



Biomaris project - Summary



Pôle AQUIMER and Sayari

Context: Environmental labelling in the food sector

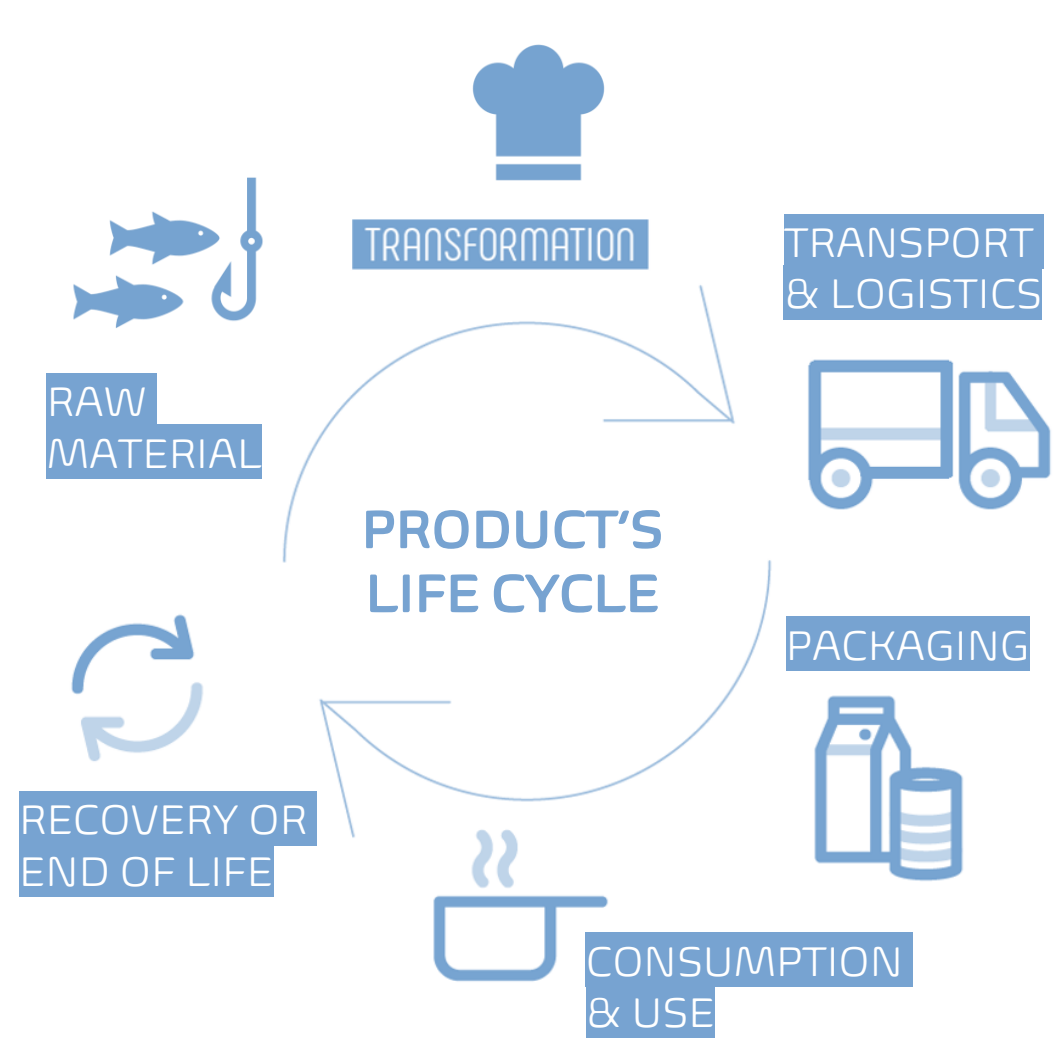
- Effective in late 2023
- Initially optional (5 years), then mandatory. Cf Nutriscore.
- Under construction by the State
- Environmental impact on the product value chain: from raw material extraction to distributor
- Take into account **the impact on biodiversity of the exploitation of marine resources** (fishing)

Source: <https://expertises.ademe.fr/economie-circulaire/consommer-autrement/passer-a-laction/reconnaitre-produit-plus-respectueux-lenvironnement/dossier/laffichage-environnemental/affichage-environnemental-contexte-objectifs>

Context: The environmental challenge of fishing: a growing concern

- Climate aspect: treated 
- Biodiversity : 
 - Overexploitation of resources
 - Seabed impact
 - Discards and endangered species
 - Noise
 - Plastics waste
 - ...

➔ BIOMARIS choice: a method for complying with the environmental labelling framework (LCA = Life Cycle Assessment).



Project objectives and partners

Objective: To develop a robust scientific methodology for assessing the impact of fishing activities on marine biodiversity and apply it to a concrete case study.

- Funder



- Coordination



- Subcontractor

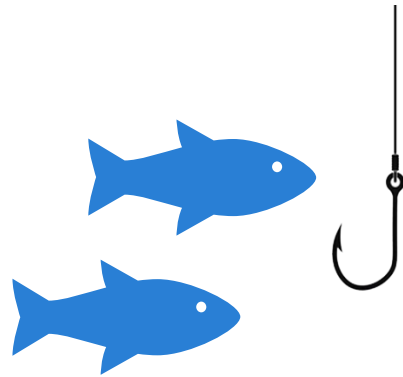


- Organizations involved (without funding)



When to use Biomaris

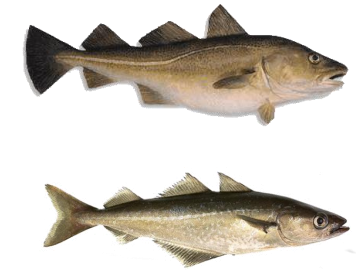
- Environmental assessment of any activity whose value chain includes fish products



Fishing - Impact at harbor gate

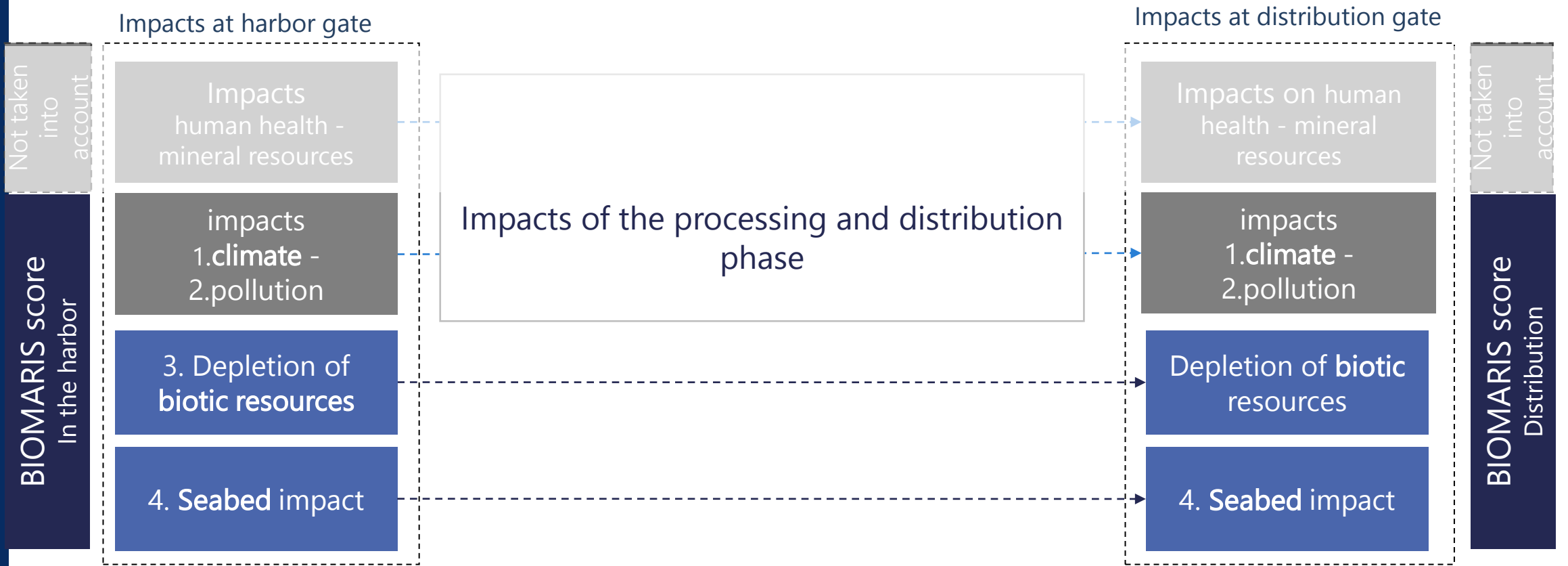
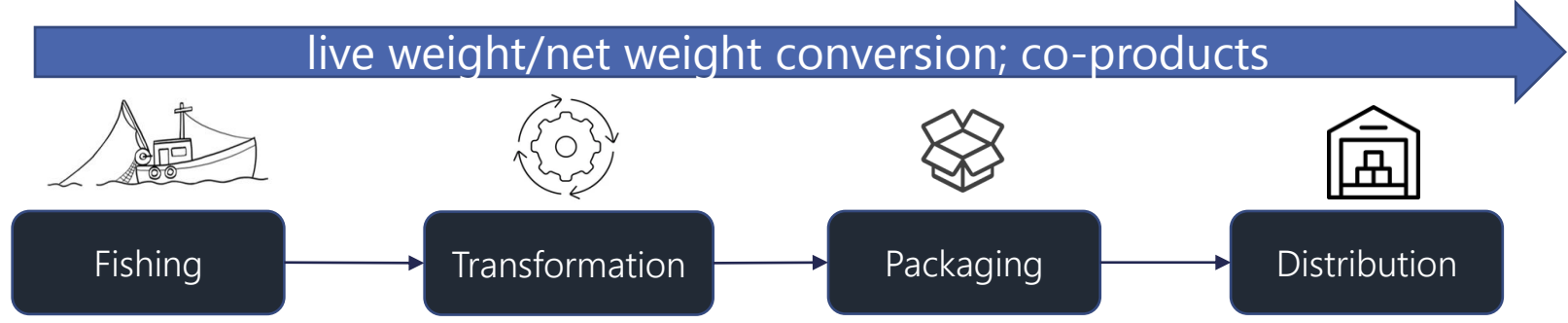


Fishing and processing - Impact at distribution



Selection of the most virtuous products (species fished, fishing areas, fishing techniques, etc.).

Biomaris method - focus on the fishing stage



How do I use Biomaris?

- → "Biomaris resources" required data :
 - All product-related catches, their weight and selling price

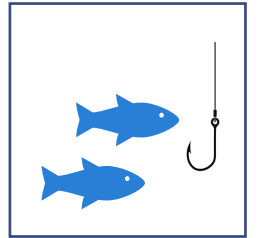
Target or study species



By-catch



Bycatch

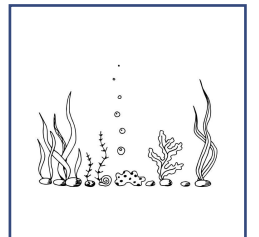


- Fishing zones precise enough to link to stocks

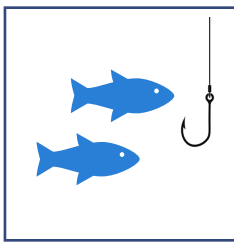
- → "Biomaris seabed" (When interacting with the bottom)

required data :

- Area trawled (m²)
- Precise fishing zones



Biomaris Resources (1/2)



- Hélias et al (2023) method validated by the United Nations Environment Programme

Resource depletion
(Hélias, Stanford-Clark et al. 2023)



- Lessons from the case study
 - Potentially major share of bycatch in total impact, even when managed and under quota

Illustrative example (2018 campaign):

Catches Impacts



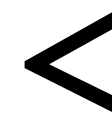
Saithe (*Pollachius virens*)



Redfish nei (*Sebastes spp*)*



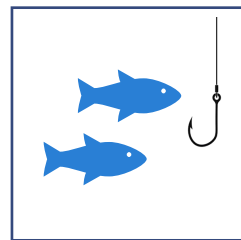
Saithe (*Pollachius virens*)



Redfish nei (*Sebastes spp*)*

* Both redfish species (*S. mentella* and *S. norvegicus*) have long life spans and slow reproductive cycles. Fishing for them has a greater impact.

Biomaris Resources (2/2)



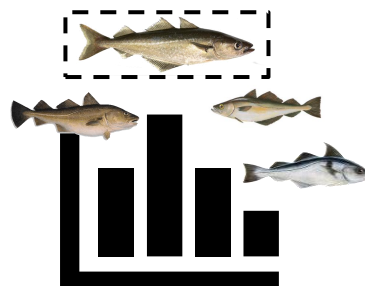
- Major parameters

Impact per kilo of target species caught

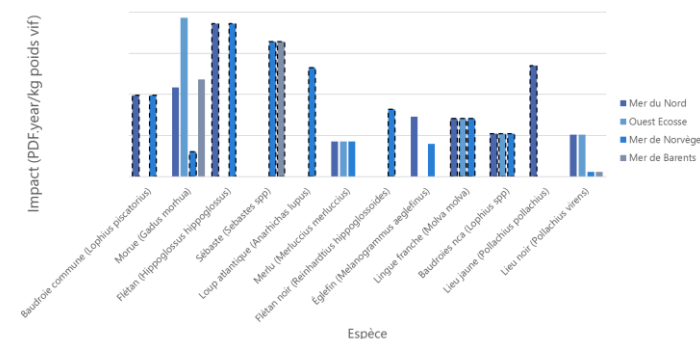


North stock vs. South stock

By-catch and incidental catch quantities



Impact per kilo of bycatch and incidental catches



- Advantages and limitations of the method



Benefits

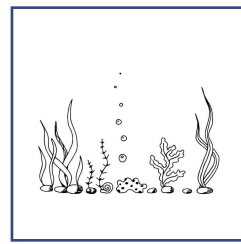
- UN-validated method
- Taking account of by-catches and incidental catches and the specific nature of stocks
- Default data available



Limits

- Regular data updates (stock status, catches, biomass, etc.)

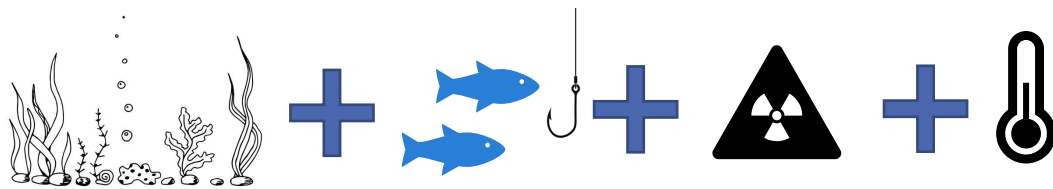
Biomaris Seabed (1/2)



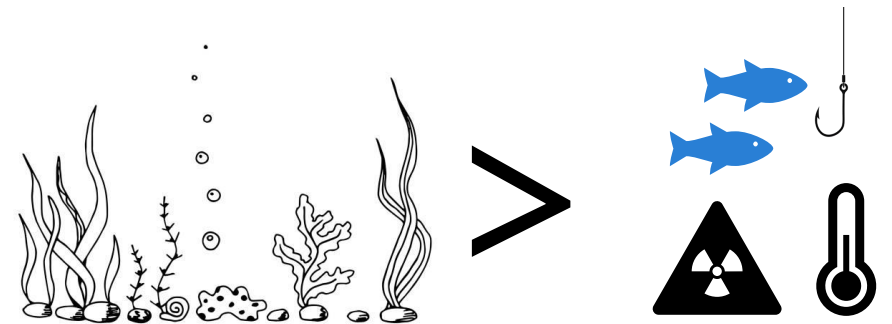
- Woods and Verones method (2019) tested

Seabed impact
(Woods and Verones 2019)

- Lessons from the case study

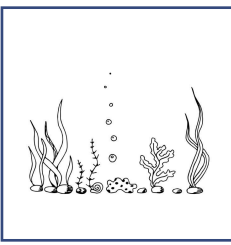


Aggregation with other LCA chains not recommended



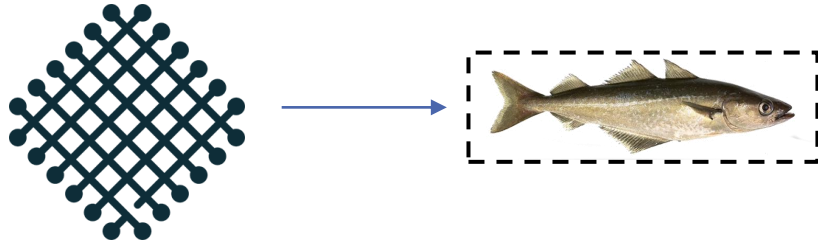
For a well-managed bottom trawl fishery, the main impact seems to be on the seabed.

Biomaris Seabed (2/2)



- Major parameters

Yield between trawled area
and fished mass



Other parameters



- Advantages and limitations of the method



Benefits

- Eventually, possible economies of scale: calculation of impact per m^2 that can be generalized
- Characterization factors do not change over time



Limits

- For now: long, complex and costly calculations

Added value

- Biomaris' added value in the product value chain is:
 - Taking into account and quantifying two key impacts of fishing on marine biodiversity
 - Similar consideration to the issues usually addressed in the environmental footprints of seafood products
 - Inclusion of these impacts throughout the product value chain
- Today Biomaris enables to:
 - Compare products on each indicator
 - Eco-design, including upstream fisheries
- Today Biomaris does not enable to:
 - Aggregate the various pressures (resources, seabed, climate, pollution)
 - Compare fish products with land-based products

Possible outcomes

- Add other case studies to support and/or improve the method, by diversifying the species, techniques and fishing areas covered.
- Coordination with environmental food labelling
 - Biomaris can be operated on the finest level of environmental display
 - Continuation of the project: testing the CSTEP alternative method
- Identifying extremes :
 - Best and worst resource depletion scores
 - Best and worst seabed impact scores

Link to labels :

- Collecting data
- Consistent consumer messages