

The next step in sustainability

Since 1 January 2015, European fisheries have been considering the ramifications of a *landing obligation*. Under this new regime, fishing vessels will have to land all catches – commercial and bycatch – of fish species that are subject to a (catch) quota. Until recently, bycatch (*discards*) was thrown back. Most discards were undersized fish, fish caught ‘in excess of the quota,’ or fish with no commercial value for the fisherman. Some discards that are thrown back into the sea survive, but others don’t. In 2013, the European Commission, the European Council and the European Parliament decided that this was ‘wastage’. It could also deplete the fish stocks, so it had to be gradually reduced to zero. Since 1 January 2015, some European fisheries sectors have been obliged to land discards, which are then processed onshore into fish meal and other products. The landing obligation has prompted the fishing industry to take steps to minimise bycatch and mortality by developing innovative and more sophisticated fishing and processing techniques.

In *demersal fisheries* in the Netherlands, where the bycatch consists mainly of flatfish, the landing obligation will be phased in between 2016 and 2019. In the *pelagic sector*, it entered into effect on 1 January 2015, e.g. herring and mackerel.

Introduction of the landing obligation in the Netherlands

The *Cooperative Fisheries Organisation* (CVO) has set up seven projects with the aim of making the landing obligation *realisable*, *acceptable* and *enforceable*. All these projects are co-funded by the European Fisheries Fund (EFF). The research questions, the aim of each project and the current status are discussed below. The conclusion may eventually be that the sector needs more time to introduce the landing obligation and/or that certain parts cannot be implemented and enforced.

1 Net innovations

How can the nets for demersal fishing be improved so that fewer discards are caught? In other words: how can we fish more selectively?

Experience gained from various practical tests indicate that in small steps, improvements regarding selectivity are realised. However, the investments required are high. In addition, there are huge differences between sole, plaice, and other demersal fisheries. The landing obligation for single-species sole-fishing using 80-mm mesh starts on 1 January 2016, so a solution must be found soon for the bycatch of undersized dab and plaice. It has also become clear in the meantime that the net innovation project is unlikely to deliver the overall solution. We therefore plan to conduct several practical tests in 2015, which will underpin the request for partial exemption from the landing obligation on the basis of the *de minimus* rule. The net innovation project is, however, expected to deliver a solution in the foreseeable future for single-species plaice-fishing, which is subject to the landing obligation from 1 January 2016. Given the financial resources and the date of introduction (1 January 2019), we decided against a targeted, large-scale study for dab at present. There is a separate project for langoustines (see project 4).

2 Showing the survival chances

Is it possible to show via scientific research that the survival chances of sole, plaice and dab are already high or can be significantly improved?



The aim of this project is to provide insight into the survival of discards in demersal fisheries in the Netherlands. We use specially developed survival tanks, first on board, and later in the laboratory, to monitor the mortality of sole, plaice and dab discards. Initial results indicate survival rates of 18%, 35% and 15% respectively, but the survival rates depend on a great many factors. Beside the tanks, we are also developing a ‘reflex’ method to establish a link between the presence or absence of reflexes and survival. Eventually, the reflex method will enable us to determine discard survival rates for various types of fishery at a low cost.

3 Improving the processing line

What adaptations to the processing line on board could improve the survival chances of the bycatch?

Once the baseline values have been set by project 2 (Showing the survival chances), we will test the different adaptations in the processing line to identify potential improvements in the survival chance of discards. Initial results show that the potential for enhancing survival is greatest for plaice (achieved through changes in the processing line). The ultimate ambition of the sector is 50% survival rates. Adaptations that are shown to improve survival rates will be phased in gradually. Eventually, this may mean that certain species of fish or certain fisheries may not be subject to the landing obligation.

4 Sectoral and chain integration in the approach to langoustines

How can improved nets reduce the bycatch in langoustine fishing?

Initial studies have suggested that net innovation will not bring about significant discard reductions in langoustine fishing. Adaptations to the mesh are limited by the characteristic long, thin shape of the langoustine, making a bycatch of plaice and dab virtually unavoidable. A literature search has further revealed that, because of the limited storage space on board (small vessels), langoustine fishing will have no future if all the

discards have to be landed. It would mean that ships could fish for just two or three days before having to return to harbour and unload. That would cause serious disruption as langoustines are usually fished in areas far from the coast. Despite the disappointing initial results, we will again be testing adapted nets in the months ahead. We will seek contact with Scotland, which has a relatively large langoustine fleet. This project will also determine the economically impact of the implementation of the landing obligation for the langoustine fishing.

5 Camera monitoring on board

How can adherence to the landing obligation be monitored on board demersal fishing vessels?

We can mount on-board cameras at places where the catch is hauled in and processed to find out if we can compile an inventory of the catch. Results so far indicate that it is difficult to distinguish flatfish species in demersal fishing with camera images. However, round fish species such as cod and haddock can be distinguished. The research must also clearly show whether camera surveillance on board is the best means of (co-) enforcing the landing obligation.

6 Demersal discard processing

How high will the volume of discards be if demersal fishing continues in the same way? How is this volume distributed across species, harbours and seasons? And what will happen if we switch to alternative fishing techniques?



Apart from the demand side this project explores the supply: How do we ensure the best possible yield? We primarily explore opportunities in the market, by tapping into existing sales opportunities, and, to a lesser extent, by developing (new) markets. The main reason is that many players are already processing by-products. Important factors are time (between now and the introduction of the landing obligation) and money (investments in processing capacity).

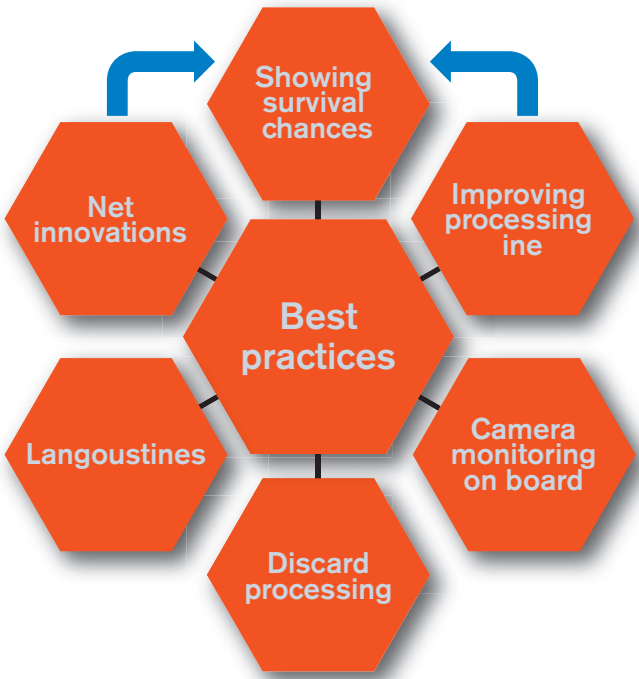
Findings so far:

- Under current practice approximately 50,000 tons of discards per year would be landed by Dutch demersal fisheries.
- Improved selectivity and changes to behaviour (e.g. variation in locations) will significantly reduce the annual volume of discards landed by the Dutch demersal fleet.

- Plaice and dab account for over 80% of discards.
- Approximately 70% of discards come from single-species sole-fishing with 80-mm nets.
- The quality of the landed discards was good, even though the time interval between catch and processing was approximately nine days.
- The oil and fat content is very low.
- The protein content in discards is high: 70% compared with 60% in fish waste.
- There are four options for processing discards: fish meal, pet food (wet) & mink feed, functional proteins and silage.
- It seems impossible to run a fish meal factory at a profit in the Netherlands. At least 100,000 tons of discards or by-products would be needed.
- The income from fish meal is nowhere near sufficient to cover the costs of processing discards on board and onshore.

7 Best practices

The data from the above-mentioned projects will form the basis for a broad economic study. This part of the research will show the extent to which innovations relating to the landing obligation are *realisable*, *acceptable* and *enforceable*. The first results of this research are expected in the course of 2015.



PROJECT TIMELINE

July 2015 – Camera monitoring on board

August 2015 – Demersal discard processing

September 2015 – Showing the survival chances

September 2015 – Sectoral and chain integration in the approach to langoustines

October 2015 – Improving the processing line

November 2015 – Net innovations

December 2015 – Best practices

Colophon

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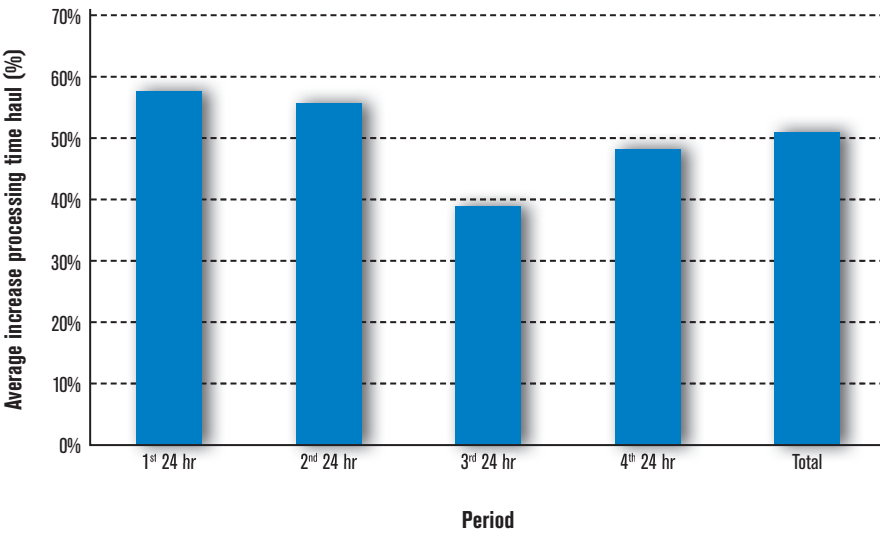
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What does the Dutch demersal fishing fleet think?

Facts and Figures

The Dutch demersal fishing fleet, collectively organised in the *Cooperative Fisheries Organisation (CVO)*, fully endorses the European desire to reduce the volume of discards, since the sector also has a lot to gain from less bycatch and more sustainable management of the fish stocks. However, the landing obligation in its present form is far too stringent. It generates extra work and additional costs for the fishers and is difficult to implement in practice. Selectivity – for example, via adaptations to nets to reduce bycatch – is technically complex, and discard processing is extremely time-consuming. Extra crew is needed on board to ensure compliance with work and rest regulations, but there is no increase in the commercial catches. In short, the crew has to work harder for less money.

Extra labour on board



Research has also revealed that some vessels do not have enough loading capacity for all the discards. Finally, the impact onshore is considerable. The yield from fish meal, for example, nowhere near covers the logistical costs of sorting and transportation to processing plants.

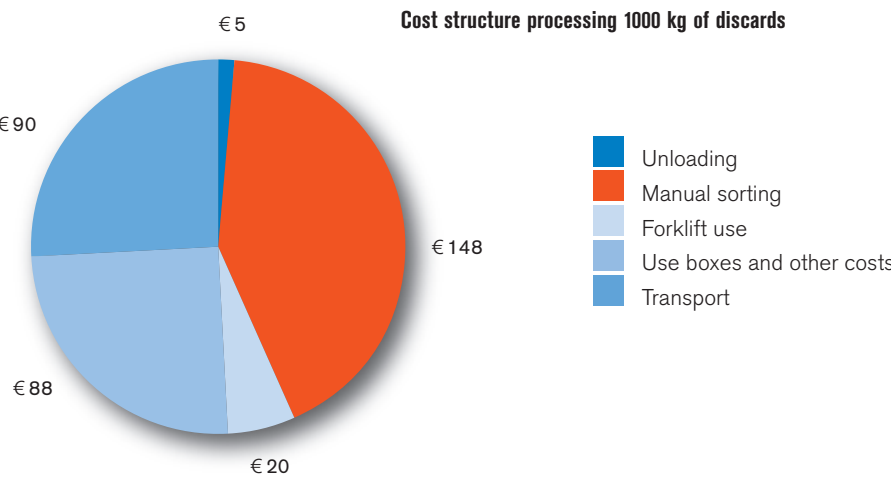
Measures already adopted in the Netherlands

Before the issue of a landing obligation was even raised, the Dutch fisheries were taking steps to make the sector more sustainable.

Reorganisation programmes succeeded in halving the number of used kilowatt days (kW days) in the Dutch fishing fleet between 1990 and 2014. By better matching the fleet with the size of the fish stocks, fishing pressure eased, which has had positive effects on stock sizes.

In addition, Dutch fishers have been experimenting with alternative, sustainable fishing gear for many years, electric pulse fishing being a classic case in point. The traditional beam trawling technique works with tickler chains which drive flatfish from the seabed into the nets. These chains disturb the seabed and generate relatively high volumes of

Extra costs ashore



The CVO wants to reach agreement with as many involved organisations and stakeholders as possible on a landing obligation which is *realisable*, *acceptable* and *enforceable*. The landing obligation is a means to an end, not an end in itself, and forms thus part of a larger raft of proposals to improve sustainability in the Dutch demersal fishing fleet.

The CVO has joined forces with researchers, government agencies and fishers to address the situation. Seven projects have been started with a view to:

- improving fishing techniques in a way that will reduce bycatch (more selective fishing);
- measuring effectively the volume and survival of bycatch (mostly guesswork so far);
- improving the survival of bycatch (adaptations to the processing line);
- keeping the processing costs of the remaining bycatch as low as possible; i.e. find a way to mitigate the negative impact of the landing obligation on the income of the fleet.

On the other side of this leaflet we show you how we worked this out.

bycatch. In pulse fishing, however, tickler chains are replaced by towlines which emit electric pulses of approximately 10 volts. The impact on the seabed is less dramatic and the bycatches of unwanted species are much smaller. Fuel consumption is also greatly reduced. Landing quantities are slightly lower but the quality is excellent, so the fish sells for a higher price. Possibly the most important effect for the landing obligation is that small fish respond less to electric pulses than big fish, so fewer undersized fish end up in the nets. The bycatch is more likely to escape alive (if thrown back) and up to 50% less benthos, including crabs and starfish, are caught.

Fishing with electricity is not allowed in Europe. Since 2007, a limited number of fishers have been granted temporary exemption in the southern North Sea in the interests of research and development.

The introduction of a landing obligation in the Dutch demersal fleet

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