Chapter 4
Fishing Industry Perspectives on the EU Landing Obligation

Mike Fitzpatrick, Katia Frangoudes, Laurence Fauconnet, and Antoni Quetglas

Abstract The Landing Obligation (LO) represents a fundamental change in European Union fisheries policy and it has a particularly significant bearing on the activities of Europe's fishing industry. This chapter provides an account of European fishing industry engagement with the discard issue prior to the LO and industry attitudes towards the LO. A discussion about discard management in Europe follows. The fishing industry had a consistent approach to discard management in the run-up to the LO enactment: they favoured fishery-specific discard reduction plans and were unanimously opposed to an outright 'discard ban'. Canvassing fishers' opinions from the North Sea (Denmark, France), Eastern and Western Mediterranean (Greece, Spain and France), the Celtic Sea (France, the UK and Ireland), Western English Channel (France) and the Azores between 2015 and 2018 reveals a consistent negative attitude towards the LO. We found that choke species are the main concern outside the Mediterranean Sea while in the Mediterranean region, the cost of disposal and the creation of a black market for juvenile fish are seen as the main negatives. Fishers recognise the necessity of reducing discards although zero discard fisheries are not seen as attainable. They favour a combination of selectivity improvements and spatial management as the best discard reduction measures. New measures to deal with intractable choke species problems are being sought by industry and Member State groups but the European Commission want existing measures to be utilised first. We discuss some potential consequences of negative stakeholders' attitudes towards this key element of EU fisheries management policy.

M. Fitzpatrick (✉)
Marine Natural Resource Governance, Cork, Ireland
e-mail: mike@irishobservernet.com

K. Frangoudes
University of Brest, Ifremer, CNRS, UMR 6308, AMURE, IUEM, Plouzané, France

L. Fauconnet
Departamento de Oceanografia e Pescas – IMAR Institute of Marine Research, University of Azores, Horta, Portugal

A. Quetglas
IEO, Instituto Español de Oceanografía, Centre Oceanogràfic de les Balears, Palma de Mallorca, Spain

S. S. Uhlmann et al. (eds.), *The European Landing Obligation*,
https://doi.org/10.1007/978-3-030-03308-8_4

These include control and compliance challenges, associated business reputation problems for the industry, a longer LO implementation timescale, and deterioration in the quality of scientific data about discards.

Keywords EU landing obligation · Fisheries control · Fisheries governance · Industry-science collaboration · Stakeholder engagement · Top-down policy

4.1 Introduction

Since 1984 when the annual Total Allowable Catch (TAC) regulation restricted the carrying of catches onboard vessels beyond those allowed by quotas (EC 1983) EU fishers were frequently obliged to discard fish, for reasons ranging from lack of quota to minimum size restrictions. With the introduction of the LO in 2015 the situation has been reversed, and fishers are now required to land catches of all fish subject to TACs or minimum sizes. This basic shift is expected to have implications for the industry at all levels from operational aspects (like sorting and storing of fish that were previously discarded) to management and governance issues such as quota management regimes.

This chapter first provides an account of how the European fishing industry addressed the issue of fisheries discards prior to the implementation of the LO. Second it presents a synthesis of recent research on industry attitudes to the LO and opinions from two individual EU fishers on the LO. Finally, it discusses the implications of these industry attitudes for discard management in Europe. Source material was drawn from interviews and surveys with fishers conducted as part of the DiscardLess research project (http://www.discardless.eu), the lead authors' own experiences working in the industry, literature sources such as European Commission publications on discards, relevant EU legislation, published books and articles, Advisory Councils' advice and reports and fishing industry press articles.

We have included the views of Advisory Councils (ACs) in some sections although we recognise that they are not solely industry bodies as their membership also comprises other groups such as environmental NGOs. However, the majority of Advisory Council members are from the fishing industry and as such their views and positions are generally reflective of the industry. For opinions from NGOs on the LO see e.g. Borges et al. (2018) and Stockhausen (this volume).We have noted cases where there is a non-consensus or majority position that is unsupported by at least some of the other interest groups within an Advisory Council. The chapter on small scale fisheries (Villasante et al., this volume) also contains some more detailed information on the views of small scale sectors on the LO which may differ from those reported here where we attempt to represent a broad cross section of fishing sectors.

4.2 European Fishing Industry Engagement with the Discard Issue up to the LO

In the run up to the 2012 CFP reform, public interest in the issue of fisheries discards was raised due to the UK TV programme and online campaign, "Hugh's Fish Fight", which gathered over 800,000 signatures for a petition to ban discarding (Borges 2015). Within EU fisheries policy circles, however, discards had been acknowledged as an important issue at least two decades previously (Borges and Penas Lado this volume). In 1991, the first 10 year review of the CFP noted the fact that the TAC system and relative stability would lead to "inevitable discards at sea" (CEC 1991). Also at that time, a discard ban was considered but rejected as unenforceable (CEC 1992). In 2001, as part of the next CFP reform a Commission Green Paper (CEC 2001) proposed pilot discard bans but the 2002 CFP (EC 2002) did not specifically address the discard issue.

In 2007, the European Commission took a position on the discards issue in an official communication, stating that the EC aimed to "*reduce unwanted by-catches and progressively eliminate discards in European fisheries*" (CEC 2007). In response, the European Association of Fish Producer Organisations (EAPO) stated that while the industry recognized discarding as a significant problem, there were complex drivers behind it, including the TAC system and catch composition rules. This, they argued, precluded a simple solution such as an absolute discard ban for all species. The socio-economic implications of a discard ban were also poorly understood (EAPO 2007).

The action plan on tackling discards proposed in the 2007 Commission communication never materialized. This has been interpreted by a member of the Commission as evidence that addressing discards was either not a priority for the industry and Member States or that the Commission "*failed to find the right incentives for that to happen*" (Penas Lado 2016). An industry representative, in an interview conducted for this chapter, points to an 8-page long response produced by the North Sea Advisory Council (NSAC) as evidence that the industry took the Commission's discards paper seriously (NSAC 2007). The NSAC response welcomed the Commission's approach while highlighting that a discard ban would necessitate fundamental changes across a range of fisheries regulations and require huge increases in enforcement efforts. The NSAC document proposed fishery specific, long-term management plans as a more favourable and practical means of achieving discard reductions. It also mentioned the use of overages or the ability for vessels "*to acquire quota post-landing for over quota species caught*" as a useful mechanism employed in the operation of the Norwegian and Icelandic discard bans. The industry representative stated that the Commission did not respond to their paper and that momentum on the issue was lost.

The next significant milestone in the EU fisheries discards debate was the publication of the 2009 Green Paper on reform of the CFP (CEC 2009) that

contained multiple references to the elimination of discards. Simultaneously, public pressure on the discards issue was considerably ramped up through the aforementioned Hugh's Fish Fight campaign. Industry responses to the Green paper highlighted their opposition to discarding as "*it is a nuisance to their business, and it is detrimental to rebuilding of stocks*" (Danish Fishermen's Association 2009). Industry also supported the reduction of "*landings of unwanted fish to lowest possible levels*" (Federation of Irish Fishermen 2009).

But they rejected an outright ban which they considered overly simplistic and instead looked for a gradual reduction of discards through fishery and gear-specific discard plans (EAPO 2009). Industry organisations also stressed their viewpoint that greater industry participation in the development of discard plans would "*reduce discards significantly*" (Danish Fishermen's Association 2009).

In 2011, a Commission proposal for a new CFP introduced the term Landing Obligation (LO) to refer to a requirement to land all catches of species regulated by TAC or Minimum Landing Size (MLS) (CEC 2011). Article 15 of the proposal set out the conditions and timeline by which the LO would be gradually implemented. In response, fishing industry organisations came together to issue an alternative proposal (Europêche, EAPO, Cogeca 2012). The industry suggestion was for a landing obligation only in fisheries where Spawning Stock Biomass (SSB) was below Blim for 3 consecutive years. All other fisheries (regulated by TAC or MLS), would be obliged to reduce discards "*to the lowest possible level*" by 2019 through fishery specific management plans. Where reduction targets specified in the management plans were not achieved by 2019, landing obligations should be introduced.

The LO was finally agreed in May 2013 by EU fisheries ministers. Despite the multiple consultation processes that were a feature of the 2012 CFP reform (there were over 400 submissions on the 2009 Green Paper), the final iteration of the discard policy was essentially a political creation. It featured a 4 year implementation timeline, which could be regarded as short for such a fundamental policy change. A member of the commission staff described the situation as one where the experience of other countries on gradual approaches had to be ignored as "*the political pressure was there for quick solutions*" (Penas Lado 2016).

4.3 Fishing Industry Stakeholders' Opinions of the LO

The DiscardLess project gathered industry stakeholders' opinions towards the LO. This section synthesises the results from this research. Opinions from different groups of stakeholders are collected every year throughout the project using different methodologies (interviews, focus groups, opinion survey). Industry participants included fishers, fisheries organisations (Producers' Organisations (POs) or associations) and the seafood processing industry. One of the principal tasks is aimed at monitoring changes in economic and social factors during and after the actual implementation of the Landing Obligation policy.

The selected case studies represent different regional seas and different types of fleets from the North Sea (Denmark, France), Eastern and Western Mediterranean (Greece, Spain and France), the Celtic Sea (France, the UK and Ireland), the Western English Channel (France) and the Azores. The results are based on a combination of 70 individual interviews (see e.g. Reid et al., this volume) and 200 responses to a postal survey (in France and Greece) that were conducted between 2015 and 2018.

A very broad range of issues and views were raised during these interviews and surveys and in order to present them coherently we have organised them into the following broad categories: (i) knowledge of the LO, the implementation process and participation in it; (ii) likely impact of the LO; (iii) adaptation or mitigation strategies.

4.3.1 Knowledge of the Landing Obligation and Participation in the Implementation Process

There are diverse views among fishers regarding their knowledge and awareness of the LO. French fishers in the Eastern English Channel, who fish from a mix of larger and smaller scale vessels mainly using towed gears, felt they have a good knowledge of the LO. This is due to an industry-led project initiated by local PO's and the Regional Fisheries Committee which simulated and tested in real time the operational and economic impacts of the LO (Balazuc et al. 2016). The project also included some gear selectivity trials but these were restricted due to fishers' perceptions about the negative economic impacts of new trawl gears. Some aspects of the LO remain poorly understood by fishers, such as the implementation timeline and issues such as how unwanted catches should be disposed of.

A significant number of fishers, in particular but not exclusively within the small scale sectors, claim that they are aware of the implementation of the LO but have very little detailed knowledge about it. Small scale fishers from the Azores raised some fundamental questions about its application such as whether they would be subject to it due to their current low discard rates. Many Azorean fishers felt that the policy was artificial, disconnected from the reality of fisheries in the region and would benefit neither themselves nor the resource. Greek trawl fishers had very low awareness of the LO, perhaps due to the absence of a representative organisation, but in discussions they felt it went against the work done recently in eliminating catches and sales of smaller fish.

According to a French fishers' representative, fishers need to understand the rationale of the LO regulation as this would provide some incentive to comply. This problem is summarised by the following quote from a French Eastern Channel fisher "*There is no need to increase our work and our costs, spend our quotas and not get a good price for our fish*". This sentiment appears to be mirrored by at least some of the EU Commission staff. One of them described the policy's lack of clarity in the following terms: "*A non discard policy would imply changes that may affect*

direct fishermen's revenues without a clear perspective of possible tradeoffs." (Penas Lado 2016).

Almost all fishers' general attitudes towards the LO were negative and this perception has not changed significantly over the past 3 years. For Mediterranean fishers in particular, the LO is perceived as being designed for quota managed fisheries in the Atlantic as it doesn't take into account the specific context of Mediterranean fisheries. All fishers met in Boulogne-sur-Mer (France) expressed their opposition to the LO and its implementation in EU waters.

Regarding participation of fishers in the LO implementation process, Danish fishers consider that their voice was partially, but insufficiently, heard. In France, fishers consider that the national fisheries administration did represent their views in LO negotiations. Catalan, Greek and Azorean fishers felt that they had not participated in any negotiations related to the LO.

Some fishers have expressed concern that the LO implementation time frame is too short for such a radical change and that it will create economic viability problems for them.

Among representatives of fishers' organisations, there is a much better knowledge about the in's and out's of the LO and its implementation process. However, they feel that their views were not sufficiently taken into account during the design of the policy. They also argue that their role in the implementation process, specifically in drafting Joint Recommendations for regional discard plans, should be clearer. Fishers' representatives feel that the LO is taking up a lot of time which detracts from their ability to deal with other important fisheries management issues. They are still uncertain about aspects of LO implementation despite their sound knowledge about the subject and participation in meetings. This uncertainty extends to the handling of choke situations, conflicts between the LO and technical and control regulations and how discard plans will be integrated into Multi-Annual Plans.

4.3.2 Impacts of the Landing Obligation

The impacts of the LO were highlighted by fishers in particular with regard to working conditions, safety, economic viability and ecosystems.

Fishers across all case studies are concerned that the LO will increase the time to sort out catches and to store additional quantities of fish. These issues are also viewed as a safety problem onboard arising from an increased workload related to sorting the catch, as well as the transfer at sea of unwanted catches.

Fishers think that the LO will negatively impact on their economic viability as operational costs (fuel, ice, disposal costs of unwanted catches) will increase and new investments will be required (e.g., purchasing of more selective gears and increasing the storage capacity of vessels). Many fishers mentioned that they cannot afford such investments and would require support from the European Maritime and Fisheries Fund (EMFF). Small-scale fishers, in particular small trawlers, stated that their fuel consumption will increase as storage capacity is limited and they will have

to return to harbour more often. The lack of utilisation options for unwanted catch at a reasonable cost, linked to the absence of a processing industry capable of dealing with discards, was highlighted in the majority of regions.

The most pressing and significant issue for fishers (outside the Mediterranean) is undoubtedly the problem of dealing with choke situations and the potential negative effects on fishing fleets. A choke species is "*a species for which the available quota is exhausted (long) before the quotas are exhausted of (some of) the other species that are caught together in a (mixed) fishery*" (Zimmermann et al. 2015). All of the relevant fishery Advisory Councils have been conducting some form of risk analysis of fisheries likely to cause choke problems in their region. Some have taken a stock-specific approach (NWWAC 2017), while others have looked at which mitigation measures may work in a general sense (NSAC 2017). All ACs agreed that some residual choke problems will persist even when all available measures are applied and are looking to both Member States and the Commission for guidance on how these can be resolved. A NSAC Demersal Working Group meeting in February 2018 stated that due to Relative Stability problems, Member States were unwilling to use quotas to address residual chokes (NSAC 2018a). This uncertainty was also summarised at a 2018 LO seminar by the Scottish White Fish Producers Association when the LO challenge for industry was described as needing to satisfy legal, societal and market demands without going out of business but also without knowing how (Pew 2018).

Fishers felt that the LO will also have a negative impact on ecosystem health, referring to birds and other organisms that have fed on discards until now.

4.3.3 Adaptation and Mitigation Strategies

The most commonly proposed mitigation strategies by fishers across case studies are selectivity improvements and exemptions. Mediterranean fishers said that selectivity of the bottom trawl fleet has already improved with the introduction of 40 mm square mesh cod-ends but that this measure would need to be applied to the whole Mediterranean (including in non-EU countries). Fishers in a number of cases mentioned selectivity trials which have been conducted, as well as their desire to use EMFF funding to support adoption of more selective gears (East and West Mediterranean, Celtic Sea, North Sea).

Fishers across all case studies also mention spatial and temporal closures as possible mitigation strategies (see also Reid et al., this volume). They stress that such closures should be scientifically based and that mapping programmes of zones with concentrations of juvenile fish are required. The need to integrate fishers' local ecological knowledge into discard plans was mentioned as a strategy to address choke problems.

The fishing industry has also pointed out that there is a trade-off between selectivity improvements and economic losses in mixed fisheries which limits the extent to which selectivity can resolve discard problems (NSAC 2018a).

4.3.4 Control and Monitoring

Some LO specific issues have been raised by stakeholders on the revision of the EU Fisheries Control System proposed by the European Commission in 2017 (EC 2017).

The North Western Waters Advisory Council (NWWAC) response agreed that there is a need for full control of high-risk vessels and that dedicated programmes to measure compliance with the Landing Obligation should be implemented (NWWAC 2018a). However they point out that the use of Electronic Monitoring (EM) with video on vessels is a controversial tool for some fishers and that "*good communication will be needed to ensure buy-in on the use of this technology by the industry*".

The NSAC response to an earlier version of the proposal supported a risk-based monitoring approach but pointed out that the majority of fishers do not see the LO as fair or rational and thus there is an associated compliance problem (NSAC 2016). They also drew attention to the controversial nature of EM with video on vessels at a NSAC meeting in April 2018 (NSAC 2018a). French fishers consider that fishing vessels are private spaces and vessel owners are concerned that crew members will protest against videos on this basis.

4.3.5 Industry-Science Collaboration

A concern often mentioned by fishers is that discard data provided by them under the LO could negatively impact their fishing opportunities in the long term. This concern is manifested in declining observer coverage in some Member States and regions (Our Fish 2017), which in turn could have a negative impact on the quality of scientific data about discards. Fishers are concerned that in the context of uncertainty around how choke situations will be dealt with, there could be a negative impact on data provision and industry-science collaboration which many fishers felt was improving prior to the LO.

In contrast to this position, there have been a number of strategic collaborations between fishers and scientists arising directly from the LO. These have arisen mainly as initiatives to examine survival of discarded fish as such information is required in order to justify exemptions from the LO on the basis of high survival (see also Rihan et al., this volume). An example of such collaborations is research on survival of flatfish and rays in pulse trawls (Schram and Molenaar 2018). This research was conducted by Wageningen Marine Research and commissioned by a Dutch fishers organisation VISNED.

4.3.6 Opposition to the LO

Some sectors within the industry are taking a more oppositional approach to the LO. The South Western Waters Advisory Council (SWWAC) communicated some very clear statements regarding their difficulties with the LO in a recent opinion document (SWWAC 2017) submitted to the Commission. (This position was not supported by all of the non-industry groups in the SWWAC).

Their proposals included:

- Compensation of crews for losses associated with unwanted catches.
- Greater flexibility in granting exemptions as all of the requests for information sought by STECF are not "humanly or financially possible" to provide.
- Simplification of the exemption process by, for example, granting high-survival exemptions for all hook or pot fisheries.
- Application of fixed multi-year TACs.
- Deferral of any further extension and implementation of the LO beyond 2018 until agreement can be reached on the points above.

A Fisher's Thoughts on the LO:

Joan J. Vaquero, bottom trawl fisherman, Mallorca-Balearic Islands, (Spain).

"Our fisheries are highly multispecific with more than a hundred commercial species. We can improve the selectivity using larger mesh sizes but we're going to lose a lot of small-sized species (but adult individuals), which will endanger the economic viability of the fishery. Adult fish here in the Mediterranean do not reach the sizes they reach in the Atlantic; this is only due to differences in conditions, the Mediterranean is a poor sea compared to the NE Atlantic.

As it stands, the LO will produce a lot of problems on board. We use relatively small bottom trawlers compared to the Atlantic fisheries. Our vessels are not prepared to store large quantities of fish because we work on a daily basis, returning to our homeport every afternoon (we work from 5:00 am to 17:00 pm), so we can only store the commercial catch of the day. Taking large volumes of catch on board (landings plus discards) could be also dangerous under bad weather conditions. We would also have a problem in case we have to sort out the discards by species because nowadays the crew is reduced to the minimum to allow the economic viability of the fishery; we cannot afford to contract an additional person on board. Finally, but more importantly, if we land the discards, what do we do with them? We do not have fish processing industries so what are the alternatives for discard disposal? It seems the only alternative here in Mallorca would be bringing them to the incineration plant. Imagine what society would say about this practice,

(continued)

because at the end we fishers would be the focus of the criticism. And the bottom trawl fishery is already seen as the bad boy of the fishing family. . .

The future of fishing in the Mediterranean was bleak even before the LO. The number of vessels has been reduced a lot during the last 20 years, mainly because of socioeconomic aspects. We live in a highly touristic area so young people prefer working on in the tourist sector rather than at sea. Apart from the hard work at sea, fishing has been burdened with a lot of administrative commitments making it even harder to maintain the activity. The LO is a new, imposed load to the sector. Consumer preferences have also changed: consumers now buy processed, frozen fish. At the end, a very reduced number of vessels will persist and I think they will have no problem maintaining their activity as with a reduced fishing effort stocks will be healthier. Also, lower supplies will mean higher prices for fish. I cannot imagine the future under the LO. Are we going to build fish processing industries here? I do not think so.

As I said before, increasing mesh size could be a problem for the viability of the fishing sector in the Mediterranean. In my case, if I see that I take large volumes of undersized fish in some areas I reduce the trawling time to reduce the unwanted catch. We also avoid working in areas and periods of the year where and when we take a lot of undersized fish. But in most cases these choices are done on a daily basis, based on day-to-day experience, because it's not possible to foresee the areas and times with large discard volumes. We try to avoid large fish shoals, not only to reduce discards but also because we will saturate the market if all of us land such large volumes. For some species we have adopted voluntary daily quotas to avoid affecting market prices (e.g., for picarel, 150 kg per vessel per day) which also has the effect of reducing discards.

In the Balearic Islands the largest discard volumes are taken on the continental shelf. In our port, for instance, we reduce the time fishing on the shelf and focus on slope grounds. In summer, we do not work on the shelf at all and leave these fishing grounds to small-scale fishers targeting red lobster, mainly to avoid towing in areas where they set their trammel nets. As such, we reduce both the effort and the discards on the shelf grounds.

Maybe the only positive aspect of the LO would be to raise awareness among fishers about the discard problem and the need to reduce unwanted catches; in essence, adopting practices in line with sustainable exploitation. But I do not see any other positive aspect. On the contrary, I see a lot of negative ones. I'm not a biologist so I don't know the best fate for undersized fish. But I see the sea as a harvested field: discards are like manure to feed fish and the entire food chain, I do not think it is a good idea to remove all this biomass from the sea."

(continued)

A Fisher's Thoughts on the LO:

John Lynch, Fisherman, Howth, Co. Dublin, Ireland.

"When the idea of a landing obligation, or discard ban as it was then, was first proposed by the Commission I, like many fishermen, thought the worst, that it could never work. But in fact we had been working towards it for many years with ever-improving selectivity. The idea of large amounts of juvenile fish going over the side has always gone against my idea of what fishing should be. However in some fisheries that use smaller mesh there has always been a problem with excessive discards and in this regard I agree totally with the objectives of the landing obligation.

There are two main objectives of the landing obligation. The first one, reduction of catches that are below the minimum conservation reference size, is probably the easiest to deal with. These fish cannot be sold for human consumption, as they are too small. This is the area where fishermen and other stakeholders have been working to reduce the discards of undersized fish and in some fisheries discards of juvenile fish are down to very low levels. This has greatly helped in rebuilding stocks as more fish can now mature and reproduce.

The other objective of the landing obligation, eliminating discards of mature fish, is much more difficult to solve. Demersal fisheries in North West waters are very mixed in nature and this makes the task very difficult. The tools available to us may not solve this problem for all stocks. As I see it the tools currently in place are as follows:

Quota Uplift is from my understanding the increase of TAC to allow for the amount of fish that used to go over the side to be landed, thus reducing discards and increasing landings but not increasing the effort on the stock. However, the quantities of quota uplift have been derisory in most cases around 10%. This I think is because the cart was put before the horse in that the discard problem was not dealt with before the landing obligation was applied to these species, for example Celtic Sea haddock. In my view, the new technical conservation measures should have been introduced at least 2 years before a discard ban was imposed.

The discard problem for some species will be solved by getting a high survival exemption. At the moment work is ongoing on skates and rays, Nephrops and plaice to see if a survivability exemption can allow them to be released back to the sea. This however will not solve the problem for the fisherman who sees good quality fish going over the side.

De minimis is a small quantity of a stock which can be discarded – usually about 5% of the TAC. This is to allow for some discarding of fish below minimum conservation reference size and is to be reduced to zero over time. I

(continued)

believe it will be necessary to have de minimis in place permanently to allow for some small amount of juvenile discards, which inevitably are caught.

Fishermen, scientists and officials have long been working together to solve the problems of discards of fish at sea. While not always agreeing on how to solve a problem, with trials of different selectivity and spatial measures, a compromise can be found. The issue of discards will never be 100% solved but the important thing is to continually strive to improve the situation for the fish and for the fisherman. As I said at the beginning, the idea of a landing obligation is perfectly good but the anomalies of reality have to be considered, and the deadline of first January 2019 for all TAC stocks is a bridge too far."

4.4 Discussion and Conclusions

Here we discuss what the implications of industry perceptions of the Landing Obligation are for management of discards and also broader fisheries governance in the EU. There are some potentially serious consequences arising from the main fishery stakeholders having a negative attitude towards one of the main pillars of EU fisheries policy. We discuss some of the more obvious ones, e.g. compliance, and also some of a more indirect nature but with nevertheless significant implications, such as the quality of scientific data.

The above sections show that a major issue for the fishing industry regarding the LO remains the choke problem. Despite intense efforts to come up with solutions (including a strong industry emphasis on selectivity improvements), Advisory Councils have identified a significant number of fisheries that will have residual choke problems, even after all available mitigation measures are applied. The principle concern that fishers have with the choke problem is the potential for significant negative economic impacts. Some NGOs have proposed specific cases where industry could receive financial compensation but only if they have first implemented effective selectivity measures (SWWAC 2017). A more general application of this approach could incentivize progress while reducing industry fears regarding vessels going out of business due to either choke related fishery closures or the loss of economic efficiency due to the use of more selective gear.

Significant uncertainty still exists among fishers and their representatives regarding how these residual choke problems can be solved without fisheries closures and associated negative economic impacts. Advisory Councils and high-level Member State groups are looking to the Commission for new measures, in addition to those allowed for in Article 15 (the LO) of the 2013 CFP (EU 2013), which could assist in solving this problem. Such measures could include removal of stocks from the TAC process or defining target and bycatch species of which only the target species would be subject to a discard ban (NSAC 2017). Industry proposals have also mentioned the use of overages, or post-landing purchasing of quota as is used in Norway and Iceland to provide some flexibility and reduce choke-type problems. Recent

indications from the Commission are that the use of such measures may only be possible when all other available measures under Article 15 have been applied (CEC 2017).

The choke problem has produced some negative outcomes in terms of discard data provision by industry arising from fears that data provided could potentially precipitate choke closures with associated economic impacts. This has resulted in a reported decrease in discard observer coverage in some Member States including Ireland (DAFM 2017) and Sweden (Sverige Radio 2016) and also in regions such as the Eastern Baltic (ICES 2017; Valentinsson et al., this volume). A situation where fishers are not incentivized to provide data represents a backward step in the collaborative process necessary for improved fisheries management. Unless there is a realigning of the incentives for fishers to provide data in support of discard mitigation, this issue is likely to remain a significant barrier to the successful implementation of the LO. The quality of scientific data may also be negatively affected and implementation will be overly reliant on control and enforcement rather than a collaborative approach.

The problem of compromising collaborative research and industry-science relationships is linked also to the more general principle of good governance that involves stakeholder participation in management. These linked issues are all complicated by industry uncertainty regarding the use of data and a poor understanding of the underlying rationale and objectives of the LO. The fact that industry perceives that their views, expressed consistently in the run-up to agreement of the LO, were not really taken on board seem to have created a perception for some of a backward step in terms of partnership and participatory management where the main drivers are bottom-up rather than top-down (see also van Hoof et al., this volume).

This viewpoint was expressed by Poul Degnbol, a former scientific advisor to the Commission, in a 2018 seminar on CFP reform (NWWAC 2018b). He described the LO as an example of top-down fisheries management, which he stated was the wrong way to go about achieving sustainable and effective management and expressed concern that it may have big implications for science. Industry sources have also highlighted that adopting a flexible, adaptive approach to the LO is made more difficult by the co-decision process in Brussels which has proven, in some cases, to be a slow one (Marchal et al. 2016).

The top-down nature of the LO and industry compliance issues are also resulting in more complex management. Each year the Joint Recommendations for regional discard plans and the delegated acts that put these plans on a legal footing become more complex. The Joint Recommendations for 2019, when for the first time all TAC species are subject to the LO, have been drafted and submitted at the time of writing (NSAC 2018b). It can be seen from these that the trend towards complexity has strengthened with a significant increase in both the number of exemptions sought and the number of supporting documents. This increased complexity in a single area of fisheries management is surely contrary to the desire for a less complex and devolved approach that is implicit in the 2013 CFP's move toward regionalization. The complexity is largely due to industry appeals for exemptions but these in turn are driven by the desire to avoid significant choke closures across EU mixed demersal

fisheries that a Landing Obligation without exemptions would create. The key to simplifying this policy area most likely lies in finding some improved mechanism for resolving the choke problem.

The additional complexity creates a number of further knock-on effects. It widens the gap between fishers' representatives who are tasked with understanding this complexity and the fishers they represent. Complex rules, combined with uncertainty at the management level, are translated into confusion and inaction at the operational level and create a significant barrier to implementation.

Furthermore the raft of exemptions and selectivity and control measures point to a situation where the implementation timescale will be longer and more complex than envisaged. This is in line with industry statements that the 2019 deadline for full implementation is ambitious. The first amendment of the LO was made in recognition of the fact that it is taking longer to develop multi-year management plans than originally envisaged (EU 2017). Could a similar recognition that LO implementation may likewise take longer than originally hoped take place also? This amendment also shows that difficulties with making changes to Article 15 may be more political than legal in nature.

To conclude, it can be said that there are some, almost unanimously held industry viewpoints on the LO, for example opposition to the requirement to land unwanted catch without any apparent economic value. However, there is also some diversity of views evident among fishers, with some having more proactive views on how to resolve problems posed by the LO while others are more reactive and are simply opposed to it. One side is hoping that the LO will never be implemented while the other is concerned with being as well prepared as possible when it is. The challenge now for fishers is to reconcile their consistently stated goal over the past 20 years, of having fishery-specific discard reduction plans, with a Landing Obligation covering all TAC or MCRS subject species. Proactive industry voices are likely to be much more persuasive than reactive ones in arguing for a discard policy that is both effective in reducing discards and more aligned with industry needs. It remains to be seen how this will play out over the first few years of full LO implementation from 2019 onwards and beyond that in the next reform of the CFP in approximately 2022.

Acknowledgments This work has received funding from the Horizon 2020 Programme under grant agreement DiscardLess number 633680. This support is gratefully acknowledged.

References

Balazuc, A., Goffier, E., Soulet, E., Rochet, M. J., Leleu, K. (2016). EODE – Expérimentation de l'Obligation de DEbarquement à bord de chalutiers de fond artisans de Manche Est et mer du Nord, et essais de valorisation des captures non désirées sous quotas communautaires. http://www.comite-peches.fr/wp-content/uploads/Plaquette_EODE.pdf. Accessed 31 July 2018.

Borges, L. (2015). The evolution of a discard policy in Europe. *Fish and Fisheries*, *16*, 534–540.

Borges, L., & Penas Lado, E. (this volume). Discards in the common fisheries policy: The evolution of the policy. In S.S. Uhlmann, C. Ulrich, S.J. Kennelly (Eds.), *The European Landing Obligation – Reducing discards in complex multi-species and multi-jurisdictional fisheries*. Cham: Springer.

Borges, L., Nielsen, K., Frangoudes, K., Armstrong, C., Borit, M. (2018). Conflicts and trade-offs in implementing the Common Fisheries Policy (CFP) discard policy. DiscardLess Deliverable D7.3. *Zenodo*. http://doi.org/10.5281/zenodo.1238588.

CEC. (1991). Report 1991 from the commission to the council and the European Parliament on the common fisheries policy. SEC(91) 2288 final. Brussels.

CEC. (1992). On the discarding of fish in community fisheries: causes, impact, solutions. Report from the commission to the council. SEC (92) 423 final. Brussels.

CEC. (2001). Green paper on the future of the common fisheries policy. COM(2001) 135 final. Brussels.

CEC. (2007). Communication from the commission to the council and the European Parliament: a policy to reduce unwanted by-catches and eliminate discards in European fisheries. COM(2007) 136 final. Brussels.

CEC. (2009). Commission of the European communities green paper – Reform of the common fisheries policy. COM(2009)163 final. Brussels.

CEC. (2011). Proposal for a regulation of the European Parliament and of the council on the common fisheries policy. COM(2011) 425 final (p. 88). Brussels.

CEC. (2017). EU Commission reply of 16th November 2017 to NSAC Advice Ref. 14–1617. http://nsrac.org/wp-content/uploads/2016/12/Response-to-14-1617-Managing-Fisheries-within-the-Landing-Obligation.pdf. Accessed 31 July 2018.

DAFM. (2017). *Irish report on implementation of the LO in 2016*. Ireland: Department of Agriculture, Food and the Marine. https://www.asktheeu.org/en/request/access_to_member_state_documents_2#incoming-13777. Accessed 31 July 2018.

DFA. (2009). Danish Fishermen's Association response to European Commission Green Paper on CFP reform, 2009. https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/danish_fishermens_association_en.pdf. Accessed 31 July 2018.

EAPO. (2007). Discard problem in fisheries. http://eapo.com/UserFiles/File/eapo07-17.pdf. Accessed 31 July 2018.

EAPO. (2009). EAPO response to European Commission Green Paper on CFP reform. http://eapo.com/UserFiles/EAPO%20Response%20Green%20Paper%20CFP%20Reform%20-%20Final%20Version.pdf. Accessed 31 July 2018.

EC. (1983). Council regulation (EEC) no 172/83 of 25 January 1983 fixing for certain fish stocks and group of fish stocks occurring in the Community's fishing zone, total allowable catches for 1982, the share of these catches available to the community, the allocation of that share between the member states and the conditions under which the total allowable catches may be fished. *Official Journal of the European Communities*, *L24*, 30–67.

EC. (2002). Council Regulation (EC) No 2371/2002 of 20 December 2002 on the conservation and sustainable exploitation of fisheries resources under the Common Fisheries Policy. *Official Journal of the European Communities*, *L358*, 59–80.

EC. (2017). Fisheries control system inception impact assessment. Ref: Ares(2017)4808152–03/10/2017. http://ec.europa.eu/info/law/betterregulation/initiative/119363/attachment/090166e5b57fb4f6_en. Accessed 31 July 2018.

EC. (2013). Regulation (EU) no 1380/2013 of the European Parliament and of the council of 11 December 2013 on the Common Fisheries Policy. Brussels, Belgium.

EU. (2017). Regulation (EU) no. 2017/2092 of the European Parliament and of the council of 15 November 2017 amending regulation (EU) no 1380/2013 on the Common Fisheries Policy.

Europêche, EAPO, Cogeca. (2012). Press Release European Fishing Industry Organisations launch an effective and workable proposal to address discards. http://eapo.accounts.divinenet.be/UserFiles/20120918%20-%20Press%20Release%20discards%20initiative.pdf. Accessed 31 July 2018.

Federation of Irish Fishermen. (2009). FIF response to the European Commission green paper on CFP reform. https://ec.europa.eu/fisheries/sites/fisheries/files/docs/body/federation_of_irish_fishermen_en.pdf. Accessed 31 July 2018.

ICES. (2017). ICES Advice on fishing opportunities, catch, and effort Baltic Sea Ecoregion cod.27.24–32. Cod (*Gadus morhua*) in subdivisions 24–32, eastern Baltic stock (Eastern Baltic Sea). https://doi.org/10.17895/ices.pub.3096.

Marchal, P., Andersen, J. L., Aranda, M., Fitzpatrick, M., Goti, L., Guyader, O., et al. (2016). A comparative review of fisheries management experiences in the European Union and in other countries worldwide: Iceland, Australia, and New Zealand. *Fish and Fisheries*, *17*, 803–824. https://doi.org/10.1111/faf.12147.

NSAC. (2007). North Sea Regional Advisory Council Response to the Commission Communication on reducing unwanted by-catches and eliminating discards in European fisheries. http://www.nsrac.org/wp-content/uploads/2009/09/wd20070702_Position_Paper_on_Discards.pdf. Accessed 31 July 2018.

NSAC. (2016). NSAC Advice Ref. 04–1617 monitoring and control under the landing obligation. www.nsrac.org. Accessed 31 July 2018.

NSAC. (2017). NSAC Advice Ref. 14–1617 managing fisheries within the landing obligation. October 2017. www.nsrac.org. Accessed 31 July 2018.

NSAC. (2018a). North Sea advisory council demersal working group meeting 7th February 2018 report. http://nsrac.org/wp-content/uploads/2017/10/DWG-20180207-London-MReport-3-Approved.docx. Accessed 31 July 2018.

NSAC. (2018b). NSAC Advice Ref. 01–1718 comments on the implementation of the landing obligation in the North Sea demersal fisheries – joint recommendation for a delegated Act for 2019. www.nsrac.org. Accessed 31 July 2018.

NWWAC. (2017). North Western Waters Choke Species Analysis NWW Member States & NWW Advisory Council October 2017. http://www.nwwac.org/publications.26.html. Accessed 31 July 2018.

NWWAC. (2018a). NWWAC response to EC proposals on the EU fisheries control system 29 January 2018. http://www.nwwac.org/publications.26.html. Accessed 31 July 2018.

NWWAC. (2018b). Report on EFARO seminar, Brussels, May 2018. The reformed CFP: an analysis of what went wrong what went well and what should the next CFP look like. http://nwwac.org. Accessed 31 July 2018.

Our Fish. (2017). Thrown away: How illegal discarding in the Baltic Sea is failing EU fisheries and citizens. http://balticsea2020.org/english/press-room/418-new-report-exposes-high-discards-of-cod-in-the-baltic-sea. Accessed 31 July 2018.

Penas Lado, E. (2016). *The common fisheries policy: the quest for sustainability*. West Sussex: Wiley-Blackwell. https://doi.org/10.1002/9781119085676.

Pew. (2018). Pew Charitable Trusts event "countdown to 2020: How far has the EU come in ending overfishing?" 21 February 2018. http://www.pewtrusts.org/en/about/events/2018/countdown-to-2020-how-far-has-the-eu-come-in-ending-overfishing. Accessed 31 July 2018.

Sveriges Radio. (2016). Fishermen do not want to have researchers on the boat. 4th August 2016. https://sverigesradio.se/sida/artikel.aspx?programid=83&artikel=6487184. Accessed 31 July 2018.

Reid, D.G., Calderwood, C., Afonso, P., Fauconnet, L., Pawlowski, L., Plet-Hansen, K.S., et al. (this volume). The best way to reduce discards is by not catching them! In S.S. Uhlmann, C. Ulrich, S.J. Kennelly (Eds.), *The European Landing Obligation – Reducing discards in complex multi-species and multi-jurisdictional fisheries*. Cham: Springer.

Rihan, D., Uhlmann, S.S., Ulrich, C., Breen, M., Catchpole, T. (this volume). Requirements for documentation, data collection and scientific evaluations. In S.S. Uhlmann, C. Ulrich, S.J. Kennelly (Eds.), *The European Landing Obligation – Reducing discards in complex multi-species and multi-jurisdictional fisheries*. Cham: Springer.

Schram, E. & Molenaar, P. (2018). Discards survival probabilities of flatfish and rays in North Sea pulse-trawl fisheries. Wageningen Marine Research (University & Research centre), Wageningen Marine Research report C037/18. 39 pp.

Stockhausen, B. (this volume). How the implementation of the Landing Obligation was weakened. In S.S. Uhlmann, C. Ulrich, S.J. Kennelly (Eds.), *The European Landing Obligation – Reducing discards in complex multi-species and multi-jurisdictional fisheries*. Cham: Springer.

SWWAC. (2017). Opinion 114: Plan for the implementation of the landing obligation. 30 May 2017. http://cc-sud.eu/index.php/en/. Accessed 31 July 2018.

Valentinsson, D., Ringdahl, K., Storr-Paulsen, M., Madsen, N. (this volume). The Baltic cod trawl fishery: The perfect fishery for a successful implementation of the Landing Obligation? In S.S. Uhlmann, C. Ulrich, S.J. Kennelly (Eds.), *The European Landing Obligation – Reducing discards in complex, multi-species and multi-jurisdictional fisheries*. Cham: Springer.

van Hoof, L., Kraan, M., Visser, N.M., Avoyan, E., Batsleer, J., Trapman, B. (this volume). Muddying the waters of the landing obligation: How multi-level governance structures can obscure policy implementation. In S.S. Uhlmann, C. Ulrich, S.J. Kennelly (Eds.), *The European Landing Obligation – Reducing discards in complex, multi-species and multi-jurisdictional fisheries*. Cham: Springer.

Villasante, S., Antelo, M., Christou, M., Fauconnet, L., Frangoudes, K., Maynou, F., et al. (this volume). The implementation of the Landing Obligation in small-scale fisheries of the Southern European Union countries. In S.S. Uhlmann, C. Ulrich, S.J. Kennelly (Eds.), *The European Landing Obligation – Reducing discards in complex multi-species and multi-jurisdictional fisheries*. Cham: Springer.

Zimmermann, C., Kraak, S., Krumme, U., Santos, J., Stotera, S., Nordheim, L. (2015). Research for PECH Committee – Options of handling choke species in the view of the EU landing obligation – the Baltic plaice example. European Parliament (p. 100). https://doi.org/10.2861/808965.