Methodology Report for Fleet Socio Economic Variables
National Fisheries Data Collection Programme

Version 1

Nicosia, 2021

Contents

List of Tables

List of Abbreviations

Abbreviation	Term
DFMR	Department of Fisheries and Marine Research
DCF	Data Collection Framework
DTS	Demersal trawlers and/or demersal seiners
FAO	Food and Agriculture Organization of the United Nations
FTE	Full-time equivalent
FVR	Fleet Vessel Register
GDPR	General Data Protection Regulation
PG	Vessels using Passive gears only
PG ECON	Planning Groups for Economics
PGO	Vessels using other Passive gears
PGP	Vessels using Polyvalent 'passive' gears only
PIM	Perpetual Inventory Methodology
PNR	Partial non-response rate
PS	Purse seiners
RCG ECON	Regional Co-ordination Group for Economics
STECF	Scientific, Technical and Economic Committee for Fisheries

Abstract

1. Type of Data Collection

1.1 Introduction

1.2 Data Frame

Cypriot fishing fleet consists of 866 vessels (inactive vessels included 79) in 2020. Taking into account the small population of our fleet, the ideal survey method would be the census. But nonetheless, this will be implemented in only two segments of our fleet and not in the entire population. Therefore, the majority of the economic and social variables of the fleet is collected by Probability Sample Survey, using post/face-to-face interviews based on predetermined questionnaires. Moreover, other data sources are used as it is explained in Section 3. The sampling frame presented below takes into account the classification of the national fleet according to vessel length and fishing gear, following the Commission Implementing Decision (EU) 2016/1251 (European Commission, 2016).

Tables A.1 and A.2 in the Annex present the collection method (census, probability sample survey or indirect survey) and the data sources for the economic and social variables. Since the Cypriot management system does not involve individual quotas or other fishing rights, the following economic variables are not collected:
➢ Income from leasing out quota or other fishing rights
➢ Value of quotas or other fishing rights
➢ Lease/rental payments for quota or other fishing rights

The sample unit is the vessel and it is selected from the DFMR (Department of Fisheries and Marine Research) that corresponds to December 31th of the year 2020. Moreover, the sample unit and, therefore, the sampling frame are common for the economic and effort variables following the Commission Decision 2010/93/EU (European Commission, 2010 - section A.1.1).

2. Target and Frame population

The target population is the total number of registered vessels in the Cypriot fleet. The fishing gears are divided into active, passive and polyvalent gears (active and passive), as Table 2.1 shows.

According to Data Collection Framework (DCF), the vessel length (in meters) in the Mediterranean Sea is categorized into the following groups: 0-6m, 6-12m, 12-18m, 18-24m, 24-40m and above 40m. Five main fishing technique categories are used in Cyprus, which are: vessels using passive gears only for vessels <12m (PG), vessels using polyvalent passive gears only (PGP), purse seiners (PS), demersal trawlers (DTS) and a licence category that was introduced by law in 2009, which represents the segments Polyvalent "passive gears only" (category C licences) (PGO).

The vessels using *Polyvalent passive gears with length 0-< 6m and 6-< 12m* compose the small-scale inshore fleet and operate mainly with bottom set nets and bottom longlines, targeting demersal species. The relevant fleet operates only in Cyprus waters (GSA25). As it is shown in Table below, they represent the large majority of the fishing vessels in the Register (~90%). Cyprus Fisheries Law[1] provides for a limited number of licenses for this segment annually and divides it into three (3) subcategories: vessels with fishing license category A', vessels with fishing license category B' and vessels with fishing license category C'.

The vessels with license A' or B' have mostly length 6-<12m and are allowed to operate every day all year round, with a number of restriction measures on the use of fishing gears and minimum landing sizes, according to the national and community law. The main gears used are trammel nets (GTR), set gillnets (GNS) and set longlines (LLS). Coding used in the current report for Polyvalent passive gears with length 0-< 6m and 6-< 12m of category A&B is *PG VL0006 (Category A&B)* and *PG VL0612 (Category A&B)*. Based on the 2019 modification of the National Fisheries Law, licenses of this category may not exceed the 327 vessels and concern vessels with length from 6-12 metres; owners of fishing vessels below 6m, with license during the adoption of the modified Law, are exempted.

The vessels with license category C' are mostly 0-<6m and have a limited fishing effort. By Law, the maximum allowable working days for this category, until the end of 2019, have been 70 days, exercised only in the weekends; since 2020 the maximum allowable working days has increased to around 100 days. There are very strict measures on the

---

[1] Basic Fisheries Law Cap. 135 and subsequent amendments of 1961 to 2022, Fisheries Regulations of 1990 to 2019 based on Article 6 of the Basic Law

use of fishing gears. Maximum allowable length of nets is 800m, and maximum number of longlines is 2 with no more than 200 hooks each. The primary gear used is trammel nets (GTR) and the secondary gear is hand and pole lines [LHP]. Coding used in the current report for Polyvalent passive gears with length 0-< 6m and 6-< 12m of category C is *PGO VL0006 (Category C)* and *PGO VL0612 (Category C)*. Based on current National Fisheries Law, licenses of this category may not exceed the 450 vessels. This new category cannot be integrated with the existing segments of Vessels using Polyvalent passive gears only below 12m since the data of previous years would not be comparative and we would face problems of bias.

The vessels using *Polyvalent 'passive' gears with length 12-<18m* range from 12-26m, but are clustered in one length category since the large majority of them are between 12-18m; information on the clustering of this fleet segment is provided in Table 2.2. This fleet segment is engaged in two fisheries; the large pelagic fishery using drifting longlines and operating around Cyprus waters and the eastern Mediterranean (targeting swordfish, bluefin tuna and albacore), and in the inshore demersal fishery using mostly set nets and set longlines. There has been also one vessel operating in Adriatic Sea; though during 2021 fishing activity in that area was ceased. A limited number of licenses is provided for this segment annually. Furthermore, closed seasons, restriction measures on the use of gears and minimum landing sizes are employed, in accordance to national and community regulations.

In accordance with ICCAT management measures, specific fishing licenses are issued for targeting bluefin tuna, swordfish and albacore; the maximum allowable number of specific licenses differs depending on the species. During 2021 specific licenses were issued for targeting large pelagic species using drifting longlines. One vessel received also specific license for targeting bluefin tuna as purse seiner.

Demersal trawlers range from 19-27 m. Information on the clustering of this fleet segment to 24 -<40m is provided in Table 2.2. The licensed trawlers are categorised, based on their type of license, in those fishing in the territorial waters of Cyprus and those fishing in international waters (eastern and central Mediterranean). It should be mentioned that from 2018 only one trawler receives license for operating in the central Mediterranean. Restriction measures on the use of trawl nets and minimum landing sizes are employed for all licensed trawlers, in accordance with national and community law. For the trawlers fishing in territorial waters a limited number of licenses is provided every year, and an extended closed season (from 1st of June until the 7th of November) is employed since the '80s. A *Management Plan for the Bottom Trawl Fishery Within the Territorial Waters of Cyprus* is implemented since the end of 2011, based on Article 19 of Council Regulation (EC) 1967/2006 (Mediterranean Regulation). The national technical measures introduced in the Management Plan for the Bottom Trawl Fishery

include the restriction of the number of licensed bottom trawlers to 2, and the restriction of 2 areas from fishing with trawl nets on a rotational basis. Other provisions of the Mediterranean Regulation in the relevant Management Plan include minimum distance from the shore and minimum depth.

Table 2.1 shows the total number of fishing vessels of the Cyprus fishing fleet by basic gear and length category, features that determine the segments of fishing fleet. It is worth mentioning that the values of Table 2.1 may diverge from the respective data of each year Annual Report. This may happen for the following reasons:

➢ Table 2.1 includes values of the national fleet register posted on 31/12/2020, while the corresponding table in each annual report uses the national fleet register that corresponds to the December 31th of the reference year.

➢ The characteristics of the population may be adjusted according to the sampling results when a different main gear from fleet register is declared in the field research.

Table 2.2 shows the fleet segments that are merged either for the presentation of results or for the sampling design. The clustering refers to the vessel length variable per main gear. In order to categorize the fishing vessels, the clustering is necessary for both sampling and confidentiality purposes following the guidelines of STECF (2009).
In more detail, our fleet includes 32 polyvalent vessels using passive gears over 12 m (PGP) in 12-<18m length class, 4 vessels in 18-<24m length class and 1 vessels in 24-<40m length class. Because of the small population of the two length groups and for sampling purposes and confidentiality reasons, all polyvalent vessels using passive gears over 12 m (PGP) are included in a single category, 12-<18m. Length groups 12-<18m, 18-<24m and 24-<40m are involved in inshore fishery activities and they also perform longer trips since they target swordfish, albacore and Bluefin tuna. Therefore 18-<24m and 24-<40m polyvalent vessels are similar to 12-< 18m vessels. The cost structure of the clustered segments does not change much and the clustering will not create any problems of bias.

Due to the very small number of demersal trawlers (DTS) below 24m (2 vessels) they could be regrouped in the 24-<40m length group (4 vessels), since they are similar and to ensure the consistency of data from previous years. Both groups are engaged in the same metier and they target the same group of species with the same gear despite their vessels' length. Although, all lengths of demersal trawlers have been grouped, their total population (=6) has a low number. However, further clustering will not take place due to the fact that demersal trawlers can give different economic data from other fleets.

Table 2.3 presents the total number of vessels per fishing gear after clustering. The number of inactive vessels is not taken into account *a priori* as no information is available. Thus, the target population is the same with the frame population, as already mentioned.

	Gear Classes	Length category				
		VL0006	VL0612	VL1218	VL1824	VL2440
Active Gears	Demersal trawlers and/or demersal seiners (DTS)	0	0	0	2	4
Active Gears	Purse seiners (PS)	0	0	0	0	1
Passive Gears	Vessels using other Passive gears (PGO)	344	73	0	0	0
Passive Gears	Vessels using Polyvalent 'passive' gears only (PGP)	0	0	32	4	1
Passive Gears	Vessels using passive gears only (PG)	28	298	0	0	0

Table 2.1: The segmentation of the Cypriot fleet according to the European Union Data Collection Framework (DCF) and the national fleet register data (using the main gear class) posted on 31/12/2020.

Gear class	Merged class		Clustered class		Total vessel number after clustering
	Length Category	Number of vessels	Length Category	Number of vessels	
DTS	VL1824	2	DTS2440	4	6
PGP	VL1824	4	PGP1218	32	37
PGP	VL2440	1	PGP1218	32	37

Table 2.2: The clustering scheme of Cypriot fleet segments* (based on the 31/12/2020 Fleet Registry)

*The first column indicates the main fishing gear for each cluster. The second column indicates the vessel length merged into the segment of the fourth column. The third column indicates the number of vessels merged, the fifth column includes the number of vessels per segment before the clustering and the last column presents the total number of vessels after the clustering per segment.

Gear class	VL0006	VL0612	VL1218	VL1824	VL2440	Total
DTS	0	0	0	0	6	**6**
PS	0	0	0	0	1	**1**
PGO	344	73	0	0	0	**417**
PGP	0	0	37	0	0	**37**
PG	28	298	0	0	0	**326**

Table 2.3: The total number of vessels of Cypriot fleet after the clustering of segments (based on the 31/12/2020 Fleet Registry).

3. Data Sources

3.1 National fleet register

Primary source of information for the categorization of fleet segments per gear class and vessel length. The Cyprus Fleet Register is frequently updated at regular intervals and is available at http://ec.europa.eu/fisheries/fleet/index.cfm. The Cyprus Fleet Register includes information on the capacity and some other characteristics of each vessel, such as the port of registry, the vessel length, the year of construction, the capacity, the horsepower as well as the main and secondary fishing gear.

3.2 Questionnaires

For the sample probability survey of the no census variables, a structured questionnaire drawn up by DFMR, has been used from the beginning of the Programme and is continually updated to better serve the purposes of the survey. The questionnaire is filled out by post/face-to-face interviews with fishermen.

3.3 Other Sources

Logbooks and Sales notes are additional sources of information. Specifically, this data is retrieved for all fishing vessels in Cypriot fleet (DTS, PG, PGO and PGP) and can be utilized to estimate a couple of variables, which are: *days at sea* and *gross value of landings.* Also, the variables *mean age of vessels*, *mean LOA of vessels*, *number of vessels*, *total vessel power* and *total vessel tonnage* are estimated from Fleet Vessel Register (FVR).

Moreover, administrative sources such as Licence system, PIM method, EU Fisheries Fund, are used for the estimation of other economic variables.

The transmission of the above information excludes vessel identity for confidentiality reasons.

4. Sampling Frame

4.1 Sampling Strategy

A sampling scheme of stratified random sampling without replacement is chosen for the probability sample survey. The sample unit is the vessel and it is selected randomly from each segment as it is described below. Probability sample survey will be implemented in two only fishing techniques, PG and PGO. The stratified random sampling of the specified segments is considered the most proper sampling technique due to the heterogeneous features of these segments.

4.2 Stratification

The stratification of Cypriot fleet is done by the variables gear class and vessel length. Two main fishing technique categories are used for random sampling, which are: vessels using passive gears only for vessels <12m (PG) and a category, which represents the segments Polyvalent "passive gears only" (category C licences) (PGO).

The fishing activity of vessels using polyvalent passive gears only (category C licences), as explained above, is performed on a periodic basis since they are allowed to fish only a total of approximately 100 days each year, under a national legislation. This category cannot be integrated with the existing segments of Vessels using Polyvalent passive gears only below 12m since the data of previous years would not be comparative and we would face problems of bias. Polyvalent "passive gears only" (category C licences) (PGO) has a total population of 417 vessels. In 0-<6m length group (PGO0006) there are 344 vessels, and 6-<12m length group (PGO0612) includes 73 vessels.

Vessels using passive gears only <12m (PG) are divided into two subcategories as follows: vessels using passive gears only 0- <6m (PG0006) which includes 28 vessels and vessels using passive gears only 6-<12m (PG0612) with 298 vessels.

Two other main fishing technique categories are used for Census, which are: vessels using polyvalent passive gears only over 12m (PGP) and demersal trawlers (DTS). Our fleet includes 32 polyvalent vessels using passive gears over 12 m (PGP) in 12-<18m length class, 4 vessels in 18-<24m length class and 1 vessel in 24-<40m length class. Because of the small population of the two length groups and for sampling purposes and confidentiality reasons, all polyvalent vessels using passive gears over 12 m (PGP) are included in a single category, 12-<18m (clustering is explained in Section 2). Therefore, PGP consists of 37 vessels.

Due to the very small number of demersal trawlers (DTS) below 24m (2 vessels) they could be regrouped in the 24-<40m length group (4 vessels), since they are similar and to ensure the consistency of data from previous years. Since, all lengths of demersal trawlers have been grouped, their total population consists of 6 vessels.

4.3 Sample size

We will apply a "disproportionate allocation" sampling scheme (Sapsford and Jupp, 2006). This is also in line with the FAO "Handbook for fisheries socio-economic sample survey". This strategy allows for keeping the sample as large as possible in order to have a higher coverage rate for the smaller-sized segments, while trying to minimize as much as possible the variance of each stratum. In other words, the size of the sample in each stratum is inversely proportional to the stratum's population size, which is demonstrated by Table 4.3.1.

Number of vessels in stratum	Sample rate
<50	50%
50 - 500	25%
500 - 2000	10%
>2000	5%

Table 4.3.1: Sample rate

Following Table 4.3.1 the sample size of our segments will be:

Segments	Sample size (population*sample rate)
PG0006	14
PG0612	75
PGO0006	86
PGO0612	19

Table 4.3.2: Sample size for each segment

4.4 Sample selection

After the sample size for every stratum has been determined, the sample units can be chosen using random sampling without replacement and with equal probabilities.
Each unit of the population has the same probability to be part of the sample and this is:
$P_i = 1/N_i$ where, N_i = the total population of the segment i

Randomness can be achieved by assigning a random number to every fishing vessel belonging to the population, using "RAND" function in excel. After that, sorting the list of vessels of a specific segment by their random number will take place. Therefore, according to the sample size (n_i), that determined before, the first n_i vessels of the list will be in the sample.

Existence of non-responsive units it could affect the response rate. In order to maintain the response rate, we will use replacement units. More specifically, the "substitute" vessels can be pulled from the subsequent next-in-sequence list of vessels identified in the random sampling procedure already explained. This treatment is in line with the FAO "Handbook for fisheries socio-economic sample survey".

5. Estimation Procedure and Derived values

5.1 Estimation

The method used to raise the final estimates to total population is the adjustments of raising factors, where the factors is the total number of licensed active vessels which are vessels fishing at least for one day.

5.2 Derived values

Some of the socio-economic variables are difficult to capture from the questionnaires, so we use indirect collection systems such as DFMR's records, estimation using Perpetual Inventory Methodology (PIM), etc.
In more detail, the variables: Consumption of fixed capital, Total value of assets (for the assets part) and Value of physical capital for all the fleet segments including the inactive ones for Consumption of fixed capital and Value of physical capital are estimated using the PIM method in accordance with the RCG ECON (PG ECON) recommendations.

The variable Number of fishing enterprises/units is estimated using information that the owners of the vessels provided when they applied for the licence.

The variables: Operating subsidies and Subsidies on investments are collected from DFMR's records because DFMR is the responsible authority for the implementation of state aid in fishery sector and also of the European Fisheries Fund 2021-2027.

For the variable Value of unpaid labour the FTE method (WS, Naples, 2009) will be applied where the average wage by fleet segment is used.

Full-time equivalent (FTE) variable in Indirect Collection Scheme is applicable only for Polyvalent "passive gears only" (category C licences) 0-<6m (PGO0006), Polyvalent "passive gears only" (category C licences) 6-<12m (PGO0612), vessels using passive gears only 0-<6m (PG0006) vessels using passive gears only 6<12m (PG0612). This variable is estimated using administrative sources. In particular, it is estimated based on the time these fleet segments are used to perform their main fishing activities using a variety of fishing gears (nets, pots, longlines etc.).

Similarly, Paid labour variable is also applicable only for PG0006, PG0612, PGO0006 and PGO0612 vessels, based on our Licence system. The fishermen of these fleet segments are individuals who need to satisfy certain criteria according to the national legislation before getting the licence. The fishermen need to make an application and as a result, a lot of information is gathered at the state of evaluating each application. The variables Unpaid labour and Unpaid labour by age are also collected from DFMR's licence system.

The collection of the social data started in 2018 for the 2017 data. The collection of the social data is on a triennual data collection and thus the next one will be in 2021 for the 2020 data and in 2024 for the 2023 data. We follow the relevant guidelines of the PGECON 2017 and the PGECON Workshop on Social and new economics variables (Athens 2018).

The variables: Employment by age, Employment by employment status, Employment by gender, Employment by nationality, FTEs by gender and Unpaid labour by gender as in the case of Paid labour are collected from DFMR's records based on its licence system for PG0006, PG0612, PGO0006 and PGO0612 fleet segments.

6. Data Quality Evaluation

6.1 Methodology Relevance

The methodology adopted and described above is controlled for its proper implementation at all stages. In particular, during the sampling period, we communicate with the correspondents at regular time intervals in order to ascertain the proper process of collecting the questionnaires. When the questionnaires are collected, the material is evaluated; for example, the number of questionnaires collected per correspondent and the completeness of the data is checked.

6.2 Results/Output Completeness

The annual report meets the requirements of Council Regulation (EC) No 1004/2017 and Commission Implementing Decision (EU) 2019/909. More specifically, the annual report includes all socio-economic variables and activity variables for all sections of the Cypriot fleet. As already mentioned, the following financial variables are not collected since the Cypriot management system does not include commercial quotas or other fishing rights:

➢ *Income from leasing out quota or other fishing rights*
➢ *Value of quotas or other fishing rights*
➢ *Lease/rental payments for quota or other fishing rights*

Data collection is compiled in accordance with the principles of Impartiality, Reliability and Objectivity using only official sources of information. The adopted methodology for collecting fisheries data follows international standards and best practices.

Before the statistical inference, the data collected either by census or by probability sampling survey are evaluated using a process of error detection as it is described in the next sections. The presentation of the results for all socio-economic variables and activity variables is detailed for all segments of the fishing fleet.

6.3 Accuracy sampling Errors

So far, any validations and identification of errors are taken place manually.

6.3.1 Typing errors

Typing errors can occur while data are being recorded, coded, edited or imputed. Sometimes, errors are incorrectly identified during the data analysis phase. Certainly, the interviewees may also provide incorrect answers to avoid reporting confidential data (because of concerns about taxes, legal issues or even competition). Even when errors are discovered, they can be wrongly corrected because of poor imputation procedures. Usually, interviewers can be asked again some questions that we think is wrong as an opportunity to double check the reporting.

6.3.2 Treatment of non-response

Existence of non-responsive units it could affect the response rate. In the case of trawlers, purse seiners and polyvalent passive gears vessels over 12m, where a census will be performed, non-responsive units may exist. The method used to raise the final estimates to total population is the adjustments of raising factors, where the factors is the total number of licensed active vessels.

In case of probability sample survey, in order to maintain the response rate we will use replacement units. More specifically, the "substitute" vessels can be pulled from the subsequent next-in sequence list of vessels identified in the random sampling procedure explained in Section 4.4. This treatment is in line with the FAO "Handbook for fisheries socio-economic sample survey".

6.3.3 Partial Non-Response error

In the case of Partial Non-Response (PNR) where missing values identified in the control procedure, are treated by imputation and specifically the "mean of the group", in line with the FAO "Handbook for fisheries socio-economic sample survey" and handbook on sampling design (Deliverable 2.1 from MARE/2016/22 SECFISH study).

6.3.4 Unreasonable or extreme values

Moreover, measurement and processing errors are located through unreasonable and extreme values of the data. An unreasonable value is a value that has no natural meaning of interpretation of the variable (e.g. a negative value of a variable that can only take positive values). An extreme value is a value that is considerably remote, compared to the majority of the rest of the variable values.

In order to address the problems related to the unreasonable or extreme values that appear on some vessels in basic technical and economic parameters that are used for the estimation of the data call variables, we use "mean of the group", in line with the FAO "Handbook for fisheries socio-economic sample survey" and handbook on sampling design (Deliverable 2.1 from MARE/2016/22 SECFISH study).

7. Accessibility and Clarity

Only authorized people can have the exclusive right of access to that information. In addition, DFMR's employees are bounded by confidentiality and have the obligation to use the data accessed exclusively for statistical purposes. Any other use of such data is prohibited beyond the end of their duties. For all data collected by the DFMR that are related to natural persons, rules set by the General Data Protection Regulation (Reg. (EU) 2016/679) are respected and followed. A document stating how the DFMR treats personal data, complying with the GDPR, is available at http://www.moa.gov.cy/moa/dfmr/dfmr.nsf/page09_gr/pag09_gr?OpenDocument (in Greek).

We do not give raw data to external end-users. The data are provided in such aggregated format that no one can identify the individual statistical units (fishing vessels) or their owner or to whom these data belong to. Furthermore, a password is needed in order to have access in the database, which only authorized people can have it.

The data is stored in a national database, but there are plans for developing a new one, since the current one is useful only for storing data, with many limitations. A study is ongoing, with duration of around two years, aiming the formation of the DFMR's strategy on all information systems used/required by the DFMR; under this study all current information systems and procedures for collecting, processing and disseminating data by the DFMR are being reviewed by experts, who will propose best ways for fulfilling EU and national requirements related to all its activities.

References

European Commission, 2016. Commission Implementing Decision (EU) 2016/1251: Adopting a multiannual Union programme for the collection, management and use of data in the fisheries and aquaculture sectors for the period 2017-2019. *Official Journal of the European Union*, L 207/113, 12 July 2016.

European Commission, 2010. Commission Decision (2010/93/EC): Adopting a multiannual Community programme for the collection, management and use of data in the fisheries sector for the period 2011–2013. *Official Journal of the European Union*, L41/8, 18 December 2009.

FAO   "Handbook for fisheries socio-economic sample survey". (available at https://www.fao.org/3/i6970e/i6970e.pdf)

Sapsford, R. & Jupp, V. 2006. Data collection and analysis. Report on quality aspects of the collection of economic data – methods of calculation of the indicators and sampling strategies. SAGE Publications in association with the Scientific, Technical and Economic Committee for Fisheries. SGECA-09-02. 11–14 May 2009, Barcelona, Spain.

STECF (Scientific, Technical and Economic Committee for Fisheries), 2009. Report of the Sub group on Research Needs (SGECA/SGRN 09-02). Edited by Paul Connolly & Tiit Raid. European Commission, 22-27 JUNE 2009, GALWAY.

Annex

	Economic variables	Data Source	Data Collection
Income	Gross value of landings	Sales notes / Logbooks	C
	Income from leasing out quota or other fishing rights	N/A	N/A
	Other income	Questionnaires	C / PSS
Labour cost	Personnel costs	Questionnaires	C / PSS
	Value of unpaid labour	Administrative sources - Licence system & DFMR's Estimation	IND
Energy costs	Energy costs	Questionnaires	C / PSS
Repair & maintenance costs	Repair and maintenance costs	Questionnaires	C / PSS
Other operating costs	Other variable costs	Questionnaires	C / PSS
	Other non-variable costs	Questionnaires	C / PSS
	Lease/rental payments for quota or other fishing rights	N/A	N/A
Subsidies	Operating subsidies	DFMR's records- EU Fisheries Fund	IND
	Subsidies on investments	DFMR's records- EU Fisheries Fund	IND
Capital costs	Consumption of fixed capital	Estimation using PIM method	IND
Capital value	Value of physical capital	Administrative sources -PIM method	IND
	Value of quota and other fishing rights	N/A	N/A
Investments	Investments in tangible assets, net	Questionnaires	C / PSS
Financial position	Total value of assets	For debts: Questionnaires For assets: Estimation using PIM method	C / IND / PSS
Employment	Unpaid labour	Questionnaires / Administrative sources- Licence system	C / IND
	Total hours worked per year	N/A	N/A
Effort	Days at sea	Control Regulation	C
Capacity	Mean age of vessels	Fleet Vessel Register	C
	Mean LOA of vessels	Fleet Vessel Register	C
	Number of fishing enterprises/ units	Administrative sources - DFMR's records	IND
	Number of vessels	Fleet Vessel Register	C
	Total vessel power	Fleet Vessel Register	C
	Total vessel tonnage	Fleet Vessel Register	C

C: Census, PSS: Probability Sample survey, IND: Indirect survey, N/A: Not Applicable

Table A1: The economic variables, the data sources and the data collection method

Social variables	Data Source	Data Collection
Employment by age	Questionnaires / DFMR's records - Licence system	C , IND
Employment by employment status	Questionnaires / DFMR's records - Licence system	C , IND
Employment by gender	Questionnaires / DFMR's records - Licence system	C , IND
Employment by level of education	Questionnaires	C, PSS
Employment by nationality	Questionnaires / DFMR's records - Licence system	C , IND
FTEs by gender	Questionnaires / DFMR's records - Licence system	C , IND
Unpaid labour by gender	Questionnaires / DFMR's records - Licence system	C , IND

Table A2: The social variables, the data sources and the data collection method