

Case Study Report, Task 7.3

Synthesis and suggestions for Discard Mitigation Strategies by case study

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Case Study: Bay of Biscay

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1 What has been going on in this case study during the last 12 months?

The development of the Delegated Regulations related to the Landing Obligation (LO) adopted by the Commission and how they should and have actually been implemented in the area have been closely followed. Discussions with relevant authorities and stakeholders affected by the LO have occurred along the year.

1.1 Important changes in stock development, discard data and ecosystem

No major changes were observed in stocks, discard data or ecosystem since the implementation of the LO on some species.

The main source of information and data of species, discards and ecosystem aspects in the study area is the International Council for the Exploration of the Sea (ICES) and also the databases of the institutes involved (AZTI, IFREMER and Agrocampus). Annual advice sheets published by ICES¹ are also used, along with the new Ecosystem Overviews published in 2016 for the Bay of Biscay and the Iberian Coast ecoregion².

1.2 Important changes in terms of fisheries and stakeholders perception

- The LO has been applied to the trawling fisheries operating in the Bay of Biscay in 2016. By March 2017, no changes in the fisheries have been observed yet.
- No major change on the fishers perception towards the LO was observed.

1.3 Important changes in management

During 2014 and 2015, Member State (MS) individually and collectively by region have elaborated a number of reports to base and require exemption to the landing obligation for some of the main fisheries targeting pelagic species (2015) and Hake, Sole and Nephrops (2016). These scientific reports, in which the causes for exemption or requirements for *de minimis* have been argued, for each of the fisheries have been presented annually in June 2015 to STECF for scientific assessment.

Base on these assessments, exemptions to the landing obligation have been applied to some fisheries. These fisheries and target species along with their exemptions are included in the annual delegated regulation published in December 2014 and 2015 (EU 2015/2439).

¹ <http://www.ices.dk/community/advisory-process/Pages/Latest-Advice.aspx>

² http://www.ices.dk/sites/pub/Publication%20Reports/Advice/2016/2016/Bay_of_Biscay_and_the%20Iberian%20Coast%20Ecoregion%20-Ecosystem%20overview.pdf

Apart from these, South Western Waters Advisory Council (SWW AC) has also summarised and explained its position in relation to the Landing Obligation, possible consequences in the industry and difficulty of implementation by the fishermen in recommendation 95 produced in May 2015. The main issue and focus has been the phased implementation of the landing obligation and the need for better definitions of the fisheries (<http://cc-sud.eu/images/img-ccs/avis/avis-2014-2015/95-obligation-de-debarquement-2016/Avis95-LandingObligation-2016-EN.pdf>).

In general, there has been cooperation between Member States groups (MS) and Advisory Councils (ACs), on the landing obligation issue and the deployment of reports. SWW AC Members have been also involved in both the technical and high level works of the MS group. Cooperation allowed a better definition of the fisheries and dialogue on exemptions.

Thus, the exemptions and *de minimis* defined in the regulation in relation to the landing obligation have been the main important management changes in the last 4 years. The application of this *de minimis* exemption along with the low enforcement level of the regulation during the last year can help to explain that no changes in stocks development, discards data and ecosystem aspects have been found in the study area.

Additionally, any 'new' species has been included in the list of species affected by the LO, as expected. Long discussions have occurred along the year, but no political decisions have been taken yet.

2 The Year behind us (2016-2017): What has DiscardLess produced in this case study during the last 12 months?

The work developed during these last 12 months in the Bay of Biscay Case Study (BoB CS) has been focused in four main tasks:

- Modelling activities have continued aiming at assessing the potential effects of the 'real' implementation of the LO both at an ecosystem and fisheries scale. Other more 'theoretical' scenarios have also been simulated aiming at getting a common framework for all CS in the project. These works have been carried out using the two ecosystem models built in Ecopath with Ecosim (EwE) and the bio-economic Impact Assessment model (FLBEIA) that are already available in the study area.
The new module produced for properly handling discards in EwE is being tested in the BoB CS, along with the Azores CS. Positive results have been obtained by now and the module is expected to be available for the whole EwE community in the project during the second half of this year (2017).
A new visualization tool has been created aiming at increasing the dissemination of the results obtained for the simulated scenarios with FLBEIA.
- Most suitable uses or valorisation alternatives for the unavoidable unwanted catches (UUC) have been evaluated, gathering the most important factors that may influence the technical and economic viability of each option. A systematic and simplified methodology for the selection of the best option has been established, methodology that has been applied for the BoB CS aiming to determine the best approach for the adaptation to the LO and the inland management of UUC.

- Attendance to workshops and roundtables with relevant authorities and stakeholders where the implementation of the LO and the potential consequences both at sea and in land have been discussed.

With all these all the deliverables and milestones scheduled for this second year of the project have been completed. In WP1, WP2 and WP4 new deliverables have not been produced in which partners from this CS were involved, but contributions to different MS have been sent. The group has also contribute to D3.2, D5.2 and D5.4, that were submitted during this last year.

Additionally several works have already been submitted to different scientific journals. Some of these works are already published (see below).

2.1 Impact assessments

2.1.1 Ecosystem scale

The two EwE models in the study area have been re-parametrized aiming at assessing how the implementation of the LO affects the different biological components of this ecosystem.

The Ecopath model built by Andonegi et al., has been balanced for the first year of the simulations (1996) and the Ecosim model has been fitted to observed time series data for the period in 1996-2013. Both initial and alternative assessment scenarios have been simulated forward, using future fishing mortalities calculated in WP2 (see Prelezo et al. 2016), resulting in not very big changes at an ecosystem level in any of the scenarios, but significant ones for some of the species. But this work is still in progress.

All these results have been included in a manuscript to be submitted soon.

Andonegi, E. and Prelezo, R. In preparation. Ecosystem response to changes in fishing activity: An analysis of the consequences of the landing obligation in the Bay of Biscay.

Agrocampus has also continue working with their previous EwE model (Bentorcha et al., 2017; Moullec et al. 2017), that was modified in order to allow for simulation of the landing obligation. In particular, the share between landing and discard was specified for every fleet.

Additionally, new discard mitigation scenarios have been produced with the two models, scenarios that have been consensuated by the whole DiscardLess WP1team. These scenarios, in which fishing pressure (F) is considered to be constant, are shown in the table below:

Scenarios	Fsim	Landings	Discards
1 Discard as Usual (BL)	Fcur	Fcur-lan	Fcur-dis
2 No discards	Fcur	Fcur-lan + Fcur-dis	0
3 No Discards and Selectivity	Fcur-lan	Fcur-lan	0
4 Landing Obligation	For quota species Fcur	Fcur-lan + Fcur-dis	0
	For others Fcur	Fcur-lan	Fcur-dis
5 Landing Obligation and Sel	For quota species Fcur-lan	Fcur-lan	0
	For others Fcur	Fcur-lan	Fcur-dis

Fcur: Fcurrent, Fcur-lan: proportion of the total F due to landings, Fcur-dis: proportion of the total F due to discards

This is in a work-in-progress state yet, but some preliminary results will be shown in the next AMEMR symposium by the WP1 leader.

2.1.2 Fishery scale

The FLBEIA model has been parametrized aiming at assessing potential effects that the implementation of the LO might cause at a fishery scale.

Both initial and alternative assessment scenarios have been forward simulated, getting some interesting results that have also been used for projections in WP1.

A manuscript has been already published where all these developments are detailed:

Prellezo R., Carmona, I., Garcia, D. (2016). The bad, the good and the very good of the Landing Obligation implementation in the Bay of Biscay: A case study of Basque trawlers. Fisheries Research 181 (2016) 172–185.

Additionally, a set of scenarios have been simulated following the outcomes of a workshop (see also subsection 2.2.), in which the possible management measures to adapt the fleet to the implementation of the LO were discussed.

From the interaction with stakeholder the following interactive program was prepared <https://aztigps.shinyapps.io/stecfbobdem/>, (password: Discardless) where results of applying different management measures and/or fishing tactics can be explored.

2.2 Avoiding unwanted catches: fishing strategies

As mentioned in the previous section, a workshop was conducted with different skippers in order to see which were the likely measures to adapt the fleet (including fishing tactics and management) to the introduction of the landing obligation. The main conclusion was that improvements have to be based on increased selectivity, however they do not like to do any kind of investment without knowing that first the selectivity tool works and second that at least they not loose from applying it. In that sense the main indicator was to contrast the social gain (if there is) in terms of the value added with the private profits, with and without the improved selectivity.

Results of this workshop has been translated to a simulation exercise, in where the main conclusion was that no private incentives for increasing the minimum mesh size were obtained. However, this conclusion cannot be necessarily extrapolated to other areas or to other fleets. Other case-specific studies must be conducted to reach a detailed understanding of the subject. The lack of private incentives should not discourage the society from supporting the increase in the selective fishing activities. From the social perspective, there is room for incentives that increase the selectivity of the gear, at least in the fleet analysed here. These incentives can be created by penalising the lower selectivity or rewarding (for example, with a higher quota or effort possibilities) the use of a more selective gear.

In this simulation, constraints arising from the LO such as the storage space or possibilities of selling the catches that cannot be directed sold to human consumptions were considered, without any change in the conclusions obtained.

The scientific results have been accepted for publication in the Scientia Marina journal:

Prellezo R., Carmona I., García D., Arregi L., Ruiz J., Onandia I. 2017. Bioeconomic assessment of a change in fishing gear selectivity: the case of a single-species fleet affected by the landing obligation. Sci. Mar. 81(3): 000-000. doi: <http://dx.doi.org/10.3989/scimar.04597.18A>

Additionally, sea trials on selectivity changes are still on the way. Still no positive results but we are working on that.

2.3 Optimal use of unavoidable unwanted catches

2.3.1 From deck to first sale

There is not an specific work for any case study as the revision on current practices in the handling of unavoidable, unwanted catches has been performed in a global maner. A report on current practices in the handling of Unavoidable Unwanted Catches (UUC) based on projects, on-going initiatives, and existing experiences has been generated (Deliverable D5.1).

Discard estimates in global and European fisheries have been presented, the most common methods of discarding and associated incentives have been reviewed, the landing obligation of the Common Fisheries Policies (CFP) as well as landing obligations in other countries have been accounted for, Monitoring, Controlling and Surveillance (MCS) alternatives have been discussed and a number of initiatives temped to reduce bycatch and discards have been reviewed.

The document present basic back-ground information on the most important discard mitigation issues and the available tools for battling the discard problem. This will then serve as input to stakeholder interactions in later stages of the DiscardLess project, particularly when it comes to interacting with fishermen. D5.1 will trigger discussions on which measures can actually be adopted on-board the European fishing vessels.

2.3.2 Products to the value chain

Most suitable uses or valorisation alternatives for the unavoidable unwanted catches (UUC) have been evaluated, gathering the most important factors that may influence the technic and economic viability of each option, to allow the correct implementation of the most suitable option. A review of existing and innovative valorisation options for fish products has been done and more than 30 valorisation products have been listed and evaluated classified as: Food applications, Bio-Products (value compounds for food, cosmetic or other uses), Feed, Industrial uses, Energy production or Agronomic.

On the other hand, a systematic and simplified methodology for the selection of the best option has been established. Main criteria have been grouped in categories to estimate the most important effects and weighted to obtain a score for each valorisation option. The methodology gives a prioritization on valorisation options that may facilitate the evaluation and establishment of UUC management systems.

The methodology has been applied to the BoB CS to determine best approach for the adaptation to the LO and the inland management of UUC.

2.4 Policy outreach

Different meetings have been arranged with stakeholders as detailed in previous sub-sections. But participation of DiscardLess researchers from this CS on meetings with partners working in similar projects along with stakeholders and authorities at national level has occurred. In all those meetings, DiscardLess members have shown the achievements of the project and our plans for the near future, but they have also learn from other projects' and stakeholders' perspectives.

This year and due to different causes external to the project, any meeting with interested NGOs has been conducted. However, it is already been arranged and will hopefully happened by the end of this year 2017.

2.5 Summary:

Substantial effort has been done for progressing in the impacts of different discards mitigation strategies, both at an ecosystem and fishery level. In the last case, not only management measures but also technical issues have been considered. Achievements were translated into three papers, one already published, another one submitted paper and the last one in preparation.

Different meetings with stakeholders have been carried out during this first year aiming to get their feedback to progress on the work planned. All out work has already been presented to them, and the feedback obtained has also been tested with the appropriate tools.

Communication with the NGOs has been scarce, but hopefully, we will conduct a meeting with them by the end of 2017.

3 The Year ahead of us: What do we expect for the next year?

- Ecosystem impact assessment-
 - Recalibrate models once new functionalities have been implemented
 - Run scenarios – work in progress
 - Comparisons between the different models in the same CS
 - Double-check about the indicators to be developed
 - First runs with the new EwE version which has been optimized to better account for discards.
- Fishery impact assessment
 - Not a lot to add, work almost finished
- From deck to first sale – 3D plot of basque Trawler with the necessary changes in the layout for the handling of UUC
- Products to the value chain – Evaluating the different options existing for the valorization of UUC and the criteria of selection of each of them. Then these results will be compared with the possibilities of bay of Biscaye case study in orther to chose the most appropriate and to get ready for the future trials.

- Policy outreach– Case study reports, continue feeding the atlas with the required information, dialogue with stakeholders.