Food and Agriculture Organization of the United Nations

FAO's work in support of traceability in fisheries value chains

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Regional Workshop to Exchange Information on Catch Documentation Scheme and Traceability of Fish and Fishery Products *SEAFDEC/TD, Samut Prakan 29-30 November 2022*

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 (e.g. eating with families or important people) and consumption place (e.g. restaurants, home or seafood markets)

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)

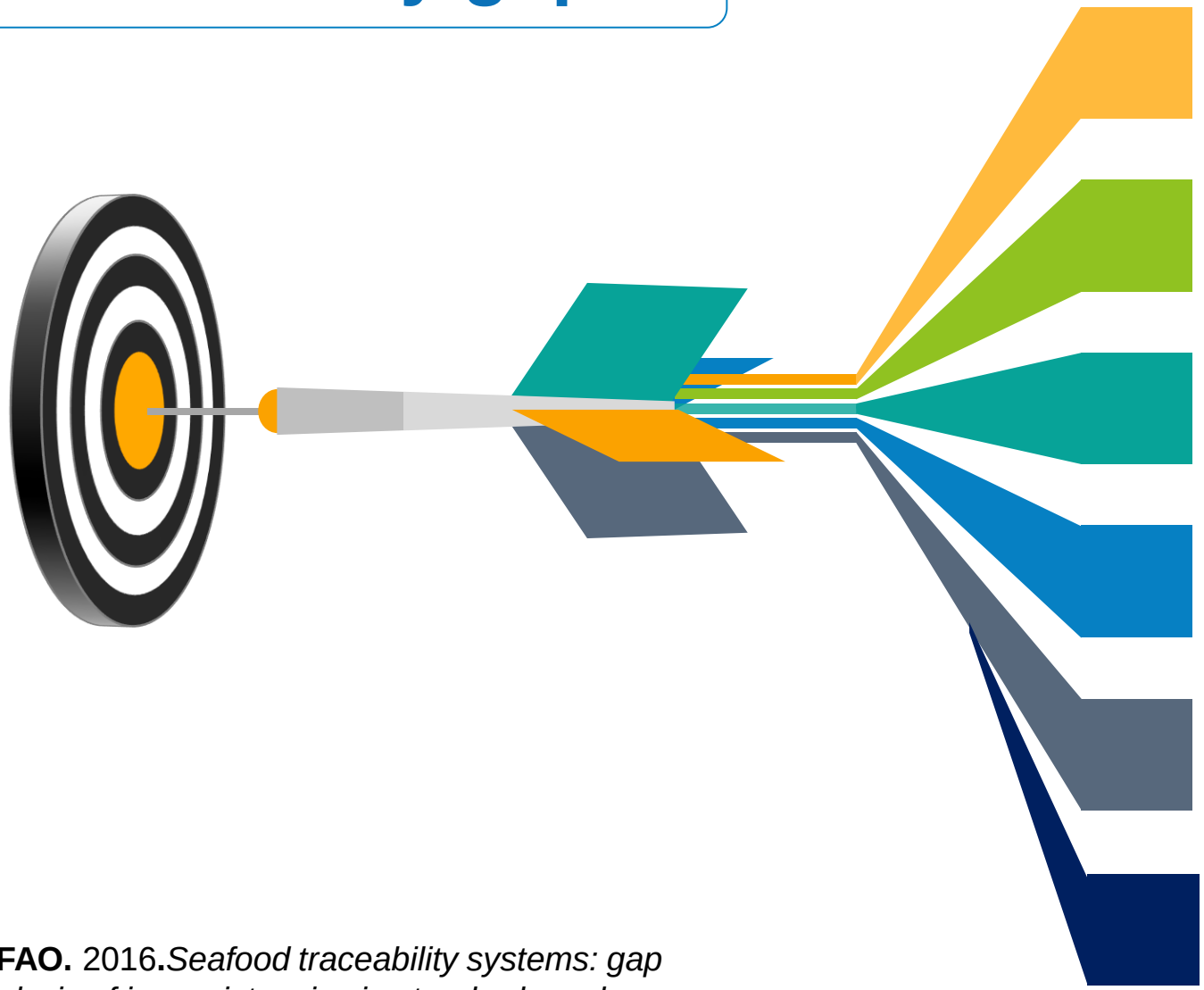
Tools

FAO instruments, in particular CCRF

Business-to-business standards and guidelines

Traceability/certification

Traceability gaps[1]



Awareness

Stakeholders must be concerned about, and have a well-informed 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.

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

Capacity building workshop
Asia

Technical paper
Seafood traceability for fisheries compliance

Circular
Good Practice Guidelines on National Seafood Traceability Systems

Circular
Blockchain applications in seafood value chains

Circular
Beyond regulatory compliance: seafood traceability benefits and success cases

Capacity building workshop
Caribbean

Guidance document on KDEs and CTEs

"National and regional good practices in seafood traceability to combat IUU fishing"

Capacity building workshop
Africa

Regional consultations (2021-2022)

Capacity building & technical papers

Incentives for implementation of a traceability system

Intrinsic incentives

- **Commitment to food safety**
- **Strategy**
- **Accuracy & ease of recall**
- **Awareness of crisis**
- Lean thinking
- Innovation management of product quality
- Process costs
- Intention to protect market share

Extrinsic incentives

- Final consumer's food safety concern
- **Branding**
- Government subsidies
- Technical support by downstream supply-chain entity
- **Transparency demand by downstream partner**
- Upstream supply-chain partner transparency
- **Financial reward**
- **Legislation**

Social incentives

- Satisfaction with being transparent to society
- **Society's appreciation for animal welfare**
- **Social pressure to practice fair labour standards**
- Pressure from non-gov. organization
- **Naming and shaming by media**

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

Capacity building & technical papers

Objective 1

Provide a review of blockchain technology and general applications in food production systems

Objective 2

Review digital tools and technology adoptions in seafood value chains

Objective 3

Review and analyse applications and opportunities of blockchain technology in fisheries and aquaculture value chains

Objective 4

Present public policy and trade implications of the application of blockchain in fisheries and aquaculture value chains

Objective 5

Provide policy recommendations for governments and international organizations

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

Reliance on human input

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

Communality analysis

Table 7. Commonality analysis of blockchain projects

Project	Commodity	Blockchain	Comments
Provenance Indonesia	Tuna Fishing method: handline, pole and line	Ethereum Type: N/A	Fish are individually identified back to the fisher Fish are tracked through transformation in processing facility Uses near-field communication (NFC) on product packaging to communicate provenance story
WWF-New Zealand, ConsenSys, Sea Quest, TraSeable Solutions Fiji	Tuna Fishing method: longline	Ethereum Type: private Platform: Treum (previously Viant)	Fish are individually identified back to the fisher Trialled radio-frequency identification (RFID) and Internet of things (IoT) sensors Fish are tracked through transformation [illegible]
Pacifical, Atato Pacific and import markets	Tuna Fishing method: purse seine	Ethereum Type: public Platform: Atato notary application programming interfaces	Fish are not individually identified Uses existing Parties to the Nauru Agreement Office (PNAO) fisheries information management system platform for data capture of Marine 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-Australia, BCG Digital Ventures Australia	Patagonian toothfish Fishing method: longline	N/A	Fish are individually identified back to the fisher Uses RFID and IoT sensors Uses QR codes on product packaging to communicate provenance story
Bumble Bee Foods, SAP	Yellowfin tuna	HyperLedger	Fish are individually identified back to

Complex seafood value chain scenarios untested

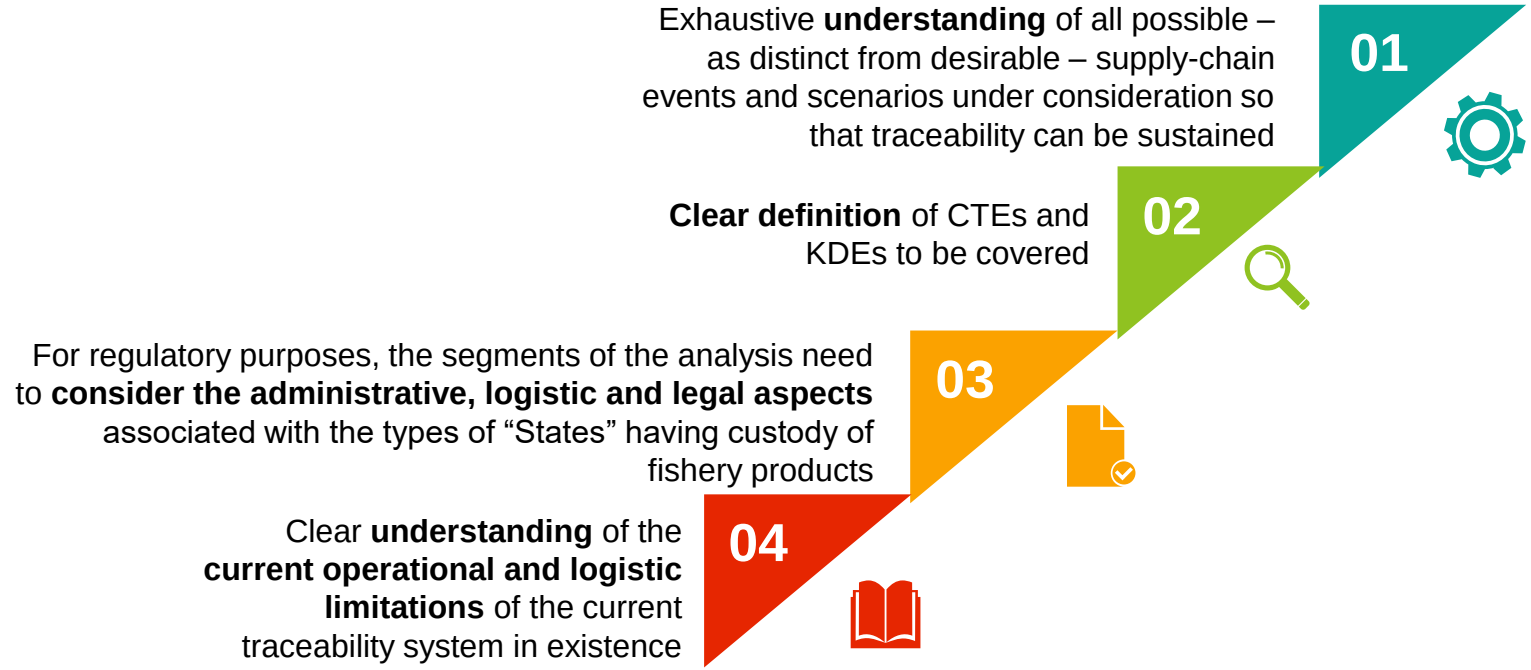
Solutions were not tested in real-world complex seafood value chain scenarios where the value chain actors were unknown

Verifiability of private and consortium blockchain platforms

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

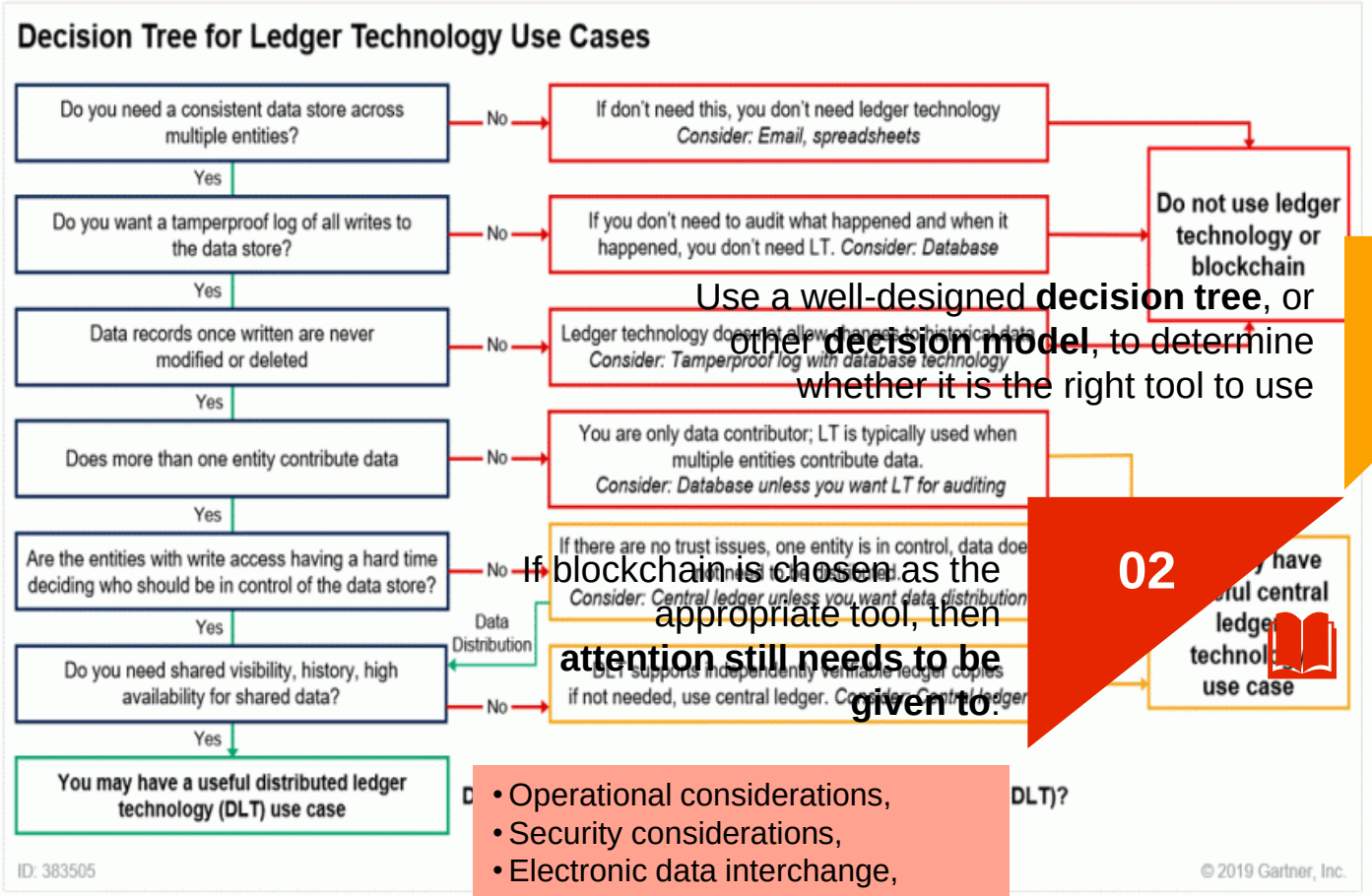
Main recommendations

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:



1

Use a well-designed **decision tree**, or other **decision model**, to determine whether it is the right tool to use

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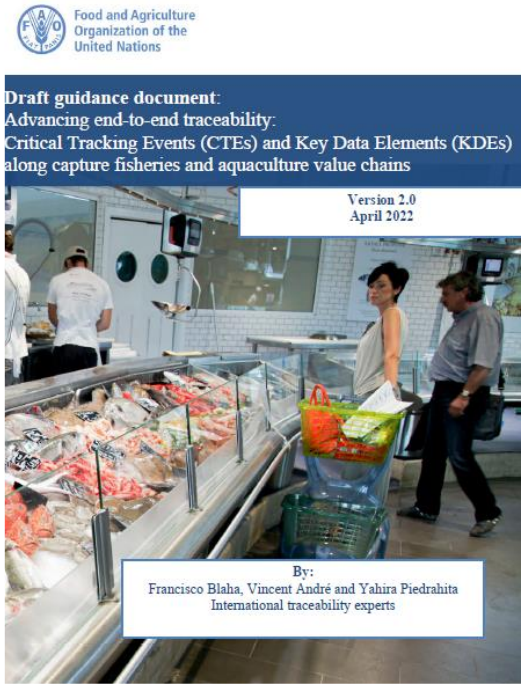
If blockchain is chosen as the appropriate tool, then **attention still needs to be given to**:

- Operational considerations,
- Security considerations,
- Electronic data interchange,
- Regulatory uncertainty,
- Increased responsibility of the user,

Capacity building & technical papers

Advancing end-to-end traceability: Critical tracking events and key data elements along capture fisheries and aquaculture value chains[2]



- Support a standardised understanding of the 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 the operators and authorities in identifying the data that needs to be traced and define the parameters of traceability.

2. Upcoming. Blaha, F., Vincent, A. and Piedrahita, Y. 2022. Guidance document: "Advancing end-to-end traceability: Critical tracking events and key data elements along capture fisheries and aquaculture value chains".Sustainable value chain development series No. 4. Rome, FAO.

Thank you !

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