Life Cycle Assessment on fresh Icelandic cod loins in European markets

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Increased pressure and awareness

- Fresh fish from Iceland traditionally sold in the most demanding markets of Europe

- Wholesalers, retailers and consumers have requested more information on sustainability and environmental impacts

- Those who can provide information on environmental impacts of their products and demonstrate that they are taking these issues seriously, ensure a competitive advantage over other producers
Lessons learned in the past have for example showed that markets can be lost if suppliers are not able to meet new requirements set forth by their customers.

Group of Icelandic researchers and suppliers of fresh Icelandic cod loins carried out Life Cycle Assessment (LCA) within selected value chains, particularly in regards to fresh Icelandic cod products that are sold at markets where sustainable sourcing and mitigating environmental impacts are emphasized.

The results were compared with similar research on competing products and potentials for improvements identified.
Methods

- The results of this project was in the form of Life Cycle Assessment (LCA) where the environmental impacts of one kg of fresh cod loins, ending at wholesalers in the UK and Switzerland, was analysed.

- Data from trawlers, long-liners, processing plants and from different transportation methods was included using the ISO standardized method with a focus on Global Warming Potential (GWP) from the CML impact assessment method.
Vessels assessed

Trawlers

Vessel 1274
Vessel 1629
Vessel 1472

Long-liners

Vessel 1591
Vessel 1527
Vessel 2631
Vessel 2614
Characterized results from vessel 1527 showing the catching, domestic transport and processing phases.
Characterized results from vessel 1527 showing the catching, domestic transport, processing and international transport to the U.K by sea phases.
Characterized results from vessel 1527 showing the catching, domestic transport, processing and international transport to the U.K by air phases.
Results

Carbon footprint of the catching, domestic transport, processing and international transport to the U.K by air phases. Presented in kg CO$_2$/kg product
Comparison of carbon footprint of the catching phase between the vessels assessed. Presented in kg CO₂/kg product
Comparison of the carbon footprint of different transport modes.
Comparison with other studies

Comparison of carbon footprint from various studies; Norwegian farmed salmon from Ytrestøyl et al. (2010). Norwegian cod from Winther et al. (2009). Presented in kg CO₂/kg product.
Conclusions

- Fishing method has considerable impact on carbon footprint values
- Results show and confirm that transporting via air has huge environmental impacts compared to sea and road transport
  - Understandable up to a point, that buyers and consumers choose to transport fresh products via air freight due to much shorter travel times
  - Recent study by Matís showed that by transporting fresh fish in a ship, the freshness of the fish holds for 11 days, compared to 9 days via air, due to better temperature control. Should make this an interesting option with updated technology and methods of storing and cooling
Conclusions

- Most of the environmental impacts from the processing phase came from the production of packaging material. Study showed that by using reusable containers to transport fish products, the overall carbon footprint could decrease dramatically.

- When comparing the results with other similar results for competing products, it is evident that fresh Icelandic cod loins have moderate CO₂ emissions.
Discussions

The variation in carbon footprint between the vessels assessed can be traced to a number of important factors:

- Fishing methods
- Differences in fuel efficiency - from 328 liters/ton down to 70 liters/ton in this study
- Distance travelled to fishing grounds
- Quota possession and composition
- Health and management of fish stocks
- Engine and ship type
- Two new trawlers are being built which replace two assessed in this study, who should consume 50% less fuel
Acknowledgements

Thank you

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