RESOURCES

[This resource](#) is meant to help industry and other stakeholders map the various traceability efforts from across sectors that include KDE lists and recommendations, and is intended as a resource to help companies and organizations align their KDE practices to existing efforts. This document will be an input into other projects this collaboration is working on, such as the Global Dialogue. FishWise will keep this report updated as KDE projects and conversations develop, and continue to track and connect KDE conversations to ensure players are well connected and not creating duplicative efforts. In addition to the KDE report, FishWise also compiled a complementary report that compiles resources regarding social responsibility in seafood supply chains. [Download the document here.](#)

THE FOOD TRACEABILITY PLAN BUILDER COURSE

A course that assists companies and supply chains in assessing their own vulnerability and conducting risk assessments for traceability, as well as building a customized step-by-step plan for improving their traceability. It is an easy-to-use, customizable, flexible food traceability course which can be used by companies and their supply chains to either evaluate the effectiveness of their existing traceability plans and/or create new ones. Through a series of online questionnaires and models the Plan Builder course will provide elements of risk analysis, vulnerability assessments, and consequence management to provide a range of options from minimal level of traceability to best practices.

This document was drafted by [Future of Fish](#), in collaboration with [FishWise](#), [Global Food Traceability Center](#) and [World Wildlife Fund](#), under the [Gordon and Betty Moore Foundation's Oceans and Seafood Markets Initiative](#)

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