

Case Study: Alternatives to EPS - iTub bulk seafood transport solutions



As plastic use and waste is continually increasing, there is a need to move away from single-use plastics as much as possible, and this includes expanded polystyrene fish boxes, for which alternatives are increasingly available.

Across the global fishing industry, expanded polystyrene (EPS) fish boxes are extensively used as single-use packaging for transportation of fish products, by both wild and farmed fisheries. In the UK alone it is estimated 22 million EPS fish boxes are used each year¹. These boxes offer protection against damage, provide temperature insulation, are low cost and light weight^{1,2}.

However, although these boxes are technically reusable and recyclable, the overwhelming majority are not reused or recycled, ending up in conventional landfill. They are also found as litter in our seas and on our coasts, where they can break down and have negative impacts on the environment and wildlife^{1,2, 3, 4, 5}. In results from the Marine Conservation Society's 2022 Great British Beach Clean, polystyrene and plastic waste was identified as the most common category of marine litter recovered around the UK coast⁶.

In 2021 Fidra published a report examining alternative packaging options to EPS for the transportation of fish produce, including reusable plastic packaging and cardboard fish box options¹.



Figure 1: iTub 460 tub (Image Credit: iTub)



Figure 2: EPS box waste (Image Credit: Fidra)

Re-usable Bulk Packaging

One such alternative is from the Norwegian/Icelandic company iTub. Established in 2010, iTub have developed a reusable, insulated polyethylene bulk transport packaging option for seafood. Bulk transportation of seafood offers greater efficiency, both in cost and transportation when compared to current EPS box options, with iTub estimating a cost saving of 15-20%* though use of large, reusable Polyethylene (PE) tubs instead of EPS boxes.

Furthermore, the use of reusable plastic containers reduces plastic use and CO2 emissions across the lifecycle of the containers, with research indicating CO2 emissions could be reduced by up to 80% through replacing EPS boxes with reusable tubs (pers comm). The average lifespan of reusable plastic containers is seven years, however iTub project that their reusable containers could see up to 15 years of use before retirement and recycling. Research shows that within a few cycles of use, reusable containers offer a lower environmental impact than EPS options, with growing benefit through long term use¹.

**(figure based on seafreight, dependent on route length and backfreight)*

What environmental benefit do bulk transportation options offer over EPS options?

“Manufacturing reusable PE plastic tubs generally requires fewer resources than producing single-use EPS boxes repeatedly. This helps conserve raw materials and energy. By choosing reusable and fully recyclable PE plastic tubs, the (seafood) industry can contribute to resources conservation and a more sustainable use of materials. As environmental regulations become more stringent, industries face increasing pressure to adopt sustainable practices. Choosing reusable, recyclable material align with these regulations trends and demonstrate a commitment to environmental responsibility.”

An Alternative to EPS fish boxes

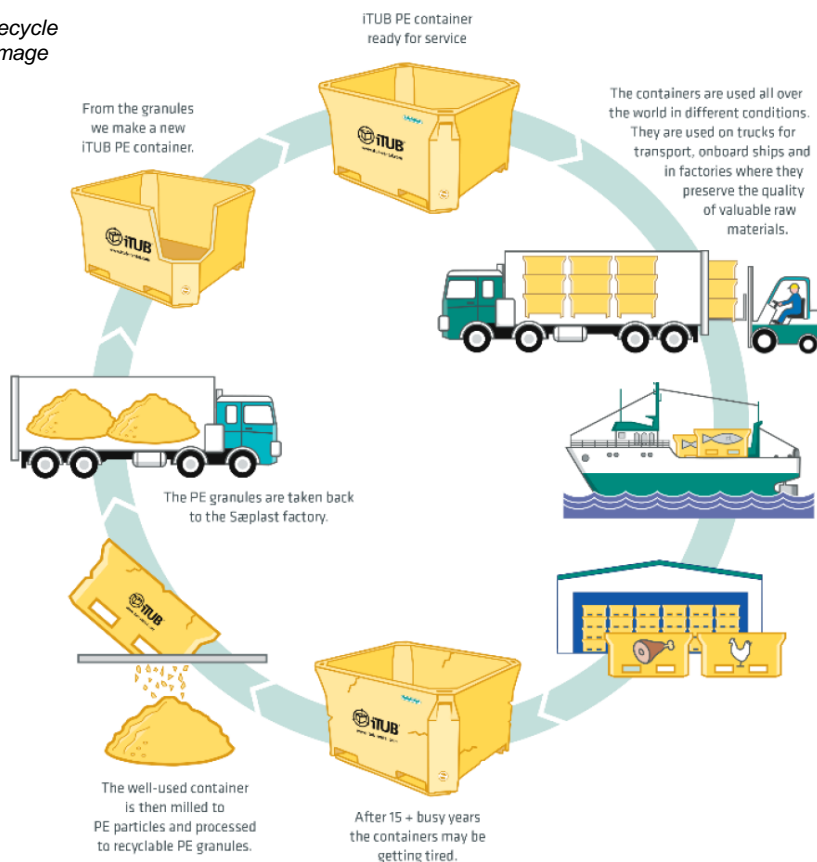
Along with manufacturer Saeplast, iTub have developed their bulk transport containers with the aim of 100% circularity. Containers are shared across users from a pool throughout the supply chain, re-used and repaired; with retired containers recycled to produce insulation for new containers. Through reusing, repairing and recycling of containers, plastic waste is significantly lower than it would be if using single use EPS options¹.

What makes iTub containers circular in their use?

“Adopting a circular economy approach has allowed us to rely less on virgin fossil fuel-based resources to produce the tubs. New tubs are made with 30% recycled plastic material. In addition, the tubs are made with 100% renewable energy... By recycling and reusing plastic, we reduce greenhouse gas emission and energy consumption. As all our tubs are recycled, none end up in landfills.”

“Since inception our tubs have been shared among our customers. This approach maximizes the utilization of the tubs, reduces the need for individual ownership, and extends tubs life cycle through increased usage... This approach not only benefits the environment by reducing waste but also offers economic advantages through cost saving and increased customer loyalty.”

Figure 3: Circular lifecycle of iTub containers (Image Credit: iTub)



Reducing single use plastics in the supply chain

Increasingly industry, suppliers and retailers are looking to reduce the volumes of single-use plastics which are used within supply chains. Sainsburys has for many years utilised reusable bulk containers in conjunction with the supplier Mowi, as have M&S and their supplier Scottish Sea Farms, while Co-op have also worked with suppliers to move away from EPS boxes with a number adopting reusable bulk container options.

Re-usable containers offer a clear step which can be taken with limited adjustment to implement in current supply chain infrastructure. Re-usable containers shared between suppliers is common across many other areas of the food industry and offers long term benefits to cost, efficiency and reduction of environmental impacts over EPS options.

How can iTub help to reduce the use of plastic in supply chains?

“As EPS boxes are single use, you need more plastic to transport fish over time. For example, when transporting 50,000 tons salmon 2000 km (from Iceland to mainland Europe), you’ll need 1,590 tons of plastic when using EPS boxes (22kg box). However, you’ll only need 790 tons of plastic when using a 38kg tub which takes about 200 kg of salmon. As EPS boxes are only single-use, you’ll need 19,090 tons of plastic to transport the 50,000 tons of salmon (over) 12 years. However, when using PE tubs, you only need 790 tons, as the tubs are reusable... Just imagine how much plastic you need when transporting 1.5 million tons from Norway to mainland Europe, as is done today?”

What next?

In 2021 the FAO published the ‘Assessment of agricultural plastics and their sustainability’ report, where EPS was identified as high relative risk to the environment and listed in the top 5 agricultural plastics to have harmful consequences to the environment². The need for alternatives to EPS to be adopted is clear, with retailers and consumers increasingly demanding reduction in plastic use and plastic waste. The solutions are available, but action is needed by the seafood industry and seafood supply chains to address the issue through positive change. More information about the alternatives available to EPS can be found [here](#). Further information on iTub’s reusable container systems can be found [here](#).

References

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