

# Social sustainability issues of cod and haddock fisheries in the northeast Atlantic

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## ABSTRACT

Research on the sustainability of capture fisheries has focused more on environmental and economic sustainability than on social sustainability. To assess social sustainability, relevant and important social sustainability issues (SSIs) need to be identified. The objective of this study was to identify relevant and important SSIs for cod and haddock fisheries in the northeast Atlantic based on two stakeholder surveys. The first survey resulted in the identification of 27 relevant SSIs that were ranked in order of importance in the second survey. Results show that worker safety, product freshness and companies' salary levels are the most important SSIs. Results on the relevance and importance of SSIs enable the industry and policy-makers to direct improvement efforts towards the more important SSIs.

Keywords: social issues, stakeholders, capture fisheries, working conditions, fish welfare

## 1. Introduction

Sustainability of food production was firmly put on the research agenda with the release in 1987 of the Brundtland report on sustainable development entitled 'Our Common Future' (Brundtland 1987). Sustainable development was defined in this report as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs." This definition captures notions of human needs (economic sustainability), equity concerns (social sustainability) and the carrying capacity of our planet (environmental sustainability).

Research on social sustainability has mainly concentrated on the inclusion of the social dimension in LCA (Benoît-Norris et al. 2011, Dreyer et al. 2006, Hunkeler 2006, Kruse et al. 2009, Norris 2006, Weidema 2006). To this end, indicators have been proposed (e.g. UNEP/SETAC 2010a, b, c, d, e) that address various social sustainability issues (SSIs) (i.e. aspects of social sustainability that are important to consider in an assessment) that are considered to be universal. The importance of SSIs, however, depends on the cultural, political, social and economic context of the case considered (Benoît-Norris et al. 2011, Glaser & Diele 2004).

A social sustainability assessment, therefore, should start with a description of the case considered (Mollenhorst & De Boer 2004, Van Calker et al. 2005). This study concerns a group of cod and haddock fishing companies in the northeast Atlantic. These Norwegian and Icelandic fishing companies employ trawlers, longliners, auto-liners, and Danish seiners in coastal and offshore fisheries to produce fresh and frozen fillets. The second step in social sustainability assessment is the identification of relevant and important social sustainability issues (Mollenhorst & De Boer 2004, Van Calker et al. 2005). Since the importance of SSIs depends on the context of the case considered, stakeholder input should be used (Caffey et al. 2000, Meul et al. 2008, Mollenhorst & De Boer 2004, Van Calker et al. 2005). Stakeholders are those individuals or organizations that can affect or are affected by the activities of the cod and haddock fishing companies in the northeast Atlantic (based on Freeman 1984).

The objective of this study is to identify relevant SSIs for cod and haddock fisheries in the northeast Atlantic and to determine the importance of these SSIs based on stakeholder input. Since social sustainability concerns a diversity of stakeholders with different interests, a heterogeneous group of stakeholders was consulted in order to get a representative set of SSIs (Caffey et al. 2000, Meul et al. 2008, Mollenhorst & De Boer 2004, Van Calker et al. 2005).

## 2. Methods

Stakeholders were invited to take part in two consecutive surveys on SSIs. These stakeholders were identified from a detailed value chain characterization and distributed across seven distinct stakeholder groups, namely: fishing companies, fishing company employees, suppliers and processors, sales organisations, consumers (repre-

sented by consumer organizations), policy-makers, and fish welfare organizations. Each stakeholder group encompasses multiple stakeholders who share similar interests.

The first survey served to compile a long list of relevant SSIs for cod and haddock fisheries in the northeast Atlantic. To this end, respondents were asked to 1) indicate whether SSIs on an initial list of possible SSIs based on literature (Table 1) were relevant, and 2) add new SSIs in case of deficiencies. SSIs on this initial list concern working conditions, terms of employment, employees' job fulfilment, companies' contribution to the local community, food safety and product quality. When at least one respondent indicated that an SSI on the initial list of SSIs was relevant, then this SSI was added to the long list. If any stakeholder mentioned a new SSI, it was added to the long list as long as the SSI was clear, concerned social sustainability and did not overlap with any of the SSIs on the initial list.

Table 1. Initial list of social sustainability issues with the relevant references to literature

SSI	Reference
Employees' working schedule	(Kruse et al. 2009, UNEP/SETAC 2010e)
Arrangements for employees' overtime	(UNEP/SETAC 2010e)
Companies' salary levels	(Benoît-Norris et al. 2011, Caffey et al. 2000, Kruse et al. 2009, Meul et al. 2008, UNEP/SETAC 2010e)
Companies' timely payment of salaries	(UNEP/SETAC 2010e)
Pension fund contributions of companies for their employees	(Kruse et al. 2009, UNEP/SETAC 2010e)
Employees' income security during sickness	(UNEP/SETAC 2010e)
Worker safety	(Caffey et al. 2000, UNEP/SETAC 2010e)
Healthy working environment (ergonomics)	(Mollenhorst & De Boer 2004, UNEP/SETAC 2010e)
Provisions aboard for the crew (for example, sports and internet facilities on vessels that go out to sea for longer periods of time)	(Kruse et al. 2009)
Employees' job satisfaction	(Bavinck & Monnereau 2007)
Employees' professional pride	(Meul et al. 2008)
Freedom of association and collective bargaining	(UNEP/SETAC 2010e)
Equal opportunities for immigrant workers	(UNEP/SETAC 2010e)
Community involvement of cod and haddock fishing companies	(UNEP/SETAC 2010b)
Local ownership of cod and haddock fishing companies	(Caffey et al. 2000)
Local employment from cod and haddock fisheries	(UNEP/SETAC 2010b)
Seasonality of employment	(Kruse et al. 2009)
Product freshness	(Roininen et al. 2006)
External damages to the fish (e.g. cuts)	(based on Mollenhorst & De Boer 2004)
Internal damages in the fish (e.g. bleedings)	(based on Mollenhorst & De Boer 2004)
Microbiological food contamination (from, for example, bacteria and parasites)	(Codex Alimentarius Commission 2009)
Chemical food contamination (from, for example, cleaning materials or pesticides)	(Codex Alimentarius Commission 2009)
Physical food contamination (from, for example, gear or equipment)	(Codex Alimentarius Commission 2009)

The second survey served to determine the importance of each SSI on the long list of relevant SSIs that resulted from the first survey. Respondents were asked to put the five most important SSIs from the long list in order of importance.

The analysis of the second survey focused on responses per stakeholder group in order to correct for unequal numbers of responses between stakeholder groups. For each respondent, five SSIs were scored 1 to 5 points, where 1 point was assigned to the SSI that the respondent ranked lowest and 5 points were assigned to the SSI that the respondent ranked highest. These individual scores were then used to calculate the average score for SSI  $i$  and stakeholder group  $k$  as follows:

$$\bar{S}_{ik} = \frac{\sum_{l=1}^l S_{ilk}}{n_{lk}}, \quad \text{Eq. 1}$$

where  $S_{ilk}$  is the score for SSI  $i$  of respondent  $l$  in stakeholder group  $k$  and  $n_{lk}$  is the number of respondents  $l$  in stakeholder group  $k$ . Then, the overall score for SSI  $i$  was calculated as follows:

$$\bar{S}_i = \frac{\sum_{k=1}^k \bar{S}_{ik}}{n_k}, \quad \text{Eq. 2}$$

where  $\bar{S}_{ik}$  is the average score for SSI  $i$  and stakeholder group  $k$ , and  $n_k$  is the total number of stakeholder groups  $k$ .

### 3. Results

In total, 41 copies of the first survey were returned from April to August 2013 via mail, e-mail and online. Table 2 reports the number of responses per stakeholder group for the first survey and shows that responses from employees in fishing companies represent the largest share of responses.

In the first survey, each SSI on the initial list of SSIs was selected by at least 5 and at most 33 respondents. This indicated that all SSIs on the initial list had to be included in the long list of SSIs for the second survey. In addition, six new SSIs suggested by respondents were added to the long list, namely: fish welfare during capture, humane slaughter of fish, opportunities for life-long learning, on-the-job training, employees’ travel time from home to work and back, and time at home. The new SSI ‘fish welfare during capture’ implicitly included the former SSIs ‘internal and external damages to fish’, which were thus excluded from the long list of SSIs. As such, the first survey resulted in a long list of 27 relevant SSIs that was used as input for the second survey.

Table 2. Targeted sample and number of responses for survey 1 and survey 2 per stakeholder group and per stakeholder

Stakeholder group	Stakeholders	Targeted sample (n) <sup>a</sup>	Responses survey 1 (n)	Responses survey 2 (n)
Fishing companies	Fishing company owners	7	3	4
	Fishing company associations	1	1	2
Fishing company employees	Fishing companies’ employees	81	12	20
	Labor unions	7	1	0
Suppliers and processors	Suppliers to the vessels	0	0	1
	Processing company owners	4	3	4
	Processing companies’ employees	335	1	6
Sales organizations	Processing company associations	1	2	2
	Retailers	12	1	1
	Merchants	3	6	1
Consumers	Organizations promoting the sector	2	1	0
	Consumer organizations	1	0	0
Policy-makers	Local municipalities	4	0	1
	Government fisheries department	2	4	1
	Public administration	0	0	1
	Public institutions	0	0	1
	Government unspecified	0	0	1
Education	Certifiers of stock sustainability	3	1	0
	Organizations that provide education to employees in fishing companies	Not applicable	Not applicable	4
Fish welfare organizations	Fish welfare organization	1	1	1
Other interest groups	Other interest groups not specified further	0	4	0

<sup>a</sup> Targeted sample refers to the number of organizations or the number of individuals.

In total, 66 copies of the second survey were returned from October to December 2013 via e-mail and online. Seven surveys were excluded because they were incomplete and no stakeholder affiliation was entered. Eight surveys were excluded because stakeholder affiliation was either unclear or irrelevant. Table 2 reports the number of responses per stakeholder group for the second survey and shows that responses from employees in fishing companies represent the largest share of responses.

The analysis of the second survey focused on the importance of the SSIs on the long list, based on overall scores per SSI. Overall scores for the SSIs ranged from 0 to 1.99, with an average of 0.6. The three most important SSIs are worker safety, product freshness and companies’ salary levels, as indicated by the highest over-

all scores for these SSIs (1.99, 1.46 and 1.34, respectively). The three least important SSIs are seasonality of employment and arrangements for employees' overtime, which were not ranked by any respondent, and equal opportunities for immigrant workers (with an overall score of 0.02).

#### 4. Discussion

The first survey resulted in the identification of 27 relevant SSIs for cod and haddock fisheries in the northeast Atlantic. These 27 SSIs include six SSIs that were not considered before in studies on social sustainability (Bavinck & Monnereau 2007, Benoît-Norris et al. 2011, Caffey et al. 2000, Codex Alimentarius Commission 2009, Kruse et al. 2009, Meul et al. 2008, Mollenhorst & De Boer 2004, Roininen et al. 2006, UNEP/SETAC 2010b, e). The newly identified SSIs address aspects of employees' training and education opportunities, employees' time off from work and fish welfare. The second survey resulted in a ranking of the 27 relevant SSIs in order of importance. This ranking of SSIs shows that the most important SSIs for cod and haddock fisheries in the northeast Atlantic are worker safety, product freshness and companies' salary levels. Worker safety (Kruse et al. 2009, Utne 2007) and companies' salary levels (Kruse et al. 2009) were identified as important SSIs in studies on social sustainability of capture fisheries before, but product freshness was not.

Results on the relevance and importance of SSIs for cod and haddock fisheries in the northeast Atlantic were based on relatively low numbers of responses to the first and the second survey (41 and 51 responses, respectively). Larger numbers of responses to the surveys would have been preferable, but consulting a diversity of stakeholders was prioritized. There were no responses, however, from consumers, one of the seven stakeholder groups distinguished. Therefore, consumer perspectives on social sustainability issues should be addressed in future research.

Responses to the surveys were unevenly distributed across stakeholder groups; the largest number of responses per stakeholder group was 20, whereas the smallest number of responses per stakeholder group was one. Not correcting for this uneven distribution of responses across stakeholder groups would have resulted in a disproportionately large influence of certain stakeholder groups at the expense of other stakeholder groups. Therefore, average scores (indicating relative importance of the SSIs) were first determined per stakeholder group and then averaged over all stakeholder groups.

It is interesting to explore to what extent results on the importance of SSIs for cod and haddock fisheries in the northeast Atlantic are applicable beyond the context of this case. In this study, several different types of fishing techniques were considered (i.e. trawling, seining, auto-lining and long-lining in coastal and offshore waters) within one region. This means that the context of cod and haddock fisheries in the northeast Atlantic is mainly determined by its regional setting. Therefore, similar results on the importance of SSIs can be expected for other capture fisheries (e.g. herring or mackerel fisheries) in the northeast Atlantic and its subareas, and for capture fisheries in similar regions (e.g. the northwest Atlantic).

#### 5. Conclusion

This study resulted in the identification of 27 relevant SSIs for cod and haddock fisheries in the northeast Atlantic. These 27 SSIs include six newly identified SSIs that address aspects of employees' training and education opportunities, employees' time off from work and fish welfare. The most important SSIs are worker safety, product freshness and companies' salary levels. Results presented in this study on the relevance and importance of SSIs for cod and haddock fisheries in the northeast Atlantic inform stakeholders, and especially the industry and policy-makers, about the relevant social sustainability themes and their valuation by different stakeholders. This enables the industry and policy-makers to direct improvement efforts towards the more important SSIs.

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