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VALDUVIS: An innovative approach to assess the sustainability of fishing activities

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ABSTRACT

The Belgian fishing sector is under pressure to demonstrate the sustainability of its fishing methods. First, the beam trawl (which accounts for 80% of the landings) is contested due to its low selectivity and significant disturbance of the sea bed. Second, the Belgian retail market has committed to sourcing sustainable seafood. However, converting to sustainable methods is costly and may not be feasible for the majority of fishers who have suffered economic losses in the wake of the 2008 fuel crisis. Instead of a full-scale transition to sustainable fishing, fishers have developed modifications to the beam trawl that reduce environmental impact and save fuel. We propose an indicator-based sustainability assessment tool (VALDUVIS) that recognizes these efforts and offers incentives for fishers to adopt more sustainable fishing practices. In this article, we describe the development of the tool and its potential applications. Integrated Sustainability Assessment (ISA) was used as a framework to develop the tool and to initiate the transition towards sustainability in the Belgian fishery. VALDUVIS offers a promising new method to assess sustainability in fisheries. The approach is innovative in several ways. First, indicator scores are calculated using official data flows (e.g., the electronic logbook), which enhances traceability and provides the possibility of communicating sustainability data soon after landing the fish. Second, indicators are scored on a fine scale (e.g., per fishing trip). Third, stakeholder participation was essential in the development of the tool. This enhanced the support of the wider fishing sector and assured the relevance of the indicators and the users' understanding of the tool. Fourth, the delivered tool is multi-purpose and can be easily adapted to the needs of a range of end users (wholesalers, retailers, authorities, researchers, etc.). The VALDUVIS tool offers a cost-effective alternative to known certification schemes that could be applied to any type of fishery. The Belgian fishing sector considers VALDUVIS to be suitable for monitoring the progress towards sustainability as well as for providing incentives for fishers to adopt better practices.

1. Introduction

The Belgian fishing fleet is one of Europe's smallest, comprising a mere 83 vessels with a total production of 22,793 tons per year (Tessens, 2013a). The fishery is considered a mixed groundfish fishery, with sole (*Solea solea*) and plaice (*Pleuronectes platessa*) as the main target species. Small and medium-sized vessels, mostly family-run businesses, make up the majority of the fleet. Belgian fishers use a range of fishing techniques, but the beam trawl method is by far the most important (80% of the landings in 2013). Other fishing methods include shrimp beam trawl (6% of landings), demersal otter trawl (5% of landings), flyshoot (Danish seine) (5% of landings), nephrops trawl (3% of landings) and scallop dredge (1% of landings). Only two vessels use passive gears, accounting for 0.3% of landings (Tessens, 2013a). In the 1980s and 1990s, the beam trawl was considered the best fishing method to maximize catch and profit. In more recent years, the fishing industry has faced economic hardship due to steeply increasing fuel prices and volatile market prices. Especially the fuel-intensive beam trawl has been adversely impacted, with some years even resulting in a net financial loss (Depestele et al., 2007; Tessens, 2013b). From an environmental perspective, the beam trawl is contested for its low selectivity (Suuronen et al., 2012) and high seabed disturbance (Lindeboom and de Groot, 1998).

Despite environmental and societal pressures, the Belgian fishing fleet is not shifting toward more sustainable techniques. There

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are two main reasons for this. First, there is little room for adaptability and innovation because of the economic losses that fishers have suffered since the 2008 fuel crisis. Second, fishers show a general resistance to change that may result in them simply continuing "business as usual" (Eayrs et al., 2014). Another possible reason is the absence of a framework for change. Instead of making dramatic changes, many fishers have chosen to modify their beam trawl gear to reduce fuel usage, which has often also resulted in higher selectivity and reduced seabed impact (Polet et al., 2010; Poos et al., 2013).

In the past decade a large number of fish sustainability information schemes have been developed. They differ in form and support various purposes (Parkes et al., 2010). Ecolabels (ISO type I environmental labels) are voluntary, with certification based on a third party assessment of the environmental effects associated with the product (e.g., The Marine Stewardship Council and Friend of the Sea). Seafood guides (ISO type II or type III ecolabels) provide self-declared claims or product descriptions against preset indices (e.g., Seafood Watch from the Monterey Bay Aquarium). Finally, sustainable development frameworks assist policymakers working in fisheries management (e.g., Anderson et al., 2015; Fletcher et al., 2005; Garcia et al., 2000). In 1995, the United Nations' Food and Agricultural Organization (FAO) published a Code of Conduct for Responsible Fisheries which sets out principles and international standards of behavior for responsible practices (FAO, 1995). However, few ecolabels comply with the principles propagated in the Code (De Vos et al., 2010). Furthermore, overall little attention has been given to the harmonization of methods and sustainability advice, leading to significant consumer confusion (Jacquet et al., 2009). This issue has been addressed by various authors and institutions who are committed to reviewing and comparing these schemes in order to improve their quality (Accenture, 2009; Jacquet and Pauly, 2007; James Sullivan Consulting, 2012; Parkes et al., 2010; Sainsbury, 2010; Washington, 2008). Also, a global consortium of major retailers has invested in developing a common, consistent and global benchmarking tool for seafood certification and labeling programs: the Global Sustainable Seafood Initiative (GSSI).

In Belgium, public awareness about sustainable seafood only started around 2010, mainly as the result of a Dutch initiative, a seafood pocket guide called '*VISwijzer*'. The *VISwijzer* was first issued in Belgium in 2010 by a major retailer in collaboration with The North Sea Foundation, an environmental NGO. It was based on the idea that informed choices made by consumers could contribute to the conservation of marine biodiversity (Jacquet et al., 2009; Jacquet and Pauly, 2007; Ward, 2008). The *VISwijzer* was criticized by Belgian fishers and their producer organization for not taking some essential differences into account in the use of the beam trawl between the Belgian and Dutch fishers. For instance, Belgian fishers use lighter fishing gears and fish at a lower towing speed than their Dutch counterparts, resulting in reduced bottom impact (Polet et al., 2010). Belgian fishers also claim to have reduced unwanted bycatch, bottom impact and fuel consumption by implementing certain gear modifications (which has been recognized to some extent by the scientific community) (Polet and Depestele, 2010). Instead, the *VISwijzer* created a negative perception about the Belgian fishery and the beam trawl in particular, and failed to offer proper incentives for fishers to convert to sustainable fishing methods. Also, it failed to effectively inform consumers about sustainable alternatives so they could make more conscious purchasing decisions. Belgian fishers felt cornered but had no way of countering the *VISwijzer* assertions by presenting a credible alternative for demonstrating sustainability.

In 2011, the Belgian fishing sector made an explicit commitment to sustainable fishing. A direct motivation for their commitment was the Belgian retailers' pledge to raise standards for purchasing sustainable seafood. Other drivers for change were the reformed Common Fisheries Policy (CFP) and the subsequent pressure from national and regional governments. On August 30th, 2011, a covenant for the promotion of a sustainable Belgian fishing sector was signed by the fishers' producer organization (*De Rederscentrale*), an environmental NGO (*Natuurpunt*), the Flemish Department for Agriculture and Fisheries and the Institute for Agricultural and Fisheries Research (ILVO). The aim of this covenant was to initiate the transition of the Belgian fishery towards sustainability. In this context, ILVO was asked to develop an indicator-based assessment tool for measuring and monitoring the sustainability of the Belgian fishing fleet.

The VALDUVIS tool attempts to answer that request. VALDUVIS uses detailed descriptions of fishers' actions as recorded in the electronic logbook to make trip-based sustainability assessments. This level of detail is based on the premise that fishers greatly differ in their fishing tactics (e.g., gear modifications, preference for a certain species mix or fish size) and that two fishing trips are never the same (e.g., tow duration, towing speed and choice of fishing ground). This newly developed tool can be used to monitor the fleet's progress towards sustainability while also providing individual fishers insight into the sustainability of their own actions and choices in relation to other fishers. This paper describes the methodological steps in the development of the tool and explores its use and applications in the Belgian fishing sector. We also discuss the potential applications of the tool and the rationale for applying the tool in a range of fisheries in the greater North Sea area.

2. Methods

2.1. Initiating change in the Belgian fishery using Integrated Sustainability Assessment (ISA)

In 2011, the fishing sector made an explicit commitment to sustainable fishing and co-signed a covenant for the promotion of a sustainable Belgian fishing sector. After the covenant was signed, Integrated Sustainability Assessment (ISA) was introduced in the Belgian fishery as a model for managing the transition. ISA offers a cyclic step-by-step approach in which visions of a sustainable future form the starting point for exploring solutions to persistent problems of unsustainable development (Bohunovsky et al., 2010; Weaver and Rotmans, 2006). These visions are developed in a participatory way. For a detailed description of the different stages of ISA, see Weaver and Rotmans (2006).

Stakeholder participation is key to ISA. Throughout the paper, we refer to 'stakeholders' as comprising all people and organizations that are actively involved in the Belgian fishing sector. The choice of stakeholders was based upon previous stakeholder-driven projects carried out at ILVO. First, we made sure that all stakeholders who can affect management decisions (policy makers, government officials, the producer organization, environmental NGOs) and stakeholders who are affected by these decisions (fishers, fishmongers, fish auctions, fish processors and retailers) were included. In addition to this 'core group', we invited other stakeholders and experts depending on the specific topics of discussion throughout the development of the tool.

The ISA approach was adapted to the Belgian fishery by means of two complementary projects: the 'VISTRAJECT' project and the 'VALDUVIS' project. The focus of 'VISTRAJECT, a trajectory towards sustainability in the Belgian fishery' (2011-2014), was to develop a shared vision of a sustainable future for the Belgian fishery and to define specific goals and actions. Partners included fishers and their producer organization (*De Rederscentrale*), an environmental NGO (*Natuurpunt*), the Flemish Department for Agriculture and Fisheries and the Institute for Agricultural and Fisheries Research