Pilot on the collection of social data in the Dutch fisheries and aquaculture sector, 2017

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1 Introduction

1.1 Background

Within the EU biological, economic and social data are to be collected under the Data Collection Framework. As of 2017 social data were also included in this data collection framework.[1] These data initially mainly include demographic information on the employees and owners of fishing and aquaculture companies, specified in Table 6 of the Commission implementing decision:

- Employment by gender
- FTE by gender
- Unpaid labour by gender
- Employment by age
- Employment by education level
- Employment by nationality
- Employment by employment status
- Total FTE.

The regulation stated that 'Data on employment by education level and employment by nationality may be collected on the basis of pilot studies'. The Netherlands carried out a pilot study to collect these data and this factsheet reports on this pilot study and its results. After comparing various options for the collection of data on education level and nationality, the data were finally collected together with the other social data on employment (see also the section on the data collection process). Because of this combined data collection, this factsheet's result section also covers the data collected as part of the regular data collection.

In the Netherlands, the data are collected by Wageningen Economic Research on behalf of the Centre for Economic Information (in Dutch, *Centrum voor Economische Informatievoorziening*, CEI). The information that is gathered by the Netherlands is specified in the National plan 2020-2021 for data collection (Ministerie van LNV et al., 2019).

[1] COMMISSION IMPLEMENTING DECISION (EU) 2016/1251 of 12 July 2016 adopting a multiannual Union programme for the collection, management and use of data in the fisheries and aquaculture sectors for the period 2017-2019

1.2 Research objectives

The objective of the pilot study was to find out what the most efficient way of data collection for the social variables was and whether the social data show patterns that should be taken into account when designing the regular data collection for these variables and when aggregating the data. As stated in the National programme, data will be gathered by means of questionnaires, sent to fishing vessel owners. The cutter fleet and the pelagic trawler fleet will be used as frame population (population from which the data will be gathered) for the pilot study. Questionnaires will be sent to the vessel owners participating in the cutter panel and will be followed up by phone calls to ensure maximum response levels. Analyses of variance will be used to check for significant differences in crew characteristics between various fleet segments. If needed, data will be aggregated using post stratification.

2 Approach

2.1 Data collection process

To implement the collection of social data and get commitment from the fishing sector to provide this, the plan for the collection of social data was discussed with sector representatives early 2017. The sector representatives concluded that the social data provided a limited view on the sector and preferably additional data on experience, working conditions e.g. should also be collected. The meeting also resulted in additional data sources which could potentially be used for the collection of data, more specifically the *Sociaal Fonds voor de Maatschapsvisserij* (SFM); an organisation which insures approximately 1,100 crewmembers of fishing vessels in 2019.[2] Although potentially a good source of information, the data from this organisation could not be used without the consent of the fishermen themselves because of privacy legislation. As the administrative burden of filling in the simple questionnaire was almost equal to that of giving permission to access the data from the SFM it was decided that the data would be gathered by questionnaires sent to the vessel owners directly. As it is proven that the response rate diminishes with the size of the questionnaire, the questionnaire only included the information requested in the DCF.

2.2 Chosen methodology

Data were gathered in different ways from the various subsectors in the Dutch fisheries and aquaculture sector, depending on the already existing data collection (Ministerie van LNV et al., 2019). The classification was based on the type of fishing licence and the activities the vessels carried out:

- Aquaculture sector (companies that have an aquaculture licence and (mostly) culture mussels and oysters):
  - Data were collected by paper questionnaire sent to (the owner of) the company. The respondent could respond either by filling in the paper questionnaire or the online questionnaire.
- Cutter sector (vessels that have an EU fishing licence, use active gears and have an overall landings value of more than 50,000 euros per year):
  - Data were collected by paper questionnaire sent to the owner of the vessel. The respondent could respond either by filling in the paper questionnaire or the online questionnaire.
- Pelagic freezer trawlers (large vessels that have an EU fishing licence, with engine powers over 3,500 kW and that are longer than 59 metres):
  - Direct contact was sought with the companies operating these vessels (three in total) which also provide economic data for the DCF. After consultation, an Excel format for filling in the data was sent whilst keeping contact about the progress of the data delivery.

[2] https://www.aovsfm.nl/application/files/7716/2452/7869/SFM_jaarverslag_2020_klein_formaat.pdf

- Other coastal fishing vessels (a mixed group of vessels mainly <12 metres that have an EU fishing licence, fish with passive gears or have an overall landings value of less than 50,000 euros per year; this category also includes inactive vessels):
  - To prevent excess administrative burden, the data were collected in combination with the already existing paper questionnaire on the economic performance of the fishing vessel. This questionnaire was sent to the owner of the vessel. The respondent could respond either by filling in the paper questionnaire or the online questionnaire.

In all sectors reminders were sent: either by phone or via a letter in case of non-response. Data collected were stored in the database at Wageningen Economic Research and assessed for erroneous/missing data. Based on the outcome of the questionnaire and additional information on the fishing activities, two vessels were reallocated from the other coastal vessels group to the aquaculture sector group.

2.3 Evaluation of quality

To know the statistical reliability of the sample an analysis was conducted to determine to what extent the vessels in the sample were representative for the total sampling frame. This was done by looking at the mean of the sample compared to the mean of the total sampling frame, with the following parameters:

- **Technical characteristics:**
  - Size and weight of vessels (tonnage, GRT)
  - Engine power of vessels (kilowatt, KW)
- **Activity characteristics:**
  - Fishing effort (days at sea or fishing days per year)
  - Total landed fish volume (in kilograms)
  - Total landed value fish (in euros)

For each characteristic the mean is tested via the Z-test to analyse whether the sample was hardly or strongly deviating from the sampling frame.

These analyses were carried out on the various subsegments that coincide with both the DCF segments for the reporting of the social variables and with the various subsectors in the Netherlands:
- Aquaculture: similar in DCF and Dutch programme
- Cutter sector: part of the large-scale fisheries (DCF)
- Pelagic freezer trawlers: part of the large-scale fisheries (DCF)
- Other coastal fishery: active part of other coastal fisheries in Dutch programme, which coincides largely with the small-scale fisheries (DCF)
- Inactive vessels: part of other coastal fisheries in Dutch programme

2.3 Assessment of existing patterns

To assess existing pattens that might need be taken into account in the processing of the data, relationships between the requested variables and general features of the subsectors were tested:
- Regional differences (in the south of the Netherlands, in the north of the Netherlands and in the province of Flevoland)
- Differences in size of the vessels (small vessels (<300 hp) vs large vessels (>300 hp)
- Differences in type of companies (single-vessel companies vs multi-vessel companies)

These relationships were tested using chi-square tests.

3 Results

3.1 Evaluation of quality

Although all vessel owners were contacted, only for approximately one fifth of the Dutch fleet the social data could be obtained (Table 1). Large differences exist between response rates for the various subsectors: for the economically most important subsectors (aquaculture sector, cutters and large pelagic trawlers) the response rate ranged between 30-38%. For the other coastal fishery, the response rate was much lower (12%) and hardly any of the owners of inactive vessels replied to the request for social data (4%). For the large trawlers, data were obtained at a late stage, so they could not be provided to the EC for use in the EU report (STECF, 2018). However, these data were considered in the current analysis.

Table 1 *Population size, number of observations and response rates for the collection of social variables in each of the subsectors*

	Population size	Number of observations	Response rate
Segment			
Aquaculture	109	34	31%
Cutters	305	90	30%
Pelagic freezer trawlers	8	3	38%
Other coastal fishery	234	28	12%
Inactive vessels	209	8	4%
Total	**865**	**163**	**19%**

Source: Wageningen Economic Research.

The overall representativeness of the vessels of which data were obtained was good (Table 2). The average vessel in the sample hardly differed from the average vessel in the overall population and none of the differences were statistically significant. Only for the other coastal fishery the size of the vessel and the activity variables from the sample vessels were much lower than those in the total population. This is because this subsector also includes a limited number of large dredging vessels targeting molluscs. These vessels fish much more intensively than the other vessels in this segment and contribute more than 70% of the total revenues of this subsector. Because of the large variability in this subsector, the large differences were not statistically significant. Activity data were not available for the aquaculture vessels and not applicable for the inactive vessels.

Table 2 *Relative differences between sample means and sampling frame means as a percentage. No significant deviations between sample and sampling frame were observed (Z<0.05). Activity data were not available for the aquaculture vessels and not applicable for the inactive vessels*

EU length class	Kilowatt (KW)	Gross Tonnage (GRT)	Days at sea	Landed volume (in kilograms)	Landed value (in euros)
Aquaculture	1%	4%			
Cutters	4%	1%	0%	-17%	-1%
Pelagic freezer trawlers	-30%	-25%	1%	-1%	-1%
Other coastal fishery	3%	-65%	-28%	-95%	-78%
Inactive vessels	-4%	-11%			

3.2 Demographics of the Dutch fishery and aquaculture sector

This section provides a general overview of the outcomes of the survey for the various subsectors. Because of the low response rate for the inactive vessels, the results of this segment have not been included as they are assumed to be too uncertain.

As expected, the survey showed that almost all people working in the Dutch fisheries and aquaculture sector in 2017 were male (Figure 1). Only in the aquaculture sector and in the cutter sector one female worker was reported. In the returned questionnaires none of the respondents said that the gender was unknown or other.

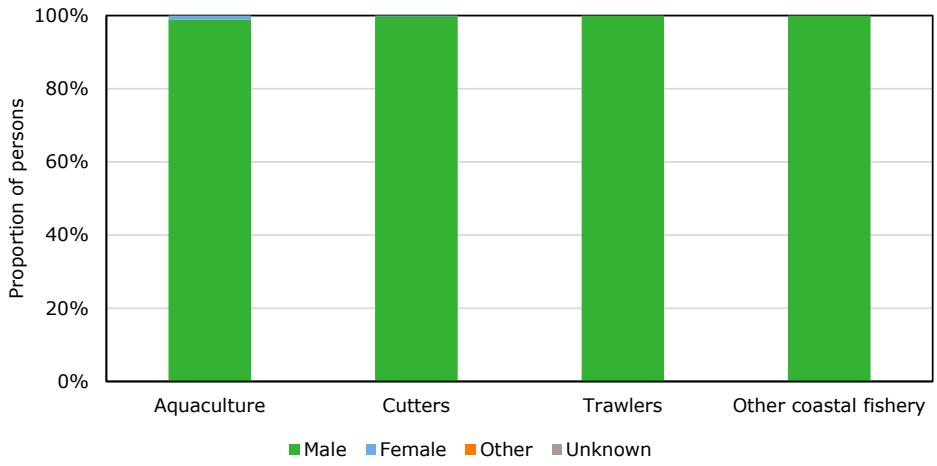

Figure 1 *Gender composition of people working in the various subsectors of the Dutch fishery and aquaculture sector*
Source: Wageningen Economic Research.

The majority of the people in the fisheries and aquaculture sector were between 25 and 64 years old and were divided equally over the class below and above 40 years old (Figure 2). For the economically important sectors (aquaculture, cutters and trawlers) the age composition was almost identical. The age of the people working in the other coastal fisheries was generally older with more than 70% of the fishers over 40 years old and more than 20% over 65 years old. Almost for all individuals mentioned in the questionnaire the age class was filled in (>99%).

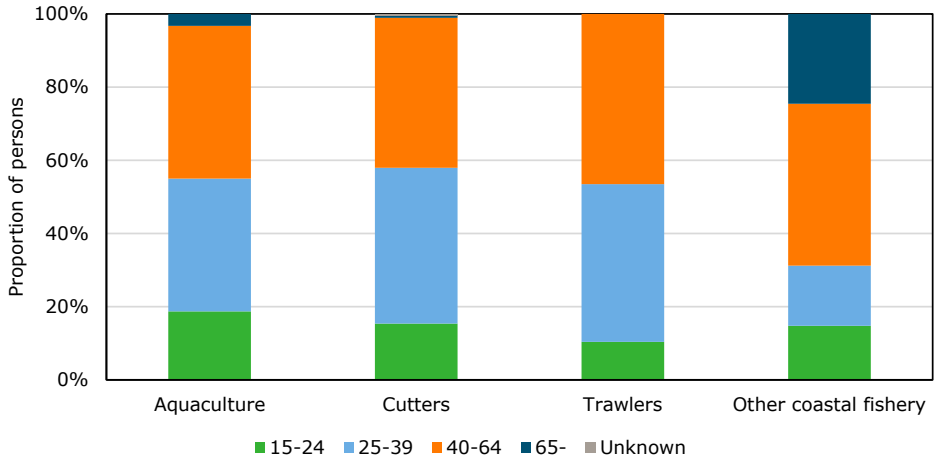

Figure 2 *Age composition of people working in the various subsectors of the Dutch fishery and aquaculture sector*
Source: Wageningen Economic Research

Most people in the fishing and aquaculture sector had a medium education level, which is equal to post-secondary vocational education (overall 76% of the known education levels). For the trawlers, the share of people with a medium education level of those from which the education level was

known was higher (approximately 90%) than for the other fishing sectors. However, it should be noted that for a large part of the crew the education level was left open in the questionnaire so it is not clear whether the known education levels are representative for the whole population of crewmembers. In the other coastal fishery, the proportion of people with a low education level (primary education and/or preparatory secondary vocational education) was higher (>40% of total had a low education level) than for the other sectors. The level of unknown for this parameter was clearly higher than for the other social variables (16%).

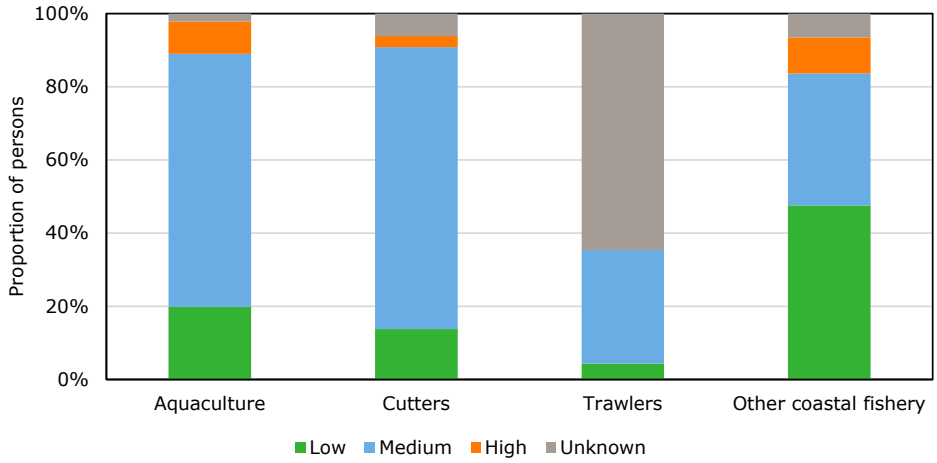

Figure 3 *Educational level of people working in the various subsectors of the Dutch fishery and aquaculture sector*
Source: Wageningen Economic Research.

The nationality of the people was also filled in for more than 99% of the people in the returned questionnaires. The vast majority of the people had the Dutch nationality (>90%), with foreign labour and especially non-EU labour mainly occurring in the trawler sector (20% in total). Only in the other coastal fishery, nationality was unknown for approximately 7% of the people involved.

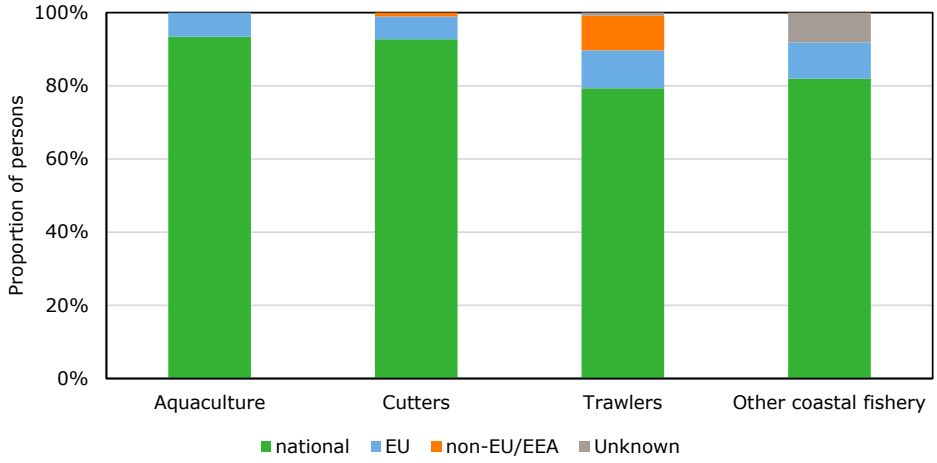

Figure 4 *Nationality of people working in the various subsectors of the Dutch fishery and aquaculture sector*
Source: Wageningen Economic Research.

Employment status differed widely between the various subsectors, mainly as a result of the scale of operation and the business structure (Figure 5). For the coastal fisheries which consist generally

of small businesses and vessels with small crews, almost two-thirds of the persons involved are owner or co-owner of the vessels, whereas in the cutter sector the reported proportion of owners is about one third and none of the persons working on the large pelagic trawlers are owners. In the aquaculture sector the proportion of owners is around 40%. Only for 2% of the persons included in the questionnaire the employment status was not known and this could largely be tracked back to one response that also include some other unknown answers.

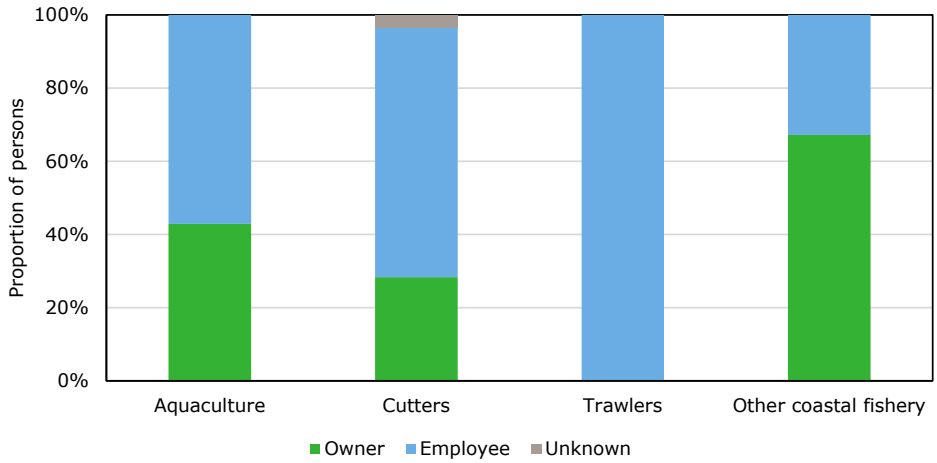

Figure 5 *Employment status of people working in the various subsectors of the Dutch fishery and aquaculture sector*
Source: Wageningen Economic Research.

Further analysis to test differences in the demographic structures of the crew between regions and type of companies within subsectors (see Section 2.3) did not result in significant differences.

4 Conclusion and discussion

This factsheet provides the results from the pilot study to collect demographic data of the Dutch fisheries and aquaculture sector. The data were collected via questionnaires. The distribution of the surveys was aligned with the existing data collection to prevent an increase of the administrative burden from the respondents and increase the chance of a good response rate. For most subsectors the response rate was between 30-38%, which is low compared to general response rates for mail surveys (Baruch, 1999) which are supposed to be between 50-60%. A recent study on the response rate in surveys for family businesses (Pielsticker and Hiebl, 2020) reveals that in most surveys response rates are also low (21% on average from 126 surveys) and that response rates have been decreasing over the years. The response rate from the other coastal sector was lower than for the other sectors, which is in line with the general lower response rate to economic surveys in this subsector over the last years (e.g. Ministerie van LNV, 2019).

The results indicate that there is no lack of willingness or ability to provide the requested information for specific parameters. In the preparation phase of the survey, it was expected by the researchers that questions about nationality or education level would be perceived to be sensitive, resulting in lower response rates for these parameters. This was not the case. The only exception was the educational level for the people working on large pelagic trawlers. The low response rate for this specific subsector might be because this information is not readily available at the company administration level and thus requires more effort for the companies to collect it. This might also explain the delayed provision of the pelagic trawler sector data.

The developed procedures to collect these data are sufficient to allow Wageningen Economic Research to collect the social data in the years to come, although response rates might be low.

Special attention needs to be paid to the planning of the questionnaires for the trawler sector. The low response rate of the other coastal sector to surveys in general also needs attention.

The data obtained provide a general demographic profile of the people working in the Dutch fishing and aquaculture sector and can show trends after some years of data collection. However, more fine-scaled answer categories will allow for more detail in the analyses. For instance, asking the age is preferred over these broad age categories. That will also give way to other, more advanced statistical analyses than were used here.

As became clear during discussions with sector representatives and managers in preparation of the survey, data availability on the social aspects of fishing fleets are important for fisheries management. Such data can play an important role in the discussions on and the development of social fisheries management. Dissemination of these first results might therefore also result in improved willingness to provide the data by the fleet.

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