

Market Access: Certification and Traceability Requirements

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Consumer preferences

- Starting point of food chains, diverse across the globe
- Demand for more specific product attributes
 Sensory attribute (e.g. taste, smell and appearance)
 Price

Quality/Safety/Integrity

Health/Nutrition

Preparation convenience/Purchase convenience

Social and environmental concerns

Others: Familiarity, assortment, freshness, mood, consumption company and consumption place



Primary processing Secondary processing Wholesale Retail Consumer Postconsumption

Harvesting

Drivers of traceability

| Purpose of Traceability | Objective | Attributes to Trace | Example Traceability Systems |
|---|---|--|--|
| Animal Health and Food Safety | To support food safety and consumer health | Specified in food & fish safety and health regulations | Codex Alimentarius ; World Organisation for Animal Health |
| Security | Prevention of IUU fishing ; product authentication ; brand & product protection | Catch documentation ; accuracy of package labelling | EU IUU Regulation; US Lacey Act; FAO CDS Guidelines |
| Environmental (Regulatory) | Mitigation of environmental impacts | Specified in environmental and protected species regulations | US Tuna Tracking & Verification Program; CITES |
| Quality (Regulatory) | Consumer assurance | Specific quality attributes included in regulations | Codex Alimentarius; EC labelling laws |
| Marketing and Quality (Non-regulatory) | Creation and maintenance of credence attributes environmental, food safety and ethical sourcing | Specific attributes included in public standards | FAO Guidelines; Globar Sustainable Seafood Initiative; Ecolabelling and food safety schemes |



Transparency in fisheries and aquaculture

Multiple Approaches

Fisheries management Regulations and national policy instruments

Statistics on production and trade

Government support measures

Advantages

Corroborates to sustainable practices

Supports sustainable production and trade

Collaborates with conquering and maintaining markets

Facilitates implementation of transparency and/or traceability-related instruments (CDS, certification and others)

Tools

FAO instruments, in particular CCRF

Business-to-business standards and guidelines Traceability/certification



Traceability gaps¹

1. **FAO.** 2016.Seafood traceability systems: gap analysis of inconsistencies in standards and norms

Awareness

Stakeholders must be concerned about, and have a wellinformed interest in the advantages of traceability systems.

Commitment

The traceability standards and norms must be used by policy-makers and industry, and not circumvented.

Economic-driven Access to capital

Technology

Tools and operational infrastructures supporting effective traceability are currently available

Standards

Standards for both implementation and verification of traceability are available and accepted, and terms and concepts are harmonized.

Implementation

The principles of traceability and traceability systems are of value if they are implemented effectively through standards and norms.



Part of normative work since 2008

Traceability to verifying the integrity of fish supply chain to ensure

Quality, Safety and Legality

On the agenda of FAO's Sub-Committee on Fish Trade





Capacity building & technical papers

Examples:





Beyond regulatory compliance: Seafood traceability benefits & success cases



Borit, M. and Olsen, P. 2020. Beyond regulatory compliance – Seafood traceability benefits and success cases. FAO Fisheries and Aquaculture Circular No. 1197. Rome, FAO





Blockchain applications in seafood value chains

BLOCKCHAIN APPLICATION IN SEAFOOD VALUE CHAIN





Blaha, F. & Katafono, K. 2020. Blockchain application in seafood value chains. FAO Fisheries and Aquaculture Circular No. 1207. Rome, FAO.



Blockchain application in seafood value chains

Challenges across 7 reviewed blockchain projects

Tagging and labelling of fish

Physical fish tags/labels could be lost or damaged while transporting the fish or could potentially be tampered with

| Project | Commodity | Blockchain | Comments |
|-------------------------|--------------------|---------------------------------|--|
| Provenance Indonesia | Tuna | Ethereum Tyme: N/A | Fish are individually identified back to the fisher |
| Indonesia | Fishing method: | 1310.1011 | Fish are tracked through transformation |
| | handline, pole and | | in processing facility |
| | ime | | Uses near-field communication (NFC) |
| | | | on product packaging to communicate |
| WWF-New Zealand | Tuna | Ethereum | Fish are individually identified back to |
| ConsenSys, Sea Quest, | | Type: private | the fisher |
| TraSeable Solutions | Fishing method: | Platform: Treum | Trialled radio-frequency identification |
| քդր | longline | (previously Viant) | (RFID) and Internet of things (IoT) sensors |
| | | | Fish are tracked through transformation |
| omm | una | lity | providing of the constraint of the second se |
| Pacifical, Atato | Tuna | Ethereum | Fish are not individually identified |
| Pacific and import | Eiching method: | Type: public Platform: Atata | Uses existing Parties to the Nauru |
| mar Kets | purse seine | notary | Agreement Office (PNAO) fisheries |
| | | application | platform for data capture of Marine |
| | | programming interfaces | Stewardship Council (MSC) chain of custody (CoC) |
| | | | Atato notary service receives digital traceability data at key points and records onto blockchain |
| | | | Provenance story linked to lot/batch number printed on canned tuna |
| OpenSC, WWF- | Patagonian | N/A | Fish are individually identified back to |
| Australia, BCG Digital | toothfish | | the fisher |
| Australia | Fishing method: | | Uses RFID and IoT sensors |
| | longline | | Uses QR codes on product packaging to |
| Bumble Ree Foods SAP | Velloufin tuna | Humer Ledger | Fish are individually identified back to |
| Dumore Dee Foods, SAF | renowini itala | riyperLeuger | a ron are more roosily identified back to |

Reliance on human input

Most of the projects rely on human input of fish data, which themselves could be open to tampering

Verifiability of private and consortium blockchain platforms

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By their very nature, these types of blockchains are not open to the public and transactions on them cannot be independently verified



Complex seafood value chain scenarios untested

Solutions were not tested in real-world complex seafood value chain scenarios where the value chain actors were unknown



Main recommendations

Critical forethought needs to be given to traceability along the value chain:





Main recommendations

Critical forethought needs to be given to blockchain as an appropriate tool for traceability:





Advancing end-to-end traceability:

Critical tracking events and key data elements along capture fisheries and aquaculture value chains²



GUIDANCE DOCUMENT: ADVANCING END-TO-END TRACEABILITY

Critical tracking events and key data elements along capture fisheries and aquaculture value chains



- Support a standardised understanding of Critical Tracking Events (CTEs) as well as sources of Key Data Elements (KDEs) for capture fisheries and aquaculture supply chains.
- Support advances in information technologies that have given rise to a broad range of digital food traceability initiatives and systems, by establishing a standardised vocabulary, as well as standardised data formatting.
- Assist operators and authorities in identifying the data that needs to be traced and define the parameters of traceability.



Objective

This guidance document, recently issued by FAO, is intended to support countries in implementing traceability in fisheries and aquaculture value chains.

It aims at developing insights and addressing gaps in developing and implementing traceability systems for both the private sector and government.





Definitions

- CTEs critical tracking event point at which product is moved between premises or is transformed, or which is determined to be a point where data capture is necessary to maintain traceability; and
- KDEs key data element input required to successfully trace a product and/or its ingredients through all relevant CTEs



Development process:





Regulatory realm

Regulatory requirements for traceability are not uniformly established among the international community

Different scenarions may apply



Regulatory realm – Capture fisheries



Flag state: this is the state whose flag is flown by fishing vessels, whose activities it is obliged to authorize and monitor under international law.



Coastal state: this is the state in whose waters a fishing operation may be taking place



Port state: this is the state in whose port(s) fish are landed



Processing state: this is the state in which raw products are converted into semi-processed products or end products



End-market state: this is the territory in which final consumer products are placed on the market



Regulatory realm – Aquaculture



Feed producers and distributors are responsible for ensuring that only traceable and safe ingredients are used in the feed manufacturing



Hatcheries are responsible for seed production based on the required minimum traceability standards



Farms (or growing farms) are responsible for their registration with the required authorities and the basic information required



Collectors/distributors/traders or intermediaries are responsible for their registration with the required authorities and providing the basic information to keep track of the movement of the aquaculture products,



Processing plants are responsible for their official state-type authorization based on regulatory requirements



CTEs/KDEs– Basic principles

- There is a need for traceability systems that cover the **entire chain of events** at each type of state. It needs to cover events between entry and exit "gates" (into and out of the type of state jurisdictions),
- **Registration and licensing** of the fishing operation, storage and processing premises to identify value chain operators.
- Having a unique identifier and a structure of control for each operator in the supply chain is fundamental for any form of traceability
- Registration of internal movements of declared species and volumes makes them traceable; this requires six KDEs that
 must be recorded at every step along a supply chain, namely:
 - product source seller and previous owner of the product;
 - product destination buyer and new owner of the product;
 - species;
 - volume; and
 - product forms.
- All co-mingling or mixing, aggregation, and disaggregation or splitting of batches or units must be tracked and all KDEs associated with new units and previous units must be tracked



| | CTEs | Main KDEs | Data source |
|-------------------------------------|--|---|--|
| Operators | Unique operator identity | Unique operator identifier Identifier associated with the operator for the duration of its existence that cannot be reused by any other operator | Legal fisheries and business operator are to be registered for existing regulatory frameworks such as fisheries, health, tax, labour, etc. |
| Raw materials and products | Unique seafood material identifiers | Unique identifier for item/stock keeping unit (SKU)/universal product code (UPC)/global trade item number (GTIN) identifier of seafood material to distinguish it within a particular facility, company, or globally. | Weight ticket, production records, packing lists, etc. Codes on inventory, etc. |
| | | Linking KDE identifier associated with physical product marking a particular instance of seafood material such as a batch/ lot number, serial number, or container number | Weight ticket, production records, packing lists, etc. Codes on inventory, etc. |
| | | Product source – seller and previous owner of the product; refer to unique operator identity | Invoices, weight ticket, production records, packing lists, codes on inventory, etc |
| | | Product destination – buyer and new owner of the product; refer to unique operator identity | Invoices, weight ticket, production records, packing lists, etc. Codes on inventory, etc. |
| | | Species name GDST | Aquatic Sciences and Fisheries Information System (ASFIS) list of species, scientific name/FAO 3-alpha code (e.g. YFT for yellowfin tuna) Vessel's logbook/harvest records |



| | CTEs | Main KDEs | Data source |
|-------------------------------------|---|---|--|
| Raw materials and products | Unique seafood material identifiers | Product form- commercial short-hand reference of the degree of transformation of seafood from its original living form. | Vessel's logbook/harvest records, weight ticket, production records, packing lists, etc. |
| | | Expiry/production date | Calendar date associated with a particular instance of a seafood product indicating the key date in its life cycle |
| | | Production method | Categorization on the spectrum of wild capture to captive culture; of the general seafood harvest method |
| | | Product origin | Country where seafood underwent the last substantial transformation |



Understanding and implementing catch documentation schemes A guide for national authorities



https://www.fao.org/3/cb8243en/cb8243en.pdf



Thank you !

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