

Dear Commissioner Damanaki, dear participants, dear colleagues.

Thank you for interesting speeches. The discards issue is very important, and I fully support the commissioner's message in her introduction.

I am Vegar Johansen, the Research Director of Fisheries technology in SINTEF, the largest independent Norwegian research institution focusing on technology development for the industry. We are more than one hundred scientists working on technology for seafood production, including more than twenty on fisheries technology development.

Referring to recent research, for instance a study of Johnsen and Eliassen in the scientific journal *Marine Policy*, several experiences should be noticed from the Nordic countries. The Nordic countries have to some extent succeeded in the avoidance of discards in fisheries. However, a significant challenge like mixed fisheries is much less in the northern Europe than further south, making discard control easier.

I am going to make three central points here. One is regarding the regulatory framework, the second concerns the technical measures that need to be implemented in order to avoid discards, and the third is about a central success criterion for introducing the measurements.

First, the most important lesson learnt in the Nordic countries regarding discard is introducing the ban of discard. This is outmost important, and needs to be combined with systems for control and enforcement with legal mandates to act if the rules are violated. Hence, the regulative pillar for management needs to be strong and clear to the fishers. The system needs to somehow account for bycatch that is unavoidable in most European fisheries due to the nature of mixed fish stocks. Scientific analyses on different experiences are available. The accommodation of a new regulatory regime should target a change in norms and values for the fisher-men. Catch of wrong species and small fish on a particular fishing ground should not be an opportunity to economic benefit, but rather a reason for exiting the fishing activity and report the occurrence to colleagues and the governmental jurisdictions. This mentality is well established in the Nordic countries.

The second point is about technical regulations for discard reduction. Representing the research institution SINTEF, we may claim to have some experience on this issue. Fish selectivity devices or special fishing gear design for reduction of bycatch has indeed been successfully developed and introduced in Norwegian fisheries. Devices for both avoiding non-targeted species and small fish has proven their ability to contribute to reduce bycatch for decades, and the Norwegian Fisheries directorate has even stated that such devices has been vital to save the Barents sea.

Although research on mesh sizes, net panels and other sorting devices have been focused for many years, the potential for further improvement on this topic is still high. The audience here seems to agree on that. However, technology has evolved rapidly, and systems for in situ measurements of targeted fish may for instance quite easily be developed with a potential for reducing bycatch and fish discards. Unwanted fish should be avoided or sorted out before it is trapped in the fishing gear. Several other enabling technologies should also be considered here. This includes development of smaller and actively

maneuvered gear, and use of new nano technology for development of gill net materials that will reduce the presence of ghost fishing.

It is not only net-based fishing gear that should be focused in development of technical measures for discard reduction. A lot of work remains on selectivity in longlining, regarding technical gear design, targeted baits and the operation and technology for the gear hauling process.

Technical design of fishing vessel has not been subject to significant research for discard reduction. However, proper design of vessels and onboard fish handling processes may contribute to safer working conditions in harsh weather conditions and better fish quality. Both are measures influencing on the discard issue.

My third and last point is about an important criterion for successful implementation of measures for discard reduction. The fisher-men have to be involved in the development of regulative and technical measures. So, this meeting is a good start. For sure, technical measures may be implemented by rules, but preferred code of conduct has to be learned and accepted by the fishers. Thus, knowledge on handling new technology and consequences on violating governmental regulations should be developed in cooperation with the fisher-men. A facility like the SINTEF flumetank in Denmark, Hirtshals, is well suited for demonstrations and information on new technical concepts and such.

SINTEF, as a research organization, is dedicated to developing technology that may contribute to reduced discards in the EU. It will be challenging, but we are ready to face this in the context of our expertise - which is the development of technological solutions for the problem at hand.

Thank you for the attention.

Vegar Johansen