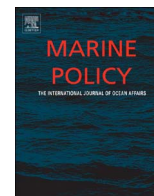




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## To land or not to land: How do stakeholders perceive the zero discard policy in European small-scale fisheries?



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### ABSTRACT

The landing obligation recently adopted by the European Union's (EU) Common Fisheries Policy aims to eradicate discards in EU fisheries. The objective of this paper is to investigate the potential social and economic impacts of the discard ban in European small-scale fisheries (SSF) and the critical factors for its successful implementation. An exhaustive systematic literature review and a stakeholder consultation were carried out in order to (i) collect detailed information about current knowledge on discards in EU SSF and gauge stakeholder perceptions about potential impacts of the discard ban in European SSF, (ii) examine the capacity of the SSF industry to implement the discard ban, and (iii) explore the limits and feasibility of implementing such a measure.

The results of this study show that little attention has been given by the scientific community to discards in EU SSF. Indeed, the systematic literature review shows that this problem is relatively unexplored in the EU. In addition, the effectiveness of a discard ban in industrial fisheries is still unclear, mainly because discard data are not systematically collected by fisheries authorities. Stakeholders mostly perceive that the new landing obligation was developed with industrial fisheries in mind and that compliance with the landing obligation in EU SSF will be difficult to achieve without high economic costs, such as those related to the handling and storage of unwanted fish on board.

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### 1. Introduction

Global marine fish catches have been stagnant over the last decades. In 2011, 70% of fish stocks were estimated to be overfished or fully fished, and only 10% of stocks considered to be underfished [1].

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Discards, defined by Food and Agriculture Organization (FAO) [2] as the “portion of the total organic material of animal origin in the catch which is thrown away, or dumped at sea for whatever reason. It does not include plant materials and postharvest waste such as offal. The discards may be dead, or alive”, have long been regarded as one of the key issues in commercial fishing in the European Union (EU), and worldwide [3–5]. Discard practices play an important role in the depletion of marine populations, and can result in future economic loss [3,6]. Since 2008, there has been a growing public outcry against discarding practices in Europe [4].

The implementation of a landing obligation was one of the key elements of the recent reform of the EU Common Fisheries Policy (CFP) (Regulation (EU) No 1380/2013). A phased landing obligation was formally implemented in January 2015, and by 2019 it will be in force in all EU waters, covering all fisheries that capture commercial species covered by the CFP regulation, including small-scale fisheries (SSF).

The discard problem is greater in industrialized large-scale fisheries than in SSF and the North Atlantic and Northwest Pacific fisheries account for 40% of the world's discards [3]. Discarding occurs not only due to poor gear selectivity and associated capture of unwanted fish, but also due to the current regulation in place. Undersize fish may be discarded due to the minimum landing size regulations, overquota fish can be discarded in a multi-species fishery due to quota exhaustion of one species, and less valuable size classes of target species may be discarded to make room for more valuable size classes (high grading).

Despite the importance of discards, data collection and estimates of discards for all commercial species in EU waters under the CFP are far from being complete and the estimates generally have low precision. This reflects the relatively low intensity of discard sampling and the high variability in the amounts of fish discarded, even within a single fishery. All estimates of quantities of fish discarded in the EU arise from scientific sampling programmes which are usually directed at demersal species often taken in “mixed fisheries”, where several commercial species are taken simultaneously by each deployment of the fishing gear [7,8]. The omission and/or use of poor quality discard data in stock assessments may also result in underestimation of exploitation rates and can lead to biased assessments and policy recommendations, hampering the achievement of sustainable use of fishery resources [9].

## 2. The role of small-scale fisheries in the European Union

Most of the world's fisheries could be considered to be ‘small-scale’, although there is no universally accepted definition and sometimes defining small-scale is not straightforward [10]. Allison and Ellis [11] define SSF as those “that operate from shore or from small boats”, in coastal and inland waters, with an average of 1–4 crew on board and strongly linked to local communities. Generally, SSF rely on local resources and have lower overheads in terms of capital, but higher labour intensity relative to large-scale “industrialized” fisheries [12]. The sector also consumes less fuel and discards less than larger-scale fisheries, and its catch is generally for human consumption [13]. There is also no commonly agreed definition of SSF at the European level. Nevertheless, the EU small-scale fishing fleet may be said to be composed of vessels small in size and, sometimes, with a low level of technology and capital investment per fisher. The only existing formal definition of “small-scale coastal fishing” is that used for the purposes of the European Maritime and Fisheries Fund (Regulation (CE) No 508/2014), which defines SSF as “fishing carried out by fishing vessels of less than 12 m and not using towed gear”. SSF are thus typically “artisanal” and coastal, using small boats, targeting multiple resource species using traditional gears.

Landings from EU SSF are worth around 2 thousand million euros annually, i.e. 25% of the revenue generated by EU fisheries; thus SSF have a high value in the seafood supply chain [14]. The EU small-scale fleet has declined by 20% over the last decade, to just over 70,000 vessels. However, they still account for around 80% of EU fishing boats and more than 40% of EU fishers (90,000) are engaged in SSF [15], emphasizing the high social, economic and cultural importance of SSF for coastal communities, especially in southern Europe. European small-scale vessels are on average 5–

7 m in length, weigh 3 GT, and have engines with a power of 34 Kw [15]. More than 90% of the European small-scale fleet uses primarily passive gears (i.e. gears that are not towed or dragged through the water) such as drift and fixed nets, hook and lines, or pots and traps [14].

The need for sustainable SSF is recognized in EU and international policy, e.g. Europe 2020, Water Framework Directive (WFD), Marine Strategy Framework Directive (MSFD), CFP, and the SSF voluntary guidelines endorsed by the FAO of the United Nations. In a vote in April 2014 on the European Maritime and Fisheries Fund (EMFF), the European Parliament recognized the importance of SSF for the sustainability of local coastal communities, particularly concerning women and youth.

Given the importance of SSF in the European context, it is of high importance to understand the reasons for, and the factors affecting, discarding, as well as the potential social and economic impacts of the landings obligation, and the best strategies to mitigate negative impacts. As such, the current paper focuses on (i) investigating the potential impacts of the discard ban in European SSF and (ii) analysing the critical factors for the successful implementation of this measure. In order to do this, a review of the literature on discards on SSF was carried out, followed by a survey of key stakeholders to collect detailed information about current knowledge on discards and stakeholders' perceptions about potential impacts of the discard ban on European SSF, the capacity of the SSF industry to implement the discard ban, and limits and feasibility of implementing such a measure.

## 3. Methodology

### 3.1. Systematic literature review

A global analysis of the peer-reviewed literature was carried out to identify studies documenting the discard problem in SSF in developed countries (EU, Australia, Canada, Japan, New Zealand, Iceland, Norway, and USA) under different fisheries management regimes. Our target was to identify the relationships between discarding behaviour, management measures and fish stock status. This analysis enabled us to quantify current rates of discards in different types of SSF, and identify the fisheries characteristics related to the current discard problem. The literature review also helped to identify and summarise the technical measures that developed countries have in place to reduce/eradicate discards, as well as the key factors and enabling conditions that may be important to solve the discard problem. This analysis can be used to help managers identify the incentives to successfully implement the new CFP. The literature search was limited to the impacts of discards of species caught for human consumption and which are directly and indirectly targeted by SSF.

A systematic search strategy was applied to identify relevant scientific papers published up to February 2016 in Scopus, by searching titles, abstracts and keywords using the following terms: “fisher\*” or “fishing”; and “discard\*”, and “artisan\*” or “small-scale” or “traditional” or “subsistence” or “local” or “industrial” or “commercial” or “large”. Although the search terms were in English, due to Scopus being indexed and having titles and abstracts available in English, no studies were excluded on the basis of being published in another language.

### 3.2. Expert consultation

Forty-nine “experts” were contacted, between December 2014 and October 2015, and sent an online questionnaire (See detailed content of the questionnaire in the [Supplementary Material](#)). Interviewees were selected based on their knowledge of SSF, gear

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