

Transparency, traceability and certification of fisheries and aquaculture products

Challenges and solutions for sustainability

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Objectives

01

Understanding the basic principles the transparency, traceability and certification as market-based tools to advance sustainability

02

Discussion of the main advantages and disadvantages, challenges and potential solution in the application of these tools

Outline

Introduction

Market-based tools

- Traceability
- Catch documentation schemes (CDSs)
- Eco-certification

Conclusions

Main sustainability challenges in fisheries and aquaculture

Illegal, Unreported, and Unregulated (IUU) Fishing	Overfishing	Bycatch and discards
Habitat destruction	Water quality degradation	Escapees
Disease and parasites	Labour and human rights violations	Market inequalities

Tools to address sustainability challenges

Regulatory and Legal Tools

- International Treaties and Agreements
 - UNCLOS
 - FAO Code of Conduct for Responsible Fisheries
 - Port State Measures Agreement (PSMA)
- National and Regional Legislation
 - National Fisheries Acts and Policies
 - Marine Protected Areas (MPA) Designation Laws
 - Trade restrictive enforcement measures (TREMs)
- Regional Fisheries Management Organizations (RFMOs)
 - ICCAT, IATTC, IOTC

Social and Institutional Tools

- Community-Based Fisheries Management (CBFM)
 - Local Co-Management Arrangements (informal governance by traditional or local authorities)
 - Fishers' Cooperatives (voluntary self-governance)
- Community Engagement and Participatory Approaches
 - Stakeholder consultations

Market-Based Tools

- Eco-Certification Programs
 - MSC, ASC, Fair Trade, BAP Certification
- Traceability Systems
 - Paper-based, electronic
 - Blockchain
- Sustainable Supply Chain Initiatives
 - Retailer Sustainability Pledges
 - Corporate Social Responsibility (CSR) Programs

Monitoring, Control, and Surveillance (MCS) Tools

- Vessel Monitoring Systems (VMS)
- Observer Programs (Onboard and Electronic)
- Catch Documentation Schemes (CDS)
- Farm inspections, record keeping and reporting
- Water quality monitoring

Market-based tools

Market-based tools leverage the <u>economic interests</u> of value chain actors to engage in sustainable practices Negative incentives Prevent access to markets for unsustainable products E.g. CDS, PSMA, Traceability

Positive incentives

Can result in price premiums for sustainable products E.g. Eco-labels, Traceability

Transparency



It involves gathering relevant information about production practices, legal compliance, environmental impacts, and socio-economic conditions and making it available to all stakeholders



Helps to enhance accountability, foster trust, and ensure that all activities along the aquatic food value chain are conducted in a responsible and sustainable manner



Traceability and certification can be used to increase transparency

Traceability

Codex Alimentarius:

"the ability to follow the movement of a food through specified stage(s) of production, processing and distribution." EC:

"...ability to track any food, feed, food producing animal or substance that will be used for consumption through all stages of production, processing and distribution".

Regulation (EC) 178/2002

ISO:

"...ability to trace and follow food, feed, and ingredients through all stages of production, processing and distribution.

ISO 8402

Uses of traceability

Compliance with regulations

- Ensuring food safety and quality control
- Preventing fraud
- Combatting IUU fishing

Competitive advantage for businesses

- Building consumer trust and confidence
- Stimulating demand for local product

Legal basis of traceability

EU market:

- Council Regulation (EC) No 1224/2009: mandates that all fishery products must be traceable from the point of harvest or capture to the consumer
- IUU Regulation (EC) No 1005/2008: requires that imported fish products be traceable to verify their legality and compliance with conservation and management measures

US Market:

 Seafood Import Monitoring Program (SIMP) - requires importers to provide traceability documentation for certain species

Japan:

• **Revised Fisheries Act (2020)**: traceability requirements for seafood products, particularly those entering the Japanese market

FAO initiatives to combat IUU and enhance traceability and transparency

UN Agreement on Port State Measures (PSMA): This international treaty aims to prevent illegally caught fish from entering markets by requiring port states to implement strict documentation and traceability protocols. Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels: a single access point for information on vessels used for fishing and related activities to IUU fishing by enhancing transparency and traceability

CTEs and KDEs

- CTEs (Critical Tracking Events) "points within a business and along ٠ the value chain where product is moved between premises or is transformed, or is determined to be a point where data capture is necessary to maintain traceability";
- KDEs (Key Data Elements) "the data elements required to ٠ successfully trace a product and/or its ingredients through all relevant CTEs". **Example of CTEs and corresponding KDEs**



An abbreviated list of Key Data Elements (KDEs):

N.	PRODUCTION
-	DATA:
	-Product ID
	-Timestamp
	-Location

LANDING DATA: -Product ID -Timestamp -Location

PROCESSING DATA: Inputs/Outputs -Batch/Lot# -Quantity -Shipping#

N. DISTRIBUTION DATA: -Date, Time -Batch/Lot# -Quantity -Shipping#

RETAIL DATA: -Date, Time -Batch/Lot# -Quantity -Received#

V.



GUIDANCE DOCUMENT: ADVANCING END-TO-END TRACEABILITY

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



Internal and External Traceability



Traceability systems

- Required information on the label vary according to the relevant regulatory framework
- Commonly required:
 - Identification number of each lot
 - Fish operator identification/Aquaculture production unit
 - Commercial designation and scientific name
 - Production method description
 - Net weight
 - Date marking and storage information to consumers

Traceability systems

Electronic





Paper based vs electronic traceability

- Both versions are in use
- Generally, electronic version offers more advantages and is becomes more widespread
- However, it can be out of reach for some operators, thus paper-based is likely to continue being in use for the time being
- It is essential to consider the enhanced functionality against the costs and drawbacks
- Novel technologies include blockchain



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BLOCKCHAIN APPLICATION IN SEAFOOD VALUE CHAINS



FAO guidance on traceability



Challenges to implementation of traceability

Lack of capacity, particularly among small-scale producers in developing countries Costs of initial investment and ongoing expenses of traceability systems

The complexity of global value aquatic food value chains

Lack of standardized traceability requirements across different markets and certification schemes

Incompatible digital information management systems Reluctance of companies to disclose sensitive information due to concerns about competitiveness or the security of proprietary information

Interactive Activities



Main solutions ?

Capacity building programs and training needed

Develop practical solutions that promote transparency while balancing the needs of producers

Standards for traceability systems (e.g. GDST, FAO)

Digitalization of traceability

Catch Documentation Schemes (CDS)

- The concept of market-related measures to reduce or eliminate trade with IUU products introduced in IPOA-IUU
 - Paragraph 69: ..[measures] could include the adoption of multilateral catch documentation and certification requirements, as well as other appropriate multilaterally-agreed measures...
 - Paragraph 71: States should take steps to improve the transparency of their markets to allow the traceability of fish or fish products.



Food and Agriculture Organization of the United Nations

INTERNATIONAL PLAN OF ACTION TO PREVENT, DETER AND ELIMINATE ILLEGAL, UNREPORTED AND UNREGULATED FISHING



Catch documentation schemes (CDSs)

- Market-based measures developed specifically to combat IUU fishing
- Records and certifies information that identifies the origin of fish caught and ensures they were harvested in a manner consistent with relevant law (catch certificate)
- Tracks and traces fish from the point of capture through unloading and throughout the supply chain (traceability)
- The objective of the CDS is to combat IUU fishing by limiting access of IUU fish and fishery products to markets.



CDS designs

- Multilateral
 - Based on RFMO rules, embodying multilateral environmental agreements, with the standing of international law
 - Applied to the entire stock or species under RFMO management mandate and to all fishers, traders, and processors dealing with products from a specific fishery
- Unilateral
 - Rules established by the importing nation/trading block
 - Do not cover all the fish harvested in the fishery, only the fraction traded into the market
- VGCDS advises multilateral schemes are preferred (FAO 2017)



Food and Agriculture Organization of the United Nations

> Voluntary Guidelines for Catch Documentation Schemes



CDS designs

Market A imposing unilateral CDS



Existing CDSs & coverage

Туре	Introduced by	Year	Species	Coverage
Multilateral	CCAMLR	2000	Toothfish (2 species)	<0.1% of the total wild fishery catch
	ICCAT	2008	Atlantic Bluefin Tuna	by volume (all three CDSs) <1% of the total catches of tuna by
	CCSBT	2010	Southern Bluefin tuna	volume (two tuna CDSs) Hosch & Blaha (2017)
Unilateral	EU	2012	All capture species	All fisheries imports
	USA	2018	13 species groups	~ 50% of all seafood imports
	Japan	2022	4 species groups	?

CCAMLR: Convention for the Conservation of Antarctic Marine Living Resources ICCAT: International Commission for the Conservation of Atlantic Tunas CCSBT: Commission for the Conservation of Southern Bluefin Tuna

CDSs & Traceability

- In a CDS legally caught fish enters the supply chain at the point of landing accompanied by a catch certificate issued by the flag state
- Trade certificates are issued as it crosses national borders
- The serial linking of certificates is the central concept in a CDS traceability mechanism
- The hard links between subsequent certificates makes it possible to monitor mass balance integrity as fish products move through the supply chain
- CDS rely on each national authority to establish its own system for tracking what goes on within its jurisdiction

Basic CDS traceability framework concept



Hosch & Blaha (2017)

CTEs and state control

Supply chain function	Harvesting	Transhipping	Landing	Transport to processing	Processing	T Importation
Costal state	~	\checkmark				
Flag state	~	\checkmark	\checkmark			
Service Port state		\checkmark	\checkmark	~		
Processing state				~	~	
T End-market state						~



Eco-certification

- A market-based approach to govern certain negative externalities of business practices
- Consumers exert control through purchasing decisions
- Eco-certifications are:
 - voluntary
 - adhere to 'third-party' verification systems











Third-party certification



Standards

- A variety of private standards exist, covering different aspects of sustainability and having different extent of "rigorousness"
- 8 Global Sustainable Seafood Initiative (GSSI) benchmarked standards ->
- Benchmarking based on key FAO normative documents





GUIDELINES FOR THE ECOLABELLING OF FISH AND FISHERY PRODUCTS FROM MARINE CAPTURE FISHERIES

DIRECTIVES POUR L'ÉTIQUETAGE ÉCOLOGIQUE DU POISSON ET DES PRODUITS DES PÊCHES **DE CAPTURE MARINES**

DIRECTRICES PARA EL ECOETIOUETADO **DE PESCADO Y PRODUCTOS PESQUEROS** DE LA PESCA DE CAPTURA MARINA





TECHNICAL GUIDELINES ON OUACULTURE CERTIFICATION

DIRECTIVES TECHNIQUES RELATIVES À LA CERTIFICATION EN AOUACULTURE

DIRECTRICES TÉCNICAS PARA LA CERTIFICACIÓN EN LA ACUICULTURA



Chain of custody (CoC)

- The set of measures which is designed to guarantee that the product put on the market and bearing the ecolabel logo is really a product coming from the certified fishery concerned. These measures should thus cover both the tracking/traceability of the product all along the processing, distribution and marketing chain, as well as the proper tracking of the documentation (and control of the quantity concerned) (FAO, 2009)
- Similar concept to traceability

- However, focused on a given set of properties (e.g. given species, gear, fishery)
- A CoC identifier assigned to all products that satisfy the given set of properties (may include fish from different vessels caught in different days)
- Units can be mixed only if they have the same CoC identified
- E.g. MSC CoC certification provides assurance a product comes from an MSC certified sustainable fishery for a particular species, though not which specific fishery, as it does allow mixing of catch from different certified sources (Longo et al 2021)

	Traceability	Ecolabel type chain of custody		
		(CoC)		
Of what?	Anything	With respect to some property		
Unit with integrity	The trade unit	The units with the same CoC		
		identifier		
Mix/join units	Must document	Only with the same CoC identifier		
After mix / join	New unit and new identifier created	Considered same unit, CoC identifier		

Table 2. Main differences between traceability and chain of custody

Source: FAO (2016)

Certified production from fisheries and aquaculture



9,725,583 mt 4.6%
1,925,967 mt 0.9%
4,228 mt 0.0%
51,132,359 mt 24.0%
3,627,216 mt 1.7%
15,733,128 mt 7.4%
6,855,704 mt 3.2%
107,754 mt 0.1%
865,258 mt 0.4%
230,996 mt 0.1%
102,654,958 mt 48.1%
20,474,002 mt 9.6%

34.2% 8.2% Production 218,358,984 mt Certified or Rated 49% 6.1% 2.05% 5.3% 0.2% 7.6%

2023

MSC Certified	9,201,032 mt 4.2%
ASC Certified	2,082,477 mt 1.0%
BAP Certified	2,134,586 mt 1.0%
FTUSA Certified	7,331 mt 0.0%
SFW Best Choice	53,707,340 mt 24.6%
QMCS Green	15,251,674 mt 7.0%
SFW Good Alternative	3,375,570 mt 1.5%
QMCS Yellow	4,304,121 mt 2.0%
SFW Avoid	16,524,412 mt 7.6%
QMCS Red	432,391 mt 0.2%
Fishery Improvement Proj	11,433,853 mt 5.2%
Aquaculture Improvement	175,599 mt 0.1%
MSC In Assessment	1,130,810 mt 0.5%
ASC In Assessment	1,474 mt 0.0%
SFW In Progress	5,904,831 mt 2.7%
Not Yet Assessed	74,695,233 mt 34.2%
Data Deficient	17,996,250 mt 8.2%

Drivers of certification: price premiums

Market	Price premium	Species	Ecolabel	Reference
London	14.2%	Alaska pollock	MSC	Roheim et al (2011)
Glasgow, Scotland	10.1%	Haddock	MSC	Sogn-Grundvåg and Young (<u>201</u> 3)
Glasgow, Scotland	12.7%	Frozen whitefish	MSC	Sogn-Grundvåg et al. (<u>2014</u>)
Glasgow, Scotland	13.1% varying by retailer	Salmon	MSC	Asche et al. (<u>201</u> 5)
Germany	30% 4% 0%	High-end cod Alaska pollock Saithe	MSC	Asche & Bronnmann (2017)
Spain	15.2-24.6%	Octopus	MSC	Fernandez Sanchez et al (2020)
Germany	9% 6%	Trout Pangasius, Tilapia	ASC	Asche, Bronnmann & Cojocaru (2021)
Sweden	No general effect on prices or quantities	Nephrops (Norway lobster)	MSC	Andersson & Hammerlund (2023)

Drivers of certification: Retailers commitments to sustainability

 Sustainable seafood consumption is increasing due to consumer demand but also due to retailers commitments to sourcing only sustainably certified products





"We are committed to sourcing 100% of our ownbrand permanent chilled and frozen fish products, as well as fish used as an ingredient in our products, from independently certified sustainable fisheries by the end of 2019 (MSC or recognised Irish FIP's for wild caught fish and ASC or GLOBAL G.A.P. Aquaculture Standard for farmed fish)"



"Commodities: 100% of our own-brand tea, coffee, cocoa, palm oil, soy, wood fibers and seafood certified against an acceptable standard"

Drivers of certification: Producers' commitment to sustainability



100% of harvest volumes sustainably certified by a GSSI-recognised standard

Number of GSI farms ASC certified and under ASC assessment



- GSI (Global Salmon Initiative)
 - A pre-competitive collaboration of 13 salmon farming companies
 - Approximately 40% of the global farmed salmon sector
 - Commitment to 100% of production certified by ASC
 - Currently around 55% certified

GSI. 2023. ASC Progress. https://globalsalmoninitiative.org/en/our-work/sustainability-certification-asc-standard/asc-progress/ Mowi.2023. https://mowi.com/blog/sustainability/commitments/sustainability-certifications/

Challenges and opportunities to ecocertification

• Costs and accessibility

- Complexity and bureaucracy
- Many standards with overlapping coverage
- Premium not always received by producers
- Market demand limitations

• Group certification

- Capacity building and assistance
- Standardization and harmonization
- Certifications provide access to preferred markets
- Consumer education and awareness raising

Conclusions

Market-based tools such as traceability and certification are powerful means to address sustainability issues. They leverage the power of markets to influence the behaviour of actors upstream the value chain

However, not all aquatic food products enter international trade and/or are sold on markets that demand traceability, CDSs and eco-certifications (approximately 38% were internationally traded in 2022)

Therefore, it is essential that a range of tools is used to address sustainability issues, and measures are taken to improve the effectiveness of formal governance at all stages of the value chain Andersson, A. & Hammarlund, C. (2023). The effect of eco-certification on demand: The case of MSC-certified Norway lobster, *Ecological Economics*, 204, Part A. https://doi.org/10.1016/i.ecolecon.2022.107661.

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Thank you for your attention!

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