

Notat

SUSTAINABLE INNOVATION

T0:	EU Fishery Administration
Kopi:	Norwegian Ministry of Fishery
Fra:	Ole Jørgen Hanssen, Erik Svanes and Mie Vold (Ostfold Research), Morten Sivertsvik and Bjørn-Tore Rotamo (Nofima Norconserv), Øystein Gran Larsen (Trace Tracker), Christian Hedløy-Engh (Mustad Longline AS) and Rolf Domstein and Bengt Gunnarsson Domstein Fish AS
Dato:	30.12.2009



Input to "Green Paper for Fishery in the EU" from the R&D project "Fish quality from seafloor to consumer – the B2M-project"

1. Background

The EU Commission has announced development of a new Common Fisheries Policy which will be implemented from 2012. With its release of the Green Paper in spring 2009, the commission initiated a process of broad data collection from different stakeholders within the EU (and EFTA). The fishing industry as well as academia has been asked to post its opinions and research based information by 31.12.09

2. Brief presentation of the R&D Project "Fish Quality from seafloor to consumer – B2M-project"

The B2M-project was established in January 2006, and has been carried out over a three year period ending in December 2009. The project has been organized with a project group consisting of Research Institutes Ostfold Research (project manager and responsible for Life Cycle Assessment (LCA) and environmental declarations of cod from long line fishing) and Nofima Norconserv (responsible for studies of fish welfare and fish quality) as well as companies Trace Tracker (responsible for developing tracing systems), Domstein Fish (leading sea food producer in Europe) and Mustad Longlines AS (project owner and leading producer of long line fishing equipment and technology globally). The project has been financed by the Norwegian Research Council (BIA program) and participating companies. The main deliveries from the project have been conference papers and scientific reports and papers in journals with review within the areas

summarized below and in the list of references. More information about the project is available on www.longlinefishing.com. (foreløpig ikke oppe!! beta.longlinefishing.com virker)

3. Environmental performance of long line fishery

In the project, in-depth LCA studies have been carried out for specific long-line fishing value chains from fishery (Ocean-based and Coastal) via processing, packing and distribution, to the retail shops. The results have been compared with products from other fishing methods, especially trawling. It has been documented significant lower energy use and emissions of climate gas emissions from the long line fishing products studied in this project compared with other fishing methods (Svanes et al Environmental sustainability of Cod (*Gadus morhua*) from autoline fisheries. in prep., Svanes et al. Effect of different allocation methods on LCA on products from wild-caught fish. in prep.).

Table 1. Environmental impact of fishery of cod of the North East Arctic stock ("skrei").

Fishing method	Energy consumption (l fuel pr kg whole fish caught)	GHG emissions (kg CO ₂ -eq pr kg whole fish caught)
Autoline fishing (this project)	0,29	0,92
Bottom trawling (average, several studies)	0,43	1,38

In addition, long line fishing has documented lower impacts on the bottom flora and fauna than trawling (Huse et al: "Fishing activity and ecosystem effects". Presentation at 3rd workshop on Life Cycle Assessment of Seafood, published in IFL Project Report 28-03.). Through Select Fish and new angling systems, there have also been documented lower side-catches of other fish species like Haddock (calculations by E. Svanes, not published yet) making long line fishery a more sustainable fishing method for the future.

Based on the project results, future regulations and instruments of European fishery should secure the competitiveness of long line fishing as a sustainable fishing method.

4. Fish welfare in long line fishery

In the project, there have been done controlled tests of the stress levels in Saithe (*Pollachius virens*) with different catching methods (longline, hook and line). Blood analyses immediately after catch revealed longlining to stress the fish more than hook and line, however the stress level did not influence the quality of the flesh. From commercial standpoint longline fishing is preferable on the basis of food safety and quality considerations.

A broad comparison among the commercial fishing methods (incl trawling and longlining) on wild fish welfare and stress levels should be carried out on European level.

5. Fish quality of cod from long line fishery

The B2M-project has done controlled tests of well established quality parameters on cod (*Gadus morhua*) from trawling and long-line fishing. The fish was taken on the same day in the same area outside Finnmark in north-east Norway, and was of comparable size. Both catchments were immediately prepared and frozen in the fishing boat. Cod from both catchments were thawed in parallel at Nofima in Stavanger, and the quality of both longlined and trawled cod was controlled at

the time of thawing and after one week of iced storage. There were highly significant differences in favour of the longlined cod in all physical and chemical quality parameters, as well as smell and colour, compared to the trawled cod. Microbial quality was not different indicating the catching method, and not handling and hygiene level, was the cause of the observed differences.

There were also done quality blind tests by professional chefs at the Culinary Institute of Norway, judging the longlined cod to be twice the quality of trawled cod.

Although the results are not from a large sample of fishes from different areas and seasons, the results indicate significant differences in quality of the fish between trawling and long-line fishing.

6. Experiences with integrating eco-labeling (KRAV), sustainable resource declarations (MSC) and environmental declarations

In the project, Domstein Fish has worked with developing their fishing activities to be able to fulfill requirements defined in the Swedish Eco-labeling scheme KRAV, the international sustainable fish stock management scheme (MSC) and environmental declarations based in LCA studies. This has been achieved during the project, and all Domstein Fish products sold in Sweden and Norway has a specific environmental guarantee (see the Figure below). It has been possible to fulfill all requirements in the declaration schemes, with products that are very competitive in the market (see below).

The results and experiences from the project should be a good basis for further development of internationally accepted systems for environmental declarations of sea food products.

7. Tracing system for wild fished cod

In the project, TraceTracker who is a leading company in development of tracing systems for sea food, has developed a pilot version of a tracing system for wild white fish (ref). The system is a basis for communicating key information about the total quality of each fish product. Domstein Fish has data available for which boat that has taken the fish, the position of the boat and how much is has taken of its quota. Further information has been gathered from the project, especially data about sustainable stocks, KRAV-requirements, energy use and emission data along the whole value chain. Also data about general fish welfare data and physical, chemical and microbiological data for long line fished cod is available in the system. A pilot version of the system will be available on <http://bunntilmunn.globaltraceability.net>.

The project results can be a good basis for further work with a common European technology platform for tracing systems for wild fish.

8. Select Fish – new and more effective technologies for long line fishing

Mustad's Autoline technology made a revolution in longline fishing during the '70's and '80's and since then more than 700 industrial vessels world-wide have organized their fishing operations around this system.

As a integrated part of the B2M-project, Mustad Longline has developed an entirely new technological platform which is particularly targeting a much larger part of the global longline fleet. The new system, Select Fish, is much more flexible than the existing Autoline system and targets both coastal and deep-sea fisheries. The system has fewer limitations with regards to space on vessel, gear to be used and species to be targeted than any other longline technology. It can also

easily be combined with other fishing methods seasonally. Prototype tests done in Lofoten (Northern Norway) have shown that cost of operation can be reduced by 50% by using the Select Fish system (fuel, baiting, bait, gear,) combined with improved catch ratio' resulting from always having fresh bait on the hooks. Under certain conditions, reduced manpower for the actual baiting operation is an additional cost saving.

Mustad has during the project period also executed a project together with the Spanish port of Celeiro (Galicia) with the objective to rationalize its operation on its longline fleet based on the same Select Fish technology. The initial project, which was granted Eureka status, was temporarily stopped in end 2008, but will again commence in early 2010. Both Celeiro Port Management as well as Mustad Longline see an attainable success within reach, and thus making a case in modernizing many of the EU's traditional fisheries (see www.mustad-autoline.com).

Auto line systems and Select Fish have been developed to make the line fishing fleet more efficient with respect to yield per cost unit and avoidance of by-catches, and will be available for the whole European fish sector.

9. Market responses to sustainable, high quality long line fished cod – experiences from Sweden

The line fished cod with environmental guarantee from Domstein Fish has been a success among consumers in Sweden. Since the declared products have appeared in the shops one year ago, they have been much focused by the responsible retail company, and the turnover has increased with 55% compared to earlier versions of the products. As all the actions taken by the involved companies have been voluntary without any specific regulations, it is very interesting to see the positive response in the market. The market growth is a good indication that sustainable fishing and long line fishing especially, will be preferred in the market if the documentation is made explicit and understandable. Information about the environmental guarantee given by Domstein Fish for all their products in the Swedish and Norwegian market can be found on www.domstein.com

The experiences and technological platforms developed through the project should be used as a basis for further development of international standards.

10. Governmental instruments to make the producer responsibility function

As the project B2M has not focused on regulatory systems and fishery policy, we will not go into detail on this point. However, it is important that all types of regulatory and incentive measures that are implemented for the European fishery sector, makes it easier to develop and implement sustainable fishing methods and technologies. Both regulations and economic incentives should favor long line fishing and other fishing methods that are able to document high level of sustainability with respect to fish stock management, effectiveness in relation to yield, efficiency in relation to energy consumption and emissions and preservation of quality throughout the whole value chain. Governmental programs should make it possible to further develop the fish processing industry towards effective production and distribution systems for this type of "distributed fishery". Programs should also be further developed to have common European platforms for documentation of sustainability of fish products, with third party verification and revision. Proactive companies all along the value chain should be encouraged to develop and

implement such systems, to make market actors an important driving force for sustainable, high quality fish products.

International and national regulations, policy instruments and economic measures should be used to promote sustainable fishing methods, effective processing and distribution and effective value chain processes between market actors.

11. Concluding remarks

The B2M-project has shown through a number of analyses and tests, and through development of new technologies for long line fishing and tracing systems, that long line fishing is among the best fishing methods, both regarding selectivity in fishing, energy efficiency and climate gas emissions in fishing and preservation of fish quality over the entire value chain to the consumer. This should be an important basis for further development of the European Fishing Policy, making regulations and instruments favorable for the long line fishing. There are still issues for improvements in several areas, and the new CFP should also have clear incentives for those companies who are among the most proactive and innovative. The B2M project will hopefully contribute with knowledge and experiences in the further development of the European Fishery Politics in the future. Please contact one of the persons below for further information:

Managing Director Christian Hedløv-Eng, Mustad Longline Email:

Christian.hedlov.engh@mustad.no; phone 0047 97097350

Managing Director Rolf Domstein, Domstein Fish, Email: rolf.domstein@domstein.no;
phone: 0047 5785 90 00

Project Manager Dr. techn. Ole Jørgen Hanssen, Ostfold Research Email:

ojh@ostfoldforskning.no ; phone: +47 90727977