Availability, conditions and alternative management procedures for postharvest fish losses in local stakeholders (WASTE2TASTE Project)

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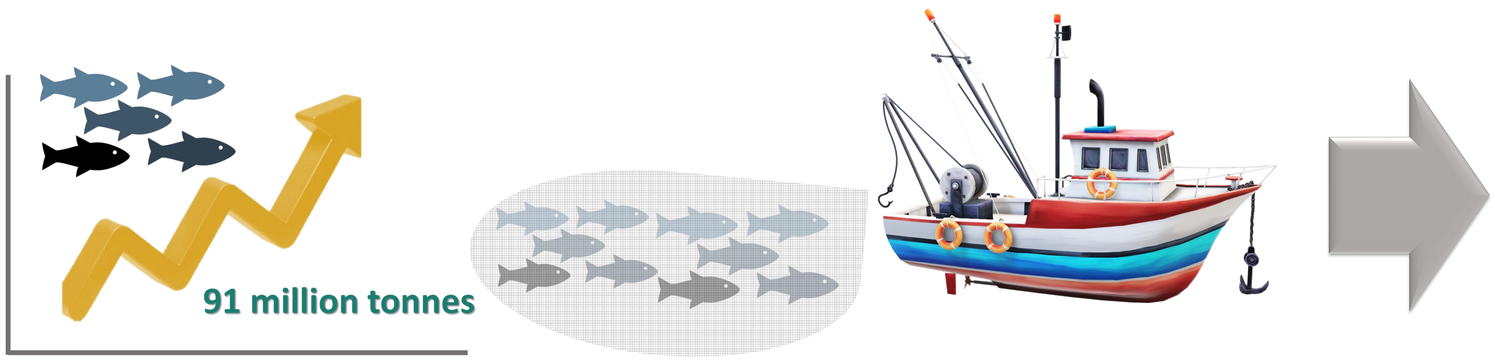
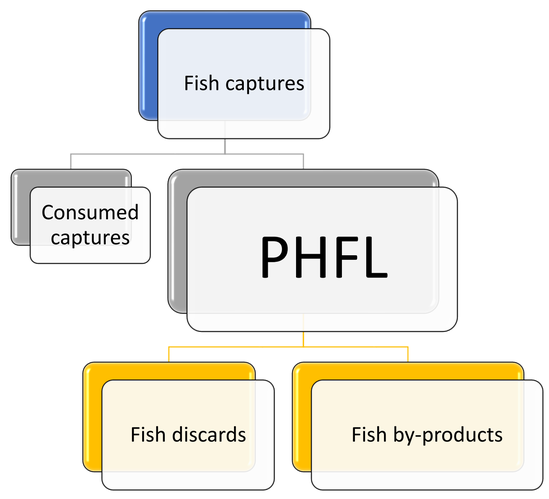
ACTUAL SITUATION

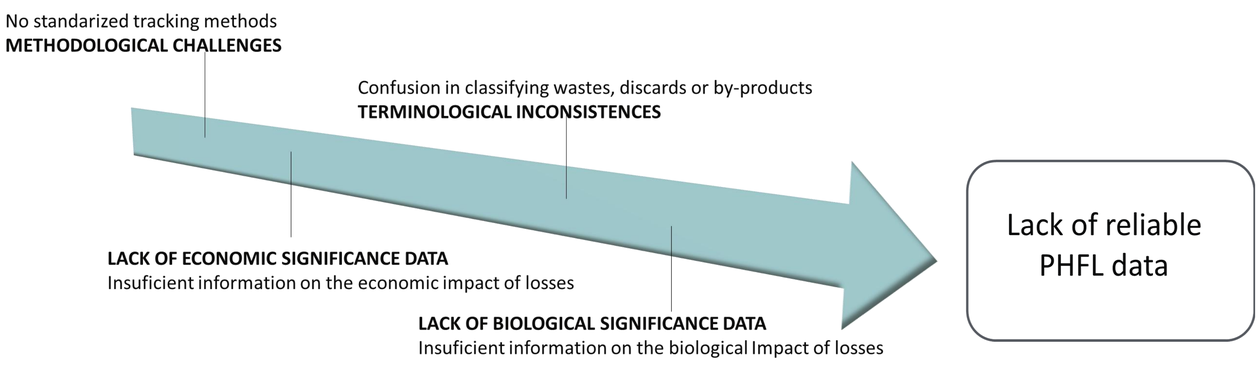
World capture fisheries (aquatic animals) production reached 91 million tons in 2022

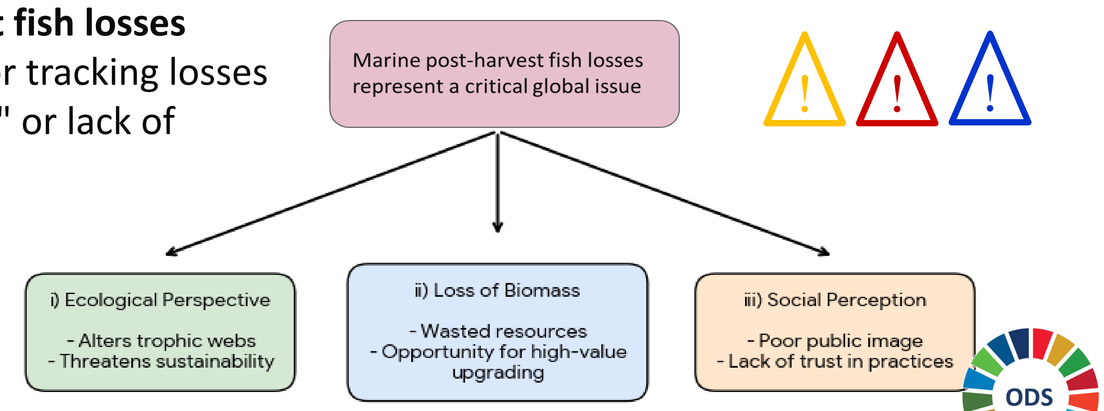




It is estimated that between **7 and 10 million tones** of commercial fisheries catches **are discarded** annually. And f**ish by-products (heads, bones, scales, skin, etc.)** represent on average between **30 and 70 percent of the fish.** **DISCARDS AND BY-PRODUCTS REPRESENT POST-HARVEST FISH LOSSES (PHFL)**

Although the numbers seems high, there is **a lack of reliable and current post-harvest fish losses data** which arises from several challenges, including a lack of standardized methods for tracking losses and waste, inconsistencies in what is classified as "by-product", “discards” or "wastes," or lack of biological or economic impact of PHFL.



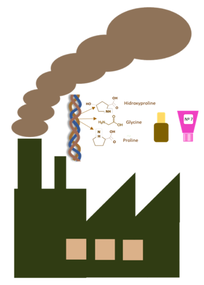


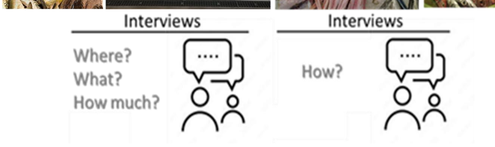
Priority measures are carrying out to refine **aquatic food value chains** to ensure their social, economic, and environmental sustainability. In this context, reducing PHFL through its **valorization** is essential

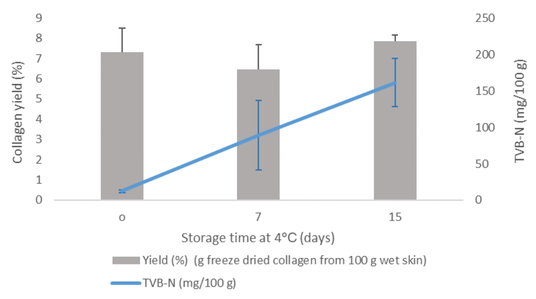
AIM and OBJECTIVES

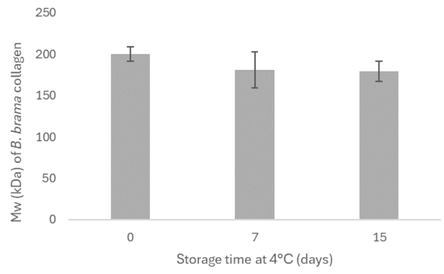
- The **Waste2Taste** overall aim is the **development of eco-innovative green bioprocesses** by using PHFL to produce **bio-based products** to be applied by the food industry.
- An specific objective of **Waste2Taste** project is the understanding of **current practices in the generation, utilisation and valorisation of fishery by-products** for the development of targeted valorization strategies and also to identify the limitations that hinder their effective use. **In Waste2Taste project** a prospective analysis was developed by using stakeholders survey and interviews.
- As collagen extraction is a leading strategy for circular economy valorization our second objective was to **evaluate how fish by-product management influences collagen extraction yield and purity**.

Valorization strategies for fish by-products









CONCLUSIONS

1. **Availability and variability of raw materials:** Fish by-products such as skins, viscera, and livers are widely available in fishmongers and processing industries, although their quantity and composition vary by species, season, and processing practices. Monkfish and blue shark dominate the supply in Galicia, while salmon skins offer unique compositional advantages.
2. **Current management limitations:** Most by-products are classified as Animal By-Products (ABP) not intended for human consumption, restricting their potential for food applications. Reclassification to a food-use category is essential but requires significant changes in infrastructure, logistics, and compliance with strict hygiene and safety standards.
3. **Preservation and handling challenges:** By-products are highly perishable due to microbial and enzymatic activity. Maintaining the cold chain and minimizing storage time are critical to preserving quality and enabling the extraction of biocompounds such as collagen and oils.
4. **Physicochemical characterization:** Skins are rich in protein, particularly collagen-related amino acids (hydroxyproline, glycine, proline), while viscera, especially livers, are the main lipid reservoirs. Salmon skin stands out as the most versatile raw material for combined collagen and lipid recovery, whereas monkfish liver is the best candidate for oil extraction due to its high lipid content and low heavy metal levels.
5. **Safety considerations:** Heavy metal analysis revealed significant variability among species. Salmon skin and monkfish liver comply best with EU safety limits, while catshark viscera and ray skins present high contamination risks. These findings underscore the need for rigorous selection and monitoring of raw materials for food applications.
6. **Amino acid profiling:** Beyond collagen indicators, by-products contain essential amino acids that could support the development of high-protein ingredients and functional foods. Protein integrity markers (e.g., tyrosine) highlight the importance of proper storage to prevent degradation.
7. **Collagen extraction:** Maintaining *B. brama* skins by-products at 4°C for 15 days results in an increase in collagen yield and TVB-N levels and a reduction in the collagen molecular weight.
8. Overall, PHFL are underutilized resources with potential for valorization into high-value biocompounds. However, achieving this requires a multifactor approach involving regulatory adaptation, improved handling and preservation practices, investment in infrastructure, and stakeholder engagement. These actions will enable the transition from waste to taste, contributing to sustainability goals and the circular economy in the fisheries sector.

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