Briefing | Note

EPS & XPS Packaging in the Commercialisation Chain for Refrigerated Fisheries Products in Europe

Reducing EPS marine litter in the North East Atlantic
OCEAN WISE
Interreg Atlantic Area

Executive Summary

The INTERREG funded OceanWise project (2018-2022) has developed a set of long-term measures to reduce the impact of expanded polystyrene (EPS) and extruded polystyrene (XPS) with the aim of reducing marine plastic litter to achieve better environmental outcomes in the North-East European Atlantic. OceanWise objectives are based on resource-efficiency, participatory methods, and circular economy principles to inform new and best practices in the use, manufacturing, recycling, and uptake of EPS and XPS.

The nature and characteristics of stakeholders involved in the distribution and commercialisation of refrigerated fishery products are extensive as are the potential exchange flows between them. This brief provides an overview of the use of EPS and XPS packaging for refrigerated fishery products (i.e., fish-boxes) across the supply and commercialisation chain (value chain) to identify management interventions enabling waste leakage reduction and enhanced valorisation.

Image source: OceanWise Project

Introduction

Fish-boxes are the most commercialised EPS packaging product in the North-East Atlantic area and a significant source of marine litter. This brief provides an overview of the value chain of EPS and XPS packaging for refrigerated fishery products (see Box 1) and identifies the critical points for waste leakage in the value chain for EPS and XPS and suggests management improvements to reduce marine litter input.

The commercial applications of EPS and XPS packaging for fresh fishery and aquaculture products in Spain are presented in Figure 1. (below). The fishery and aquaculture supply chains are very complex, involving many stakeholders and often demonstrate high levels of vertical integration across both commercialisation and distribution channels. The identification of these critical points allows for the classification and development of different strategies for waste management, which can be implemented along the supply-distribution channel.

Use of EPS/ XPS for Refrigerated Fishery Products

EPS fish-boxes are used in the transportation of fresh fishery products, for example wild species from extractive fishing such as bivalve molluscs, and crustaceans, which are imported into Europe from third party countries such as Argentina and South Africa, and are subsequently included in the commercialisation processes at local market auctions.

- **Bivalve Molluscs:** Although EPS and XPS are not used in the supply, processing, and distribution value chain of bivalve molluscs (e.g. mussels and clams), they may in rare occasions reach the final consumer in EPS or XPS type packaging.
- **Aquaculture:** Both seawater and freshwater fish are classified by size and sold to wholesalers, retailers, and logistic platforms for distribution in EPS fish-boxes. Imported aquaculture products such as salmon from Norway and Chile is commercialized in EPS fish-boxes to wholesalers and processing companies.
- **Crustaceans:** EPS fish-boxes are used to transport and sell crustaceans to logistic platforms for distribution, wholesalers, retailers, HORECA (Hotels, Restaurants and Catering), and to private consumers.

Image source: OceanWise Project

Box 1. Raw materials packaged and transported in EPS fish-boxes

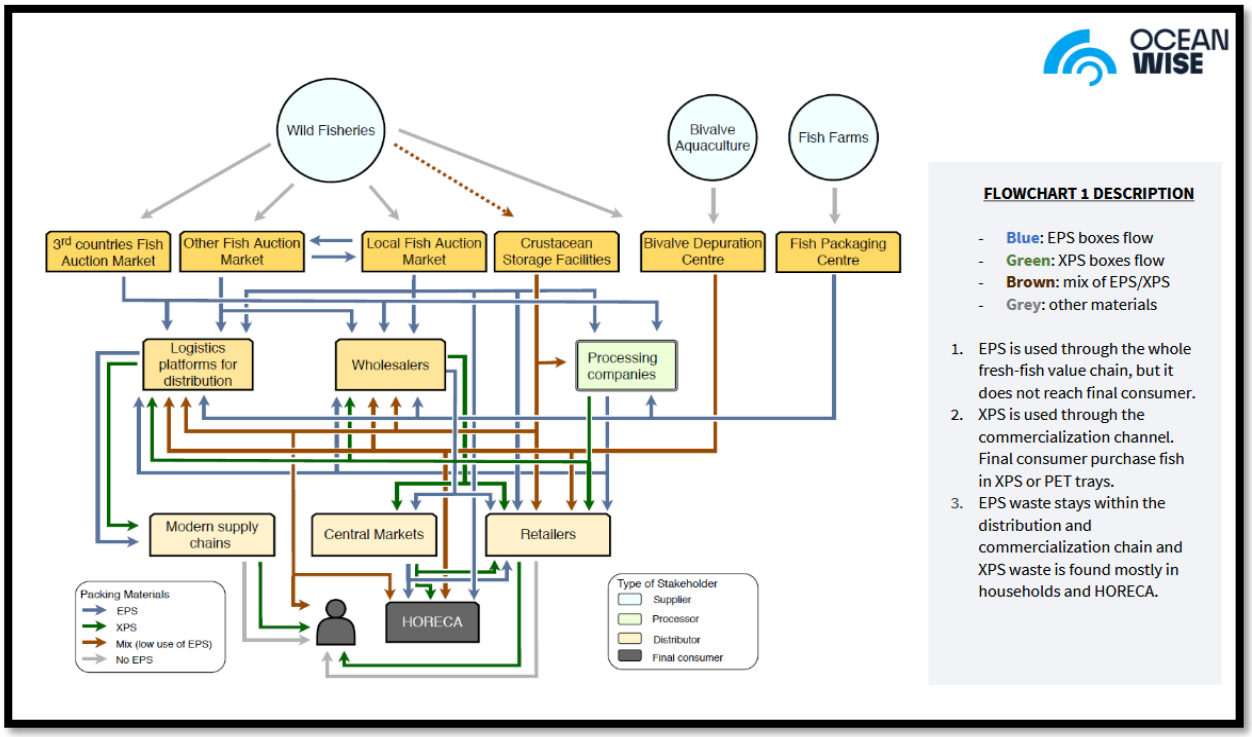

Figure 1. Flowchart of most important and common flows EPS and XPS through the supply chain in Spain (Cetmar,Sociedade Ponto Verde & Repak, 2022).

Commercialistion & Distribution Channels

There are several stakeholders involved in the commercialisation and distribution of fisheries products within the EPS and XPS fish-box commercial flow where EPS/XPS waste leakage may occur.

Processing Companies: Fresh fish arrives for processing in EPS boxes and then is processed for commercialisation and packaged in XPS and PET trays. Wholesale processed fisheries produce is sold in bulk in EPS boxes.

Logistic Platforms for Distribution: These facilities store the products for distribution and supply them to retail outlets in EPS fishboxes and in some instances XPS trays are used for processed products.

Modern Supply Chains: Processed products are commercialised in XPS trays for retail in large supermarket chains.

Wholesalers: Fisheries products are commercialised and transported across the distribution chain in EPS fish-boxes.

Central Markets (MERCAS): Wholesalers and retailers receive and commercialise goods in EPS fish-boxes, and processed products in XPS packaging/trays.

Retailers: Fisheries products are stored in EPS boxes and sold onto final consumers in different packaging. In the case of processed goods, XPS trays are used

Conclusions

1. The fishery and aquaculture supply chains are very complex and often demonstrate high levels of vertical integration. The importance of each stakeholder, the role they play and the volume of products may vary depending on each country.

2. EPS does not reach the final consumer in most cases but XPS trays are used from the first level of the supply chain: *Processing Companies, Logistic platforms for distribution* and *Wholesalers,* and it ends in the homes of final consumers (citizens).

3. Different stakeholders generate EPS and XPS waste at various stages along the supply chain and the efficiency of the waste management cycle largely depends on the individual stakeholder e.g. processing company, wholesalers.

References

Cetmar, Sociedade Ponto Verde & Repak. 2022. OceanWise Project Report: EPS/XPS fish-boxes waste cycle through the European market. Available online at: www.oceanwise-project.eu

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