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Environmental Impacts of Fish Products

Danish researchers have quantified the potential environmental impacts at all stages of the life cycle of fish products: from fishing stage through transport, processing, retail, and use phases to post-consumption waste disposal. The obtained results emphasise the need for the promotion of more sustainable fishing methods through fishery regulations.

The new EU Thematic Strategy on Natural Resources recognises the reduction of the negative environmental impacts of natural resources use as a key device for sustainable development in Europe and globally. For all resource sectors, the strategy promotes a life cycle approach that accounts for environmental impacts along the whole extraction-production-use-recycling-waste management chain.

In a recent Danish study, the life cycle approach was used to identify environmental hotspots and processes during the life cycle of the main Danish fish products. The main goal of the study was to provide support for future regulations of resource use in the Danish fishery sector.

The study has focused on the results of a quantitative life cycle assessment (LCA) for flatfish and other typical Danish fish products. The data used for the LCA analysis (catch composition and energy consumption) were based on a sample of 330 vessels representing 99% of the total Danish catches in 2001. For flatfish, the analysis included the assessment of environmental impact potential during fishing, auction, processing, transport, retail, and use of 1 kg of the consumed frozen flatfish filet that corresponds to 3kg of flatfish caught by average fishing methods.

The results of the LCA for flatfish have shown that the fishing stage has the largest environmental impact potential, followed by the retail and use (consumption) stages. For instance, almost a half of the global warming potential, 90% of the ozone depletion potential, around 60% of acidification potential, and practically the entire water ecotoxicity potential are related to fishing activity. This is mainly due to relatively high fuel consumption and significant emissions of biocides from anti-fouling agents.

For the other species, the results show a similar picture, but there have been cases where the processing stage was more damaging from the environmental point of view mainly due to the intensive energy packaging materials.

Although the quantitative LCA does not permit to quantify the impacts on biodiversity, depletion of renewable biotic resources, and human toxicity, it has clearly shown that the energy consumption is a key factor contributing to environmental burden for all the investigated fish products, particularly during the fishing stage. Thus the authors analysed the fuel consumption both as a function of the fishing method and the type of fish species caught.

Their analyses have shown that the consumption of fuel per kg of caught fish can be reduced by a factor of 15 by switching from beam trawl to more sustainable fishing techniques such as the Danish seine. Furthermore, as demersal and shelfish represented the most fuel consuming species compared to small pelagic species, current quota regulations might use this knowledge to adjust to a more sustainable fishing practices.

From a policy perspective, the authors highlight that paradoxically to their findings, the environmental regulations have mainly addressed the fish processing industry. Therefore, they recommend to broaden the perspective of existing fishery regulations and increase the focus on fishing methods and energy consumption during the fishing stage.

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