REPORT

7.3.3. Alternative systems to EPS: Reusable and Recyclable Packaging for the Food Industry

OCEAN WISE

Reducing
EPS marine litter
in the North East
Atlantic

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Atlantic Area
European Regional Development Fund

EUROPEAN UNION

7.3.3. Alternative systems to EPS: Reusable and Recyclable Packaging for the Food Industry

Elaboration of the Report

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Description and details of the system

In the value chain of the fisheries sector –in cold storage, there are several commercialization levels, which are very similar for any agri-food sector.

We basically have a sector of extraction and production of raw material including fishing, fish markets, aquaculture companies and so on. At this stage raw material is kept in EPS boxes to enter the first level of commercialization –wholesalers, logistics supply platforms, processing companies, and also in EPS boxes and sometimes in XPS trays. Fresh and refrigerated fisheries products enter the second level of commercialization –big supply areas, central markets and retailers.

However, there is a new alternative for the exchange of goods based on the use of reusable and recyclable plastic boxes (High Density Polyethylene-HDPE), which is already stablished in some agri-food sectors including fisheries. Unlike EPS, which is used once and needs to be recycled (considering that a high percentage of its wastes miss the valorization cycle) this is a solution based in the nonstop use of plastic boxes -that may reach an average life of some years, and its later recycling. Therefore, it means a circular economy concept based on “share, reuse, reduce” which is infinitely more sustainable that that of the linear model “take, make, waste”.

The reduction in the use of EPS would be a measure more efficient and sustainable than using and recycling. In many ports in the North of Spain and France there is a system of plastic boxes (packaging) for the commercialization and supply of fresh fish replacing the EPS boxes. This logistics system uses reusable and recyclable packaging for the food industry including the fishing sector. It has the following characteristics:

- There are some companies (TEPSA http://www.e-tepsa.com/) commercializing plastic boxes for food use at very competitive prices. All the boxes are the same regardless of the customer, although the dimensions and design vary depending on the sector. In the case of TEPSA they are pistachio green. Additionally, the design allows them to be piled in such a way that once empty, they can be piled to reduce the space required and the transport costs
- A certain port purchases a given number of boxes to share among all the ship owners and other ports. All of them share the same type of boxes as a bargaining chip. In this way, the fishing catches are stored on board, downloaded and sold in these boxes. Once sold, the port gives the ship owner another set of similar boxes already washed (there is a cleaning and disinfection service of boxes in the fish markets).
- The goods purchased in the fish markets (Picture 2) may arrive in the same boxes (Picture 3) to the supply platforms of big supermarkets (Picture 5) and to the wholesalers located in ports. They are adopting this new trend and following the same pattern: they use the box, they return the box and they receive back the same number of other boxes.
- Its scope also reaches some big supply areas –supplied by their own logistics platforms, and supermarkets (Picture 4) which follow a similar pattern to the previously mentioned stakeholders, placed before in the value chain.

- The owners of the boxes are ports and ship owners. The boxes do not belong to wholesalers or supply platforms, which in case of using the boxes, must pay the price. They will recover almost the whole price when giving the boxes back except for a small amount to pay for washing and disinfection. However, there are other possibilities. For instance, there are big supply areas that have purchased their own boxes, which are similar to the ones of ports and ship owners. So, they wash and return the same number of boxes to their suppliers. The advantage is that they sell the fish in the boxes already used into the ship, thus avoiding the handling of fish and the generation of EPS wastes.
- The broken boxes are returned to the initial seller (TEPSA) which even pays for them and recycle them making other plastic elements for non-food use such as pontoons, flower pots, aquaculture devices…In this way the cycle is completely closed in a sustainable manner.

This system is becoming more and more stablished in many ports and for sure it is going to spread to the detriment of the producers of EPS boxes. Nevertheless, there is trouble for these plastic boxes to replace EPS in the supply to the big markets in cities. The big wholesalers located in ports prepare the fish in EPS boxes to supply to other minor wholesalers working in central markets. They send the goods to the retailers and to the Hotel and catering sector and it is difficult to recover the boxes in case they receive the fish in plastic boxes and not in EPS boxes.

This is the major constraint for the use of reusable rigid plastic boxes to spread to the next levels of commercialization and reach the whole value chain. Currently their application is limited to the raw material sector and to the first level of commercialization.

An additional problem arises when certain spot sales in supermarkets along with some retailers demand to their supply platforms or wholesalers –in other words, their suppliers, an amount, which is higher or lower than the capacity of a standard box. For instance, a standard box may contain 15 kg of hake but the retailer/supermarket demands an amount of 7 or 20 kg. Consequently, the supplier despite having received the goods in standard plastic boxes is forced to repack in EPS boxes of different sizes. Additionally, there are certain fish species that need to be classified, gutted and washed –in supply logistics platforms and wholesalers in ports, before the shipment to retailers and supermarkets. This also explains the division in different types of EPS boxes. This situation does not happen in big supply chains or big supermarkets where they sell much bigger amounts.

Apart from the TEPSA case and the implementation of this system in ports, we found the case of companies working with RPCs-Reusable Plastic containers. They are multinational businesses focused on Returnable Transit Packaging (RTP). It is essentially an activity very similar to the one already described. The two major examples of this sector are IFCO https://www.ifco.com/es/ -with a notable presence in fisheries, and LOGIFRUIT within the fruit & vegetable sector https://logifruit.es/.

- They own big amounts of boxes designed by a common standard and color adapted to the requirements of an agri-food sector. They offer the boxes to the big supply chains looking for their support to make all their suppliers use these boxes, in order to achieve a standard leading to many advantages in logistics. The business underling this exchange is a kind of box hiring, very cheap and acceptable for the parties

involved with advantages for all the parties. The RTP companies are in charge of disinfection, replacement, supply and transport of boxes.

- In return, the customer's service is guaranteed wherever it is located. Instead of the customer, the RTP Company purchases the boxes, which means a saving of expenses, space and time. The RTP company manages the whole process from delivery to collection, classification, inspection and disinfection.

Picture 1. Reusable boxes on board a coastal fishing vessel.

Picture 2. Reusable boxes in a fish market.

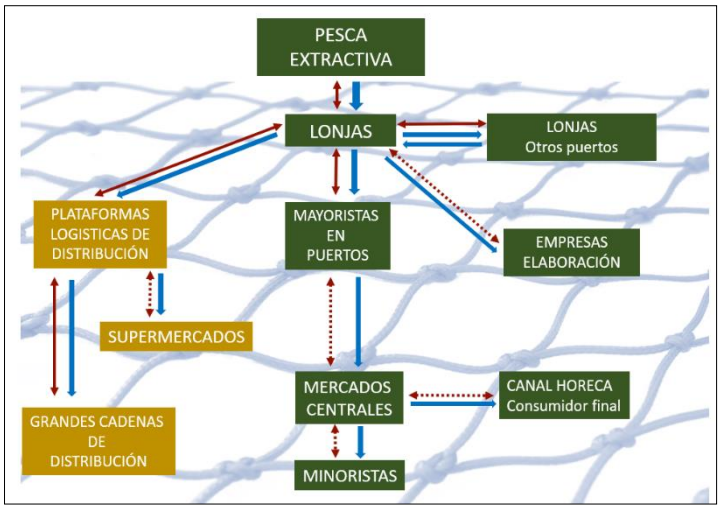
Picture 3. Reusable boxes in pallets for shipment to the market.

Picture 4. Reusable boxes in a supermarket sales spot.

Picture 5. Reusable boxes in logistics supply chains. Preparation of orders

Current comparative flowchart between EPS packaging and reusable boxes

Currently, both systems coexist in the market: the one that supplies the goods in EPS packaging and the one with reusable plastic boxes. However, there are differences regarding their scope and stage of implementation as it is shown in this flowchart (Picture 6). Blue arrows represent the flow followed by the EPS packaging where, in every case, they have only one way because they are not returnable. They are considered single-use packaging.



Picture 6. Comparative flowchart between EPS packaging and reusable plastic boxes

Red arrows represent returnable plastic boxes in those areas where they are implemented. They have double way because they can be used non-stop, after washing and disinfection. Both systems may work simultaneously and exist for the same stakeholders. There seems to be a certain trend towards reusable boxes gaining ground to EPS packaging.

Finally, the dashed red lines represent a possibility still unreal, where the reusable plastic boxes are also established in the exchange of goods between certain stakeholders of the supply chain who now use exclusively EPS.

Conclusions

- These types of reusable and recyclable packaging are not a material alternative to EPS but a logistics system different from EPS's.
- It is fairly implemented in some ports, especially in the North of Sapin and France and it could extend to other European ports in the short term.
- Its natural scope of implementation is in ports _both fish markets and wholesalers, as well as Distribution Platforms and Big Supermarkets. It is unlikely to be used at the level of Central Markets of Big Cities, Retailers, and Food Service Channel, which might represent a limitation for expansion.

- This system reduces the use of EPS packaging, (and not only in the fisheries sector); however, it would be necessary to assess its life cycle compared to the EPS's. That is because although the boxes are more lasting and recyclable, their constant hygiene requires big amounts of water, soaps, energy, etc.