MAXIMISING UTILISATION OF FISH BYPRODUCTS : CHALLENGES AND OPPORTUNITIES

UNIVERSITY of STIRLING

Dr Wesley Malcorps

marinTrust — MARINE INGREDIENTS RESPONSIBLY SUPPLIED

Francisco Aldon, CEO of MarinTrust

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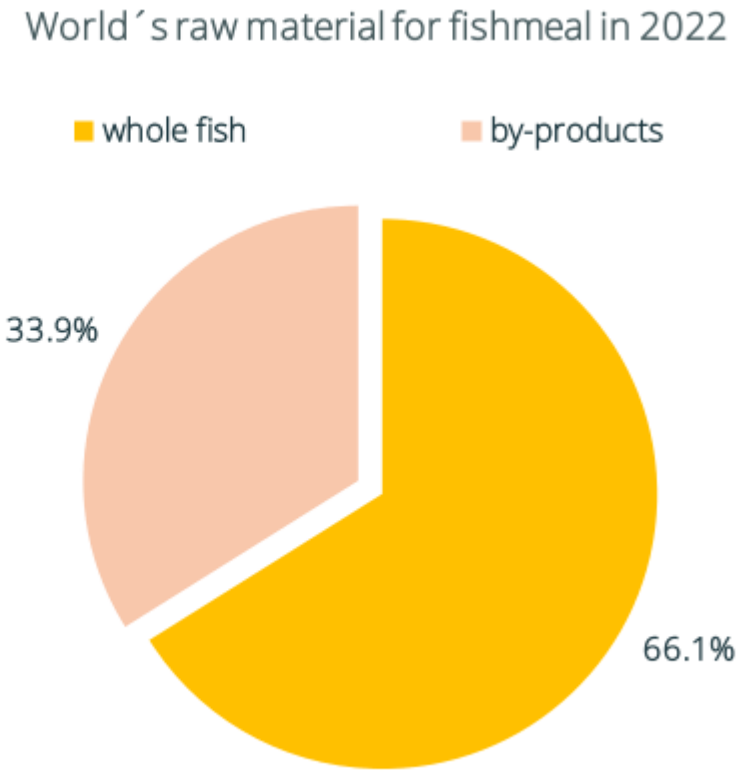
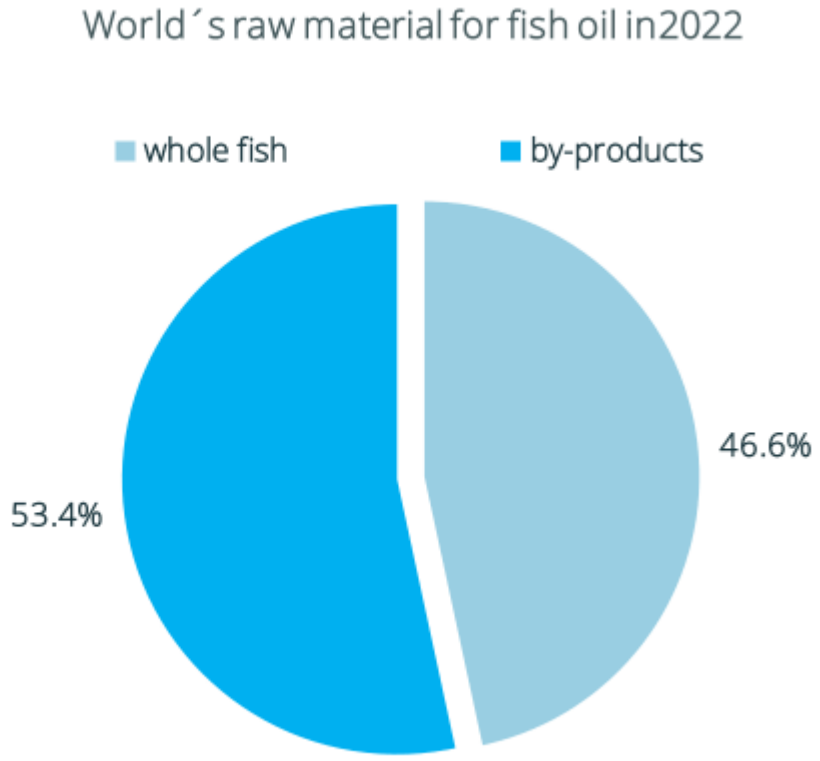
By-Products and Marine Ingredients





**Estimates do not include shrimp or squid products*

By-product resources in 2022 supply about 38% of all marine ingredients ~2.0Mtonnes per annum.

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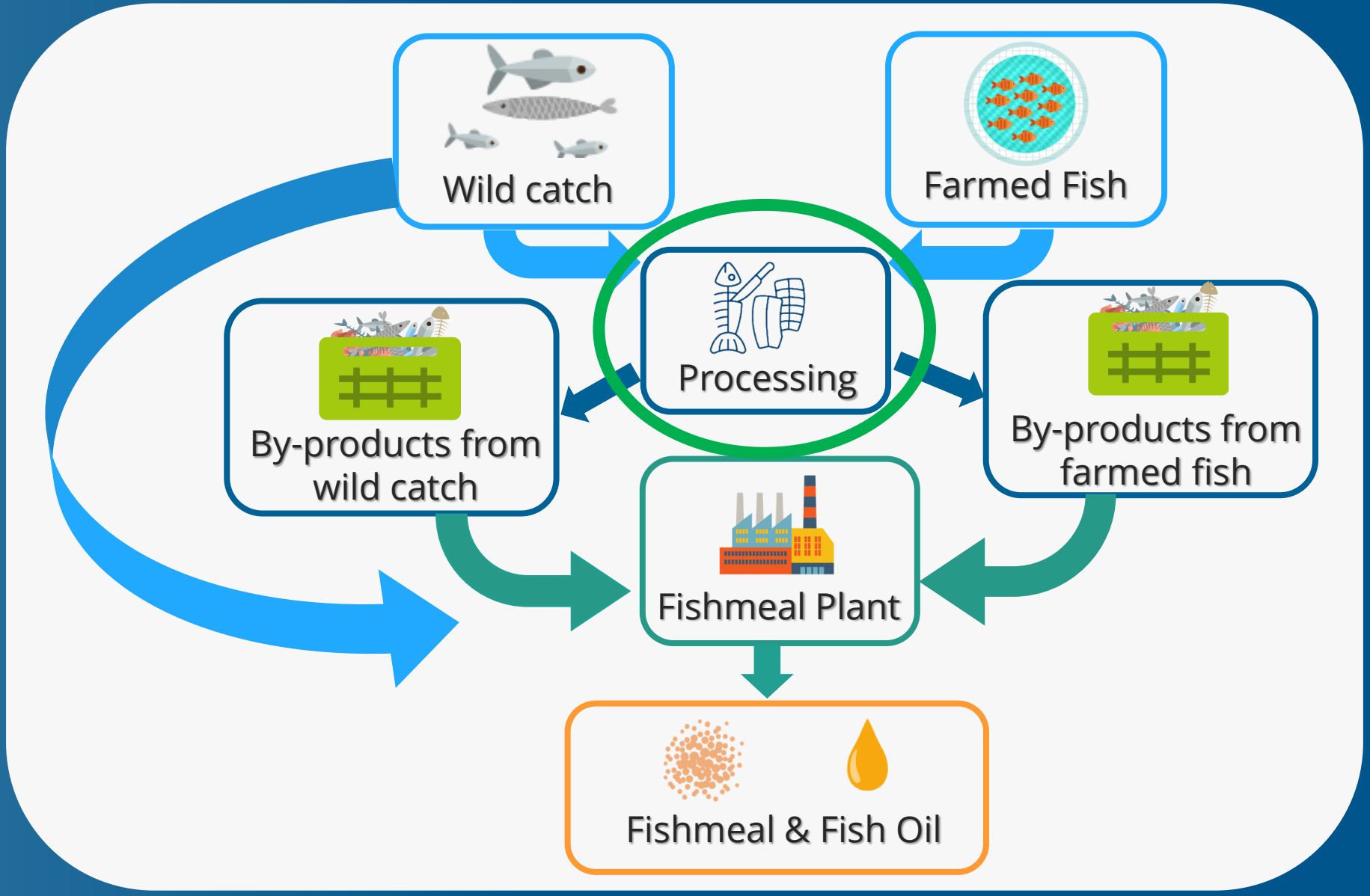
marinTrust MARINE INGREDIENTS RESPONSIBLY SUPPLIED

Dr Wesley Malcorps
Research Fellow – Institute of Aquaculture

Francisco Aldon
CEO of MarinTrust

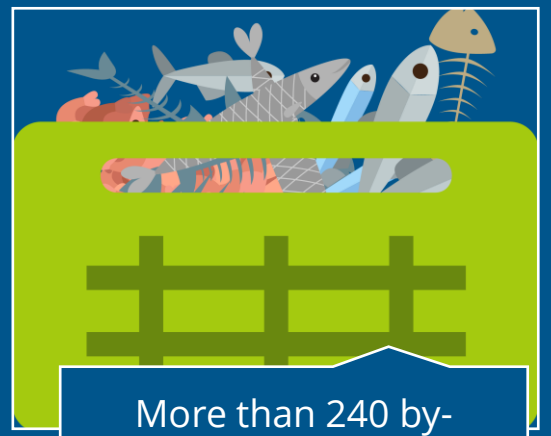
Sourcing & production of marine ingredients



By-products: the data we have so far

Data on MarinTrust-approved by-products (as of June 2023), so far focusing on wild capture only from approved by-products assessment (excluding MSC etc).

Facilities in 20 countries



More than 240 by-products being used (species + stocks

71 approve by-product species

Common species

Tuna

Haddock

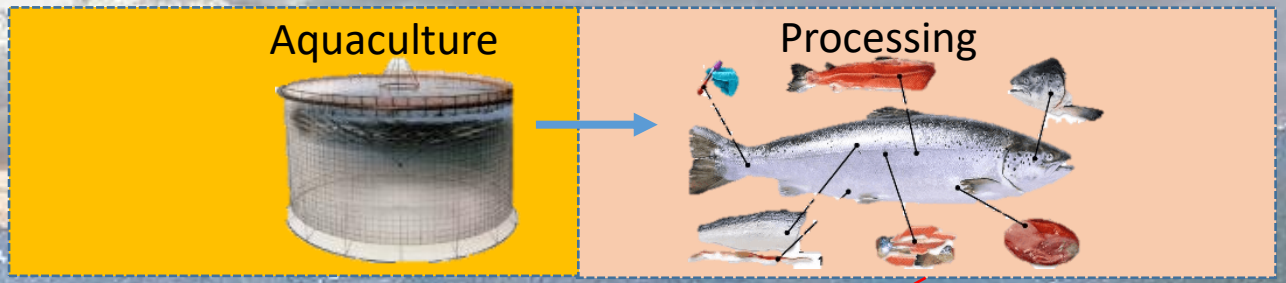
Sardinella

Mackerel

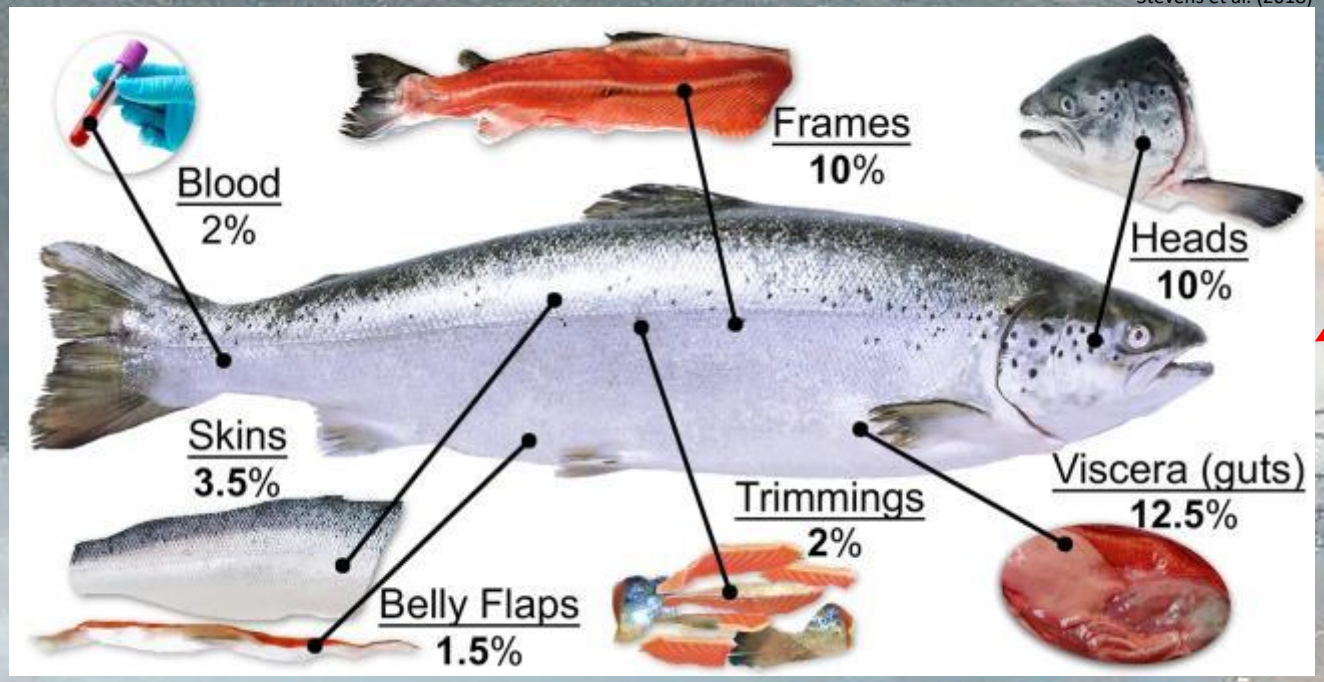
Saithe

Plaice

Aquaculture processing by-products



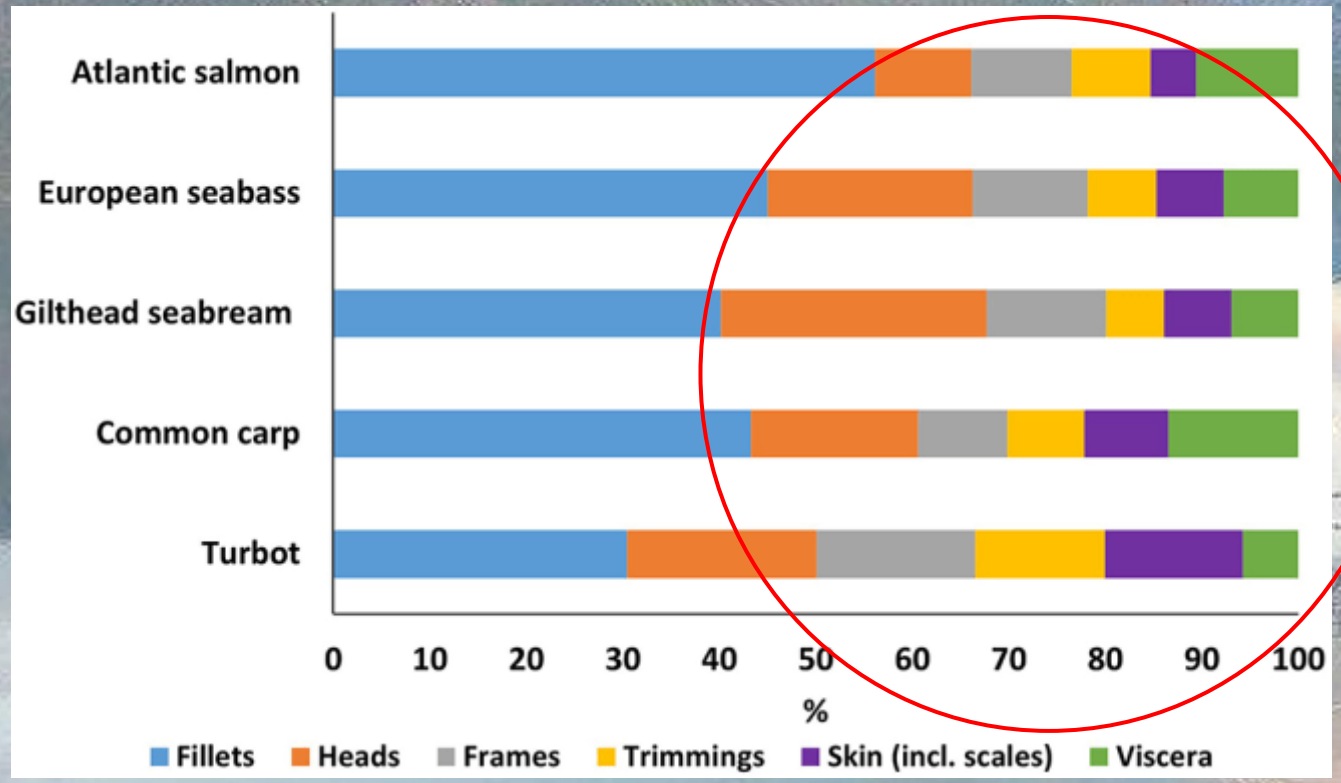
Stevens et al. (2018)



- By-products represent a large proportion of the whole fish
- Relative low price for by-products compared to fillet
- In general poorly utilised
- **Interesting nutritional characterisation**

Growing interest in adding value to aquaculture processing by-products due to consistent supply, higher uniformity and freshness compared to capture fisheries

Nutritional characterisation of aquaculture processing by-products



Malcorps et al., 2021

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- By-products ±50%, heads highest share
- Norway example of full processing and utilisation, but potential to increase volumes and value addition

→ Adding value to by-products
= adding value to industry overall!

(Stevens et al., 2018)
-Scotland could increase fish farming output (up to 60%)
-Increase by-product revenue (up to 803%)
-Increase the industry bottom-line by over 5%
→ **without new cages + additional marine and terrestrial resources**

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Food recovery hierarchy

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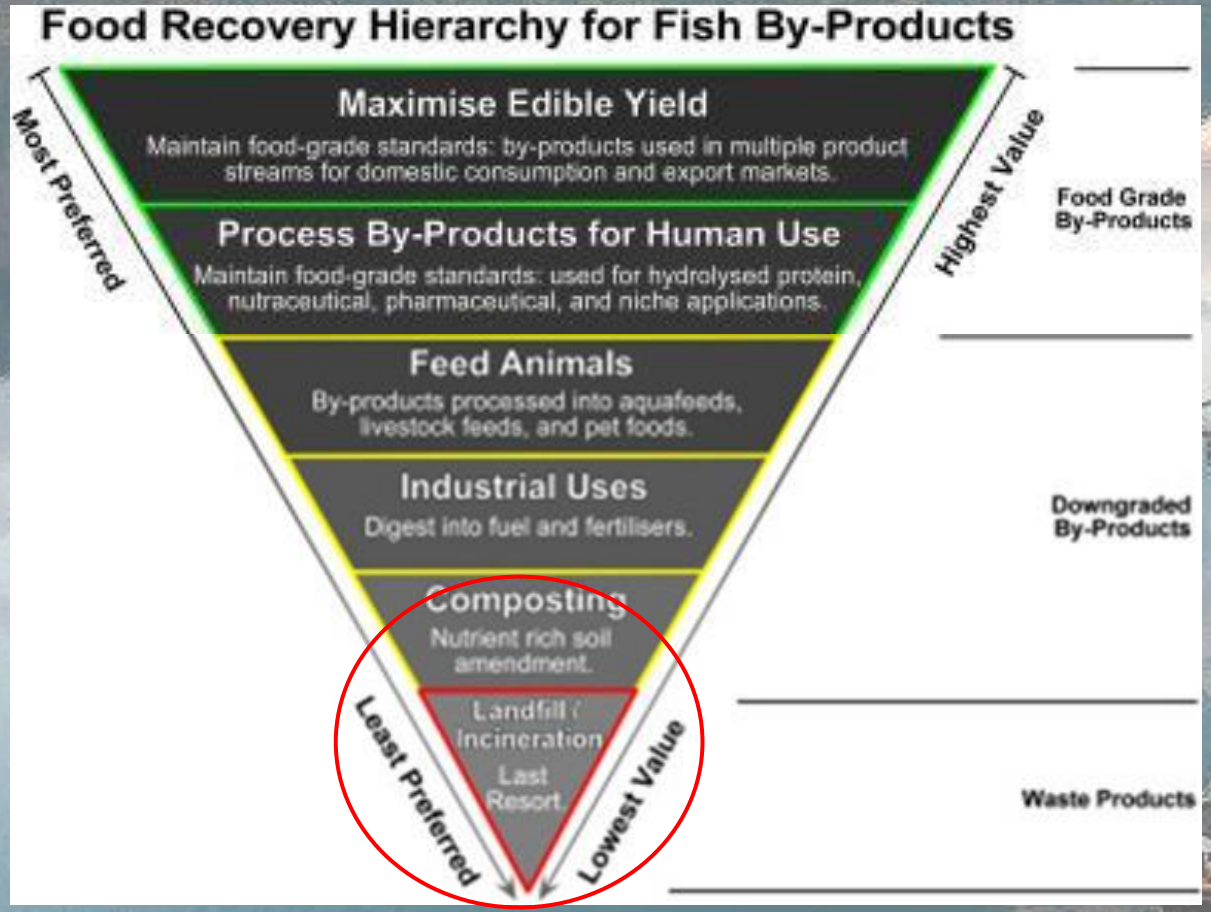
Stevens et al. (2018) based on EPA.gov



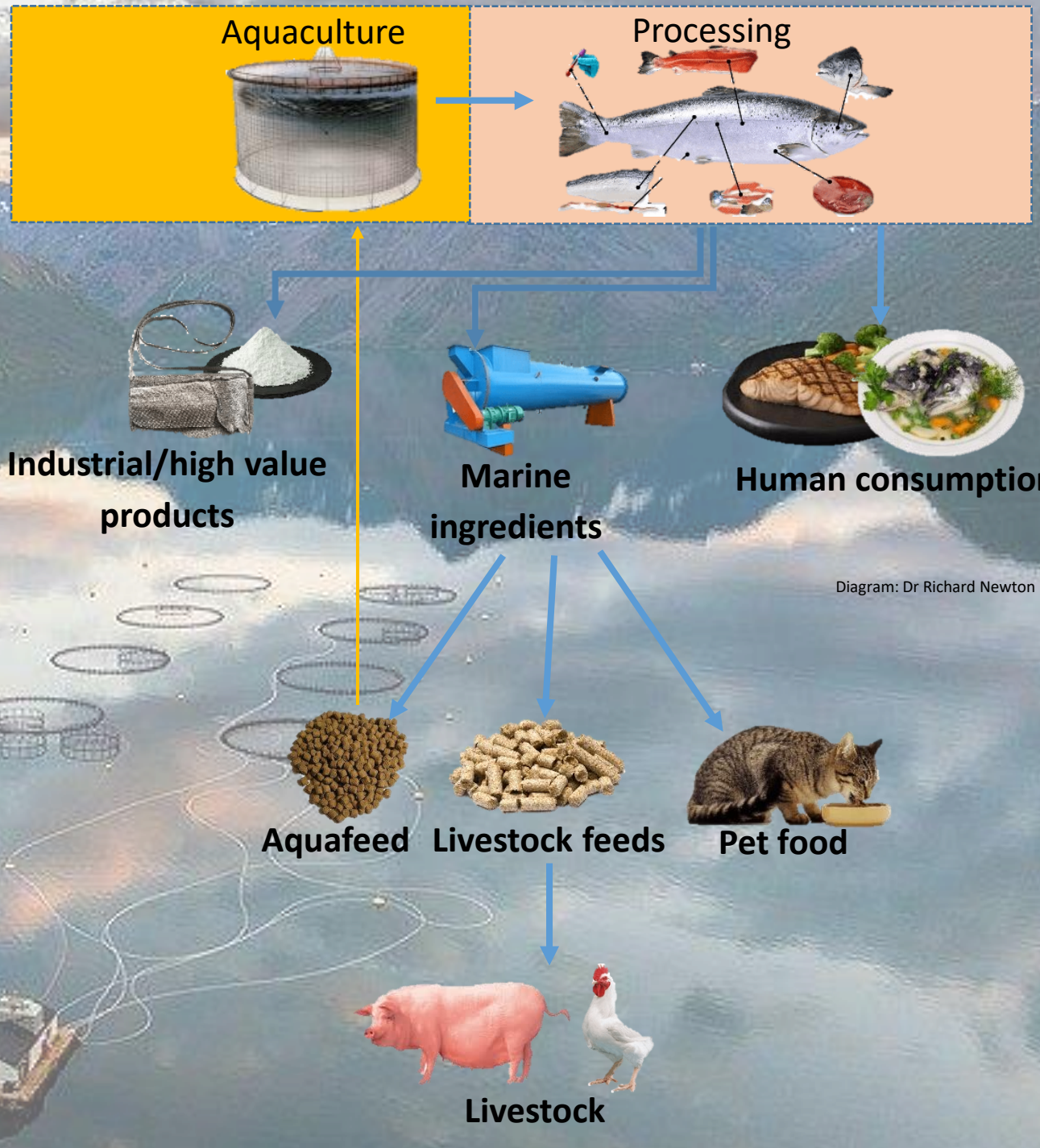
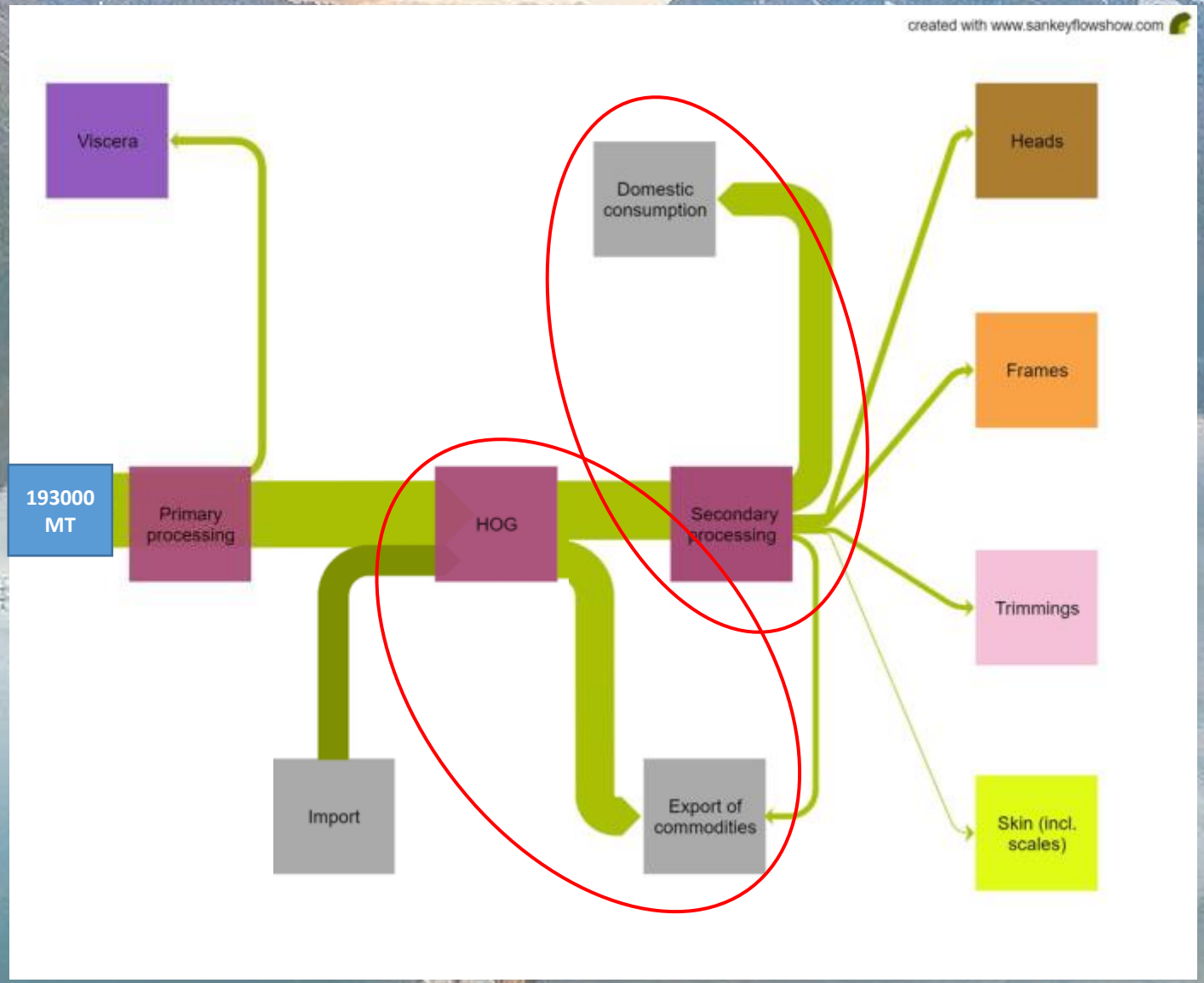


Diagram: Dr Richard Newton

Where are the by-products coming from?

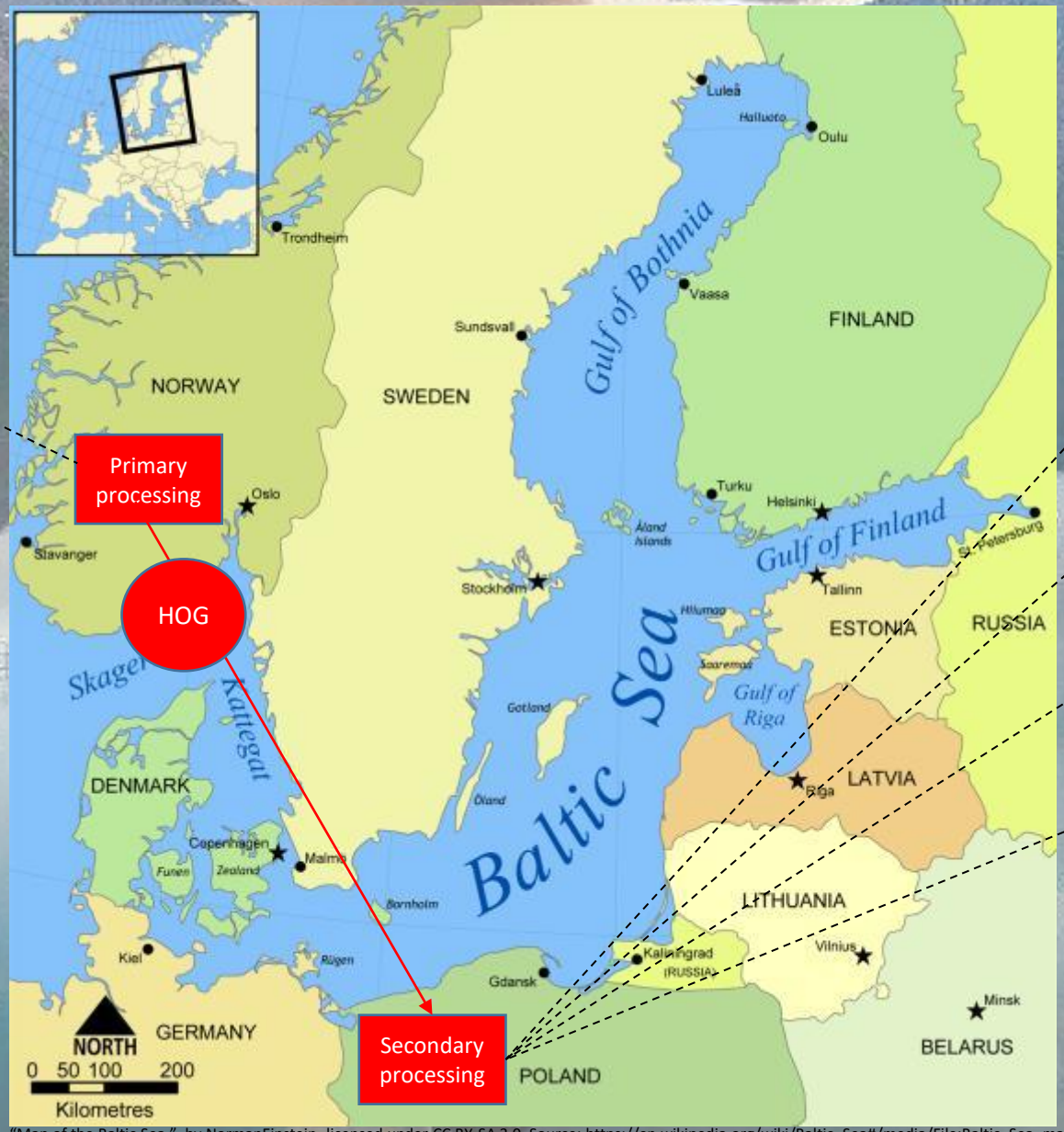
UK salmon industry (2020)



HOG = Head-on gutted

FAO FishStatJ, 2022

Norwegian salmon industry



HOG = Head-on gutted

MarinTrust Value Chain

Implementing traceability: start with data

Standardising traceability can help build a **bridge between the marine ingredient production and the food industry**

GLOBAL DIALOGUE on Seafood Traceability

How?

GDST's data requirements provide a framework to enhance traceability, covering the collection, usage, transfer and management of data. MarinTrust is supporting the inclusion of Marine Ingredients within GDST.

MarinTrust will provide guidance for its implementation, empowering producers and improving market access to responsibly sourced ingredients

Need for traceability

-Intra-species feeding
-Contamination issues
-Adulteration of feed

Need for traceability
-Quality
-Safety
-Standards
→ CREATING VALUE

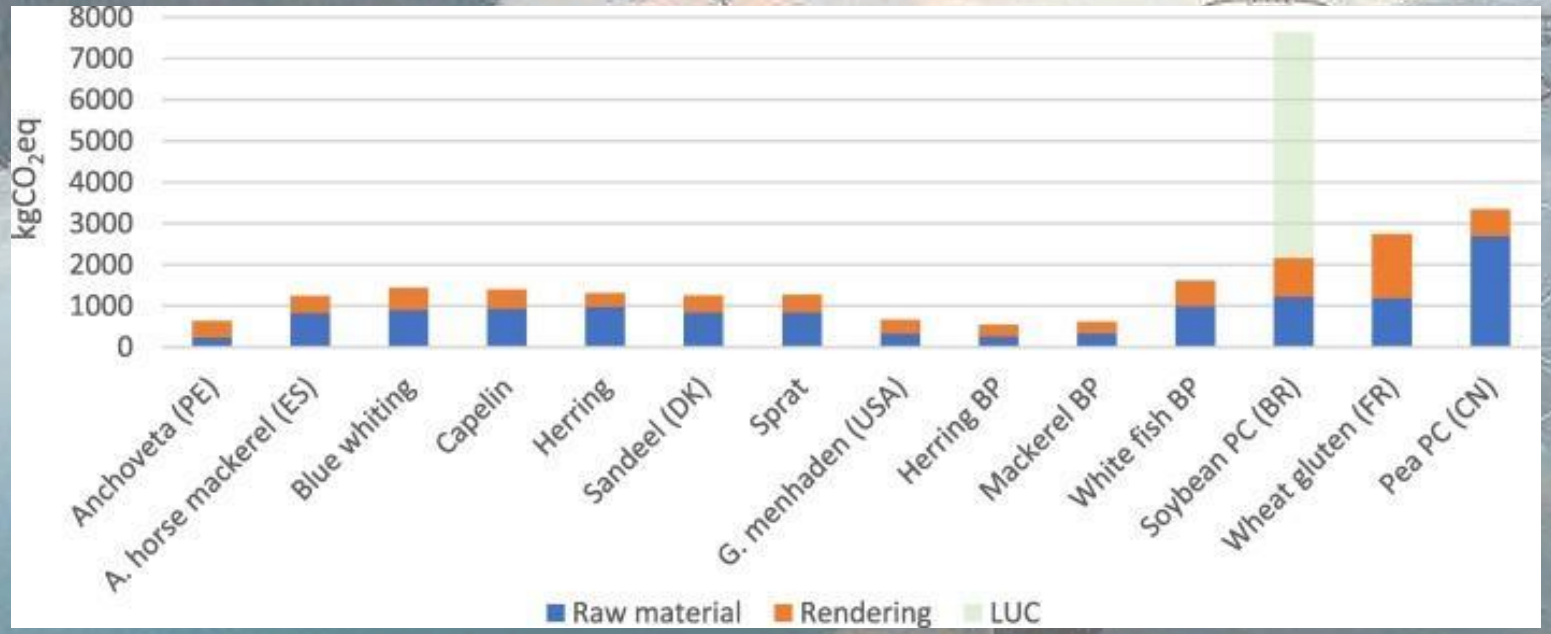
EU regulation for animal by-products not intended for human consumption
(EC) No 1069/2009

Category 2:
-Farm mortal
-Fish parts colle effluent processing plant
-Fish parts con e amounts of vet residues
-Cat. 3 (below) is minated with Cat. 2

Category 3:
-Part of slaughtered animals not intend for human consumption
-Fish caught for fishmeal production
-By-products from fish processing plants

Need for traceability for MI from fisheries

- Marine ingredients are very variable in their impact between and even within species, mostly depending on the fuel intensity of the fishery from which they are sourced.
- Large proportion of MI source from by-products (BP)
- Certified fisheries?



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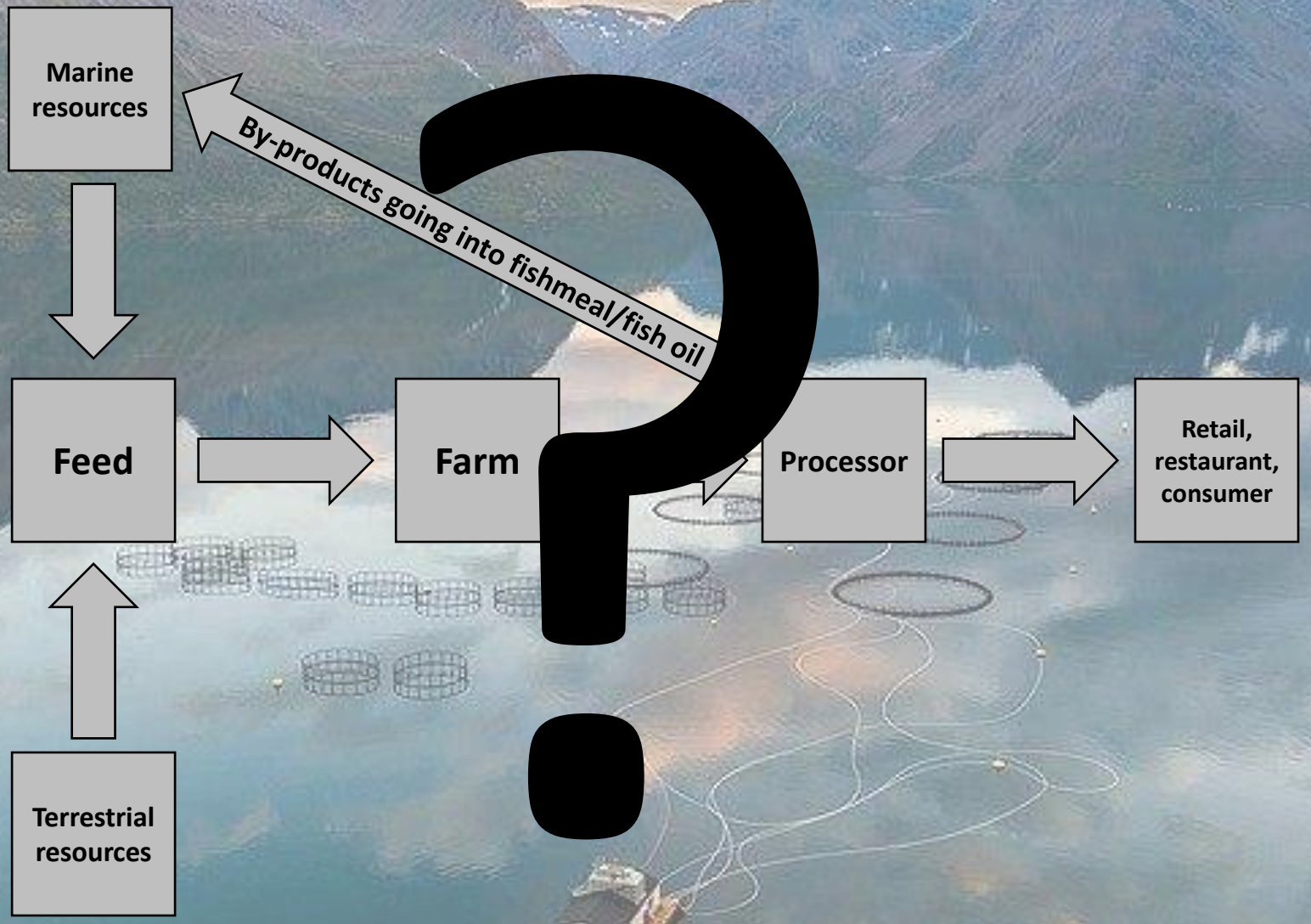
Newton et al., 2021

How to manage traceability in the supply chain



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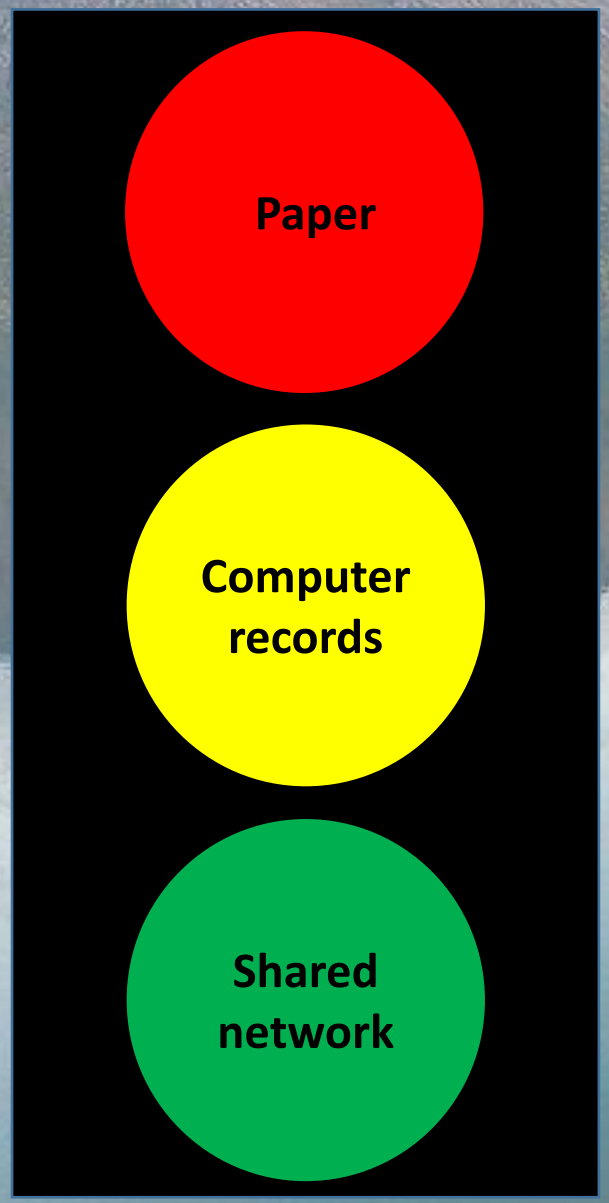

-Poorest
-Can get lost
-Coffee spills
-Mistakes in data
-Isolated data
→ **Missed opportunity**

-Recorded on paper, uploaded on computer
-Isolated data
→ **Missed opportunity**

-Most promising
-Real-time
-Big data
-Supply chain collaboration
→ **The Future**

YouTube video: ***Fish By-Products and Blockchain Technology to Maximize Utilisation -*** https://youtu.be/4b5ftxCN_tc

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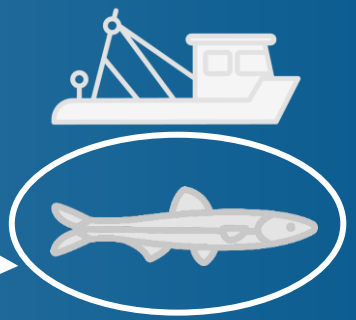
Traceability pilots (UK & Peru)

MarinTrust has supported pilot projects in Peru and the UK to **test the implementation of a full traceability system** of marine ingredients from fishing to feed dispatch.

Identifying Critical Tracking Events (CTEs) and Key Data Elements (KDEs)

CTEs

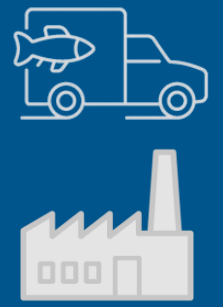
KDEs



Wild capture / Farmed Fish

By-product generation / unloading / transport

Marine Ingredient Production



Storage / Dispatch

Next steps: Moving marine ingredients forward through continuous improvement

Increasing **accessibility** for responsibly sourced and produced marine ingredients.

Encouraging the use of **by-products.**

Progressing the Standard's focus on **environmental**, and **social impacts**, both at the **factory** and on the **vessels**.

Laying the foundations towards **fully traceable** marine ingredients through standardisation of data.

Zero waste: Aiming for 100% use of fish

V3 strengthens risk assessment criteria and management controls for both whole fish and by-products. For by-products this includes a more efficient/clearer step-by-step process that checks IUU risk indices, endangered species lists and fisheries management systems before approval

By-product risk assessment framework

Alongside the development of V3, MarinTrust has begun further developing both the by-product and whole fish fishery assessment criteria, with pilot assessments and feedback from certificate holders and fisheries experts.

Consultation is live now!

We are inviting all our stakeholders to provide feedback to this vital development.

Timeline for Version 3

Working towards launching in October 2023!

2018 - Process launched

2020 - Public consultation & Terms of reference approved

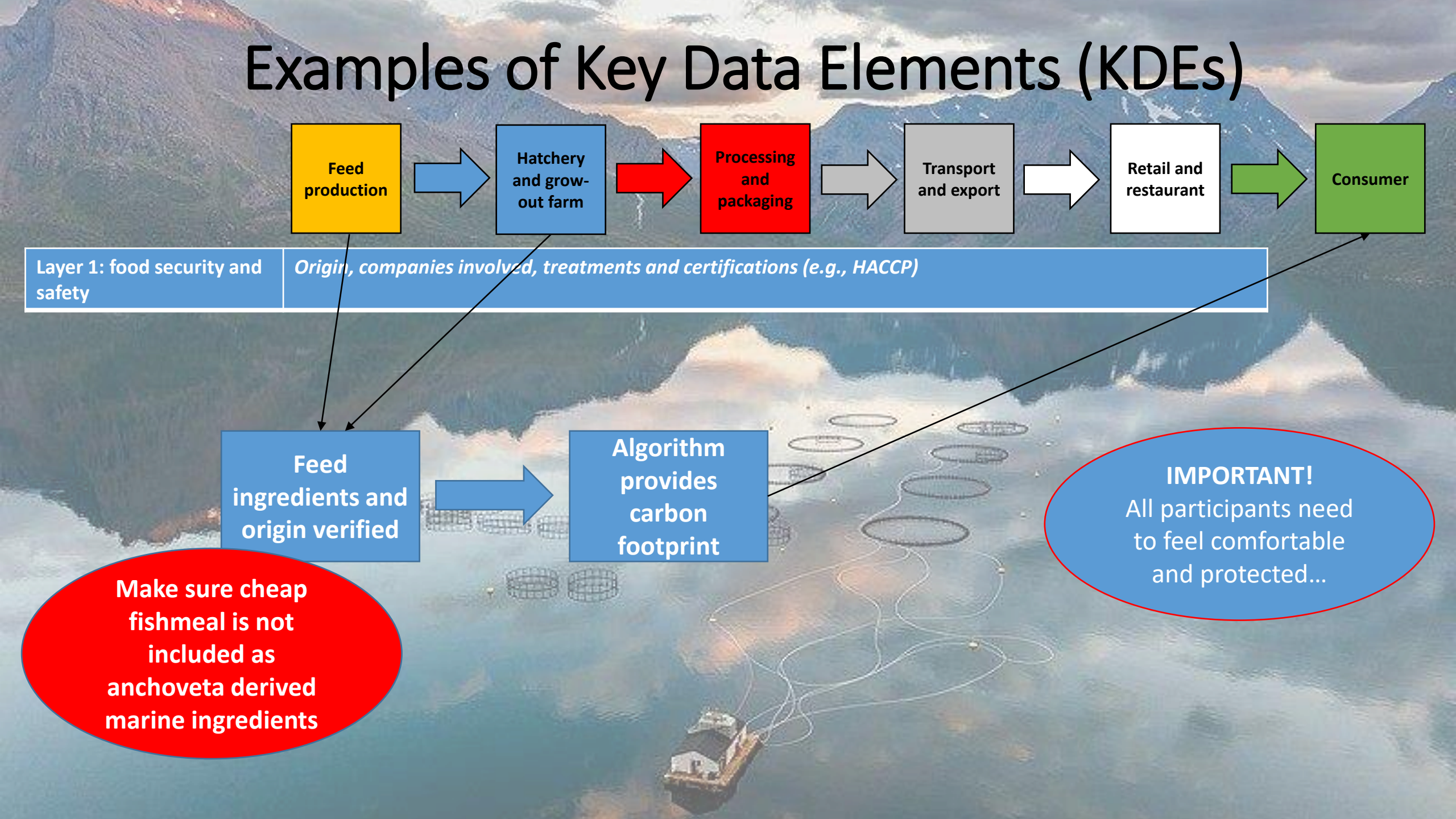
2021 - Analysis & stakeholder engagement

2022 - Review & Pilots

May 2023: Public consultation

October 2023: Launch

Examples of Key Data Elements (KDEs)



Examples of Key Data Elements (KDEs)

Feed production → Hatchery and grow-out farm → Processing and packaging → Transport and export → Retail and restaurant → Consumer

KDEs → socio-economic and environmental sustainability indicators

https://freesvg.org/eco-carbon-footprint-vector-icon

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Sustainability performance over time…?

Engage consumer in a sustainability dialogue → market force!

Sustainability is a JOURNEY, not an endpoint!

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Thank you

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