Annex 4

Socio-economic data collection for fisheries, aquaculture and the processing industry at EU level

The project dealing with Socio-economic, economic (including bioeconomic) data should carry out following elements:

Work Package 1

A **summary of what has been achieved in 2016-2017** relevant to regional and supra regional cooperation on (socio-)economic data collection (in studies, PGECON, JRC, EUROSTAT, scientific publications etc.). Based on this analysis, a set of prerequisites for the functioning of PGECON and links to RCGs is to be outlined. This includes guidance on the need of any additional work, in case part of the work packages 2-6 has already been carried out and may serve as a starting point for further work as described below. A roadmap with actions planned is required.

Work package 2

Harmonization of methodologies for sampling design and estimation methods for fleet and aquaculture economic data collection. The applicants should produce a practical manual that can be used by all EU Member States as supporting guidelines in the production process of key fisheries statistics according to EU legislation. This manual should contain methodological and technical materials, worked examples and case studies. The handbook should provide methodological guidance for Member States when planning their data collection scheme and analysing data collected. It will advise on reporting of data quality and in improvement of data quality, thus considerably increasing the efficiency and effectiveness of data collection.

The expected content of the handbook should cover the topics identified by "DCF workshop on statistical issues" (2016, Zagreb), in particular: survey planning, basic concepts and definitions, survey strategy, the role of auxiliary information, the role of statistical models, techniques for sample selection and estimation, basic sampling techniques, use of auxiliary information in estimation phase, treatment of nonresponse, types of nonresponse, adjustment for unit nonresponse, worked examples, case studies (at least 2), quality assessment of estimates, how to evaluate the quality of sampling and estimation procedures, how to improve quality, Software SAS and other tools. Furthermore, it should build on the relevant work from PGECON and related workshop and ad-hoc reports such as the 2016 recent reports on data quality and statistical variables definitions

Work package 3

Harmonise quality reporting and propose methodology in the case of non-probability sample survey. Economic data can be collected in one of three manners: through census (the whole population i.e. the whole fleet is sampled), or by sampling a sub-set of the population.

Sampling of a sub-set can be done either through probability sampling (the sub-set is chosen at random) or through non-probability sampling (data being collected from a sample of population members not randomly selected e.g. where data are collected from a sub-set of vessels who have agreed to supply data on a voluntary basis or from a sample selected on the basis of *a priori* information). All three methods are allowed under the DCF, but the quality (in particular bias and variability) declines as you move from census to probability to non-probability sampling. In addition to the method chosen to gather data, the response-rate of respondents affects the quality. When collecting economic data on the fleet, both non-probability sampling and low response rates are common. This problem has been discussed by the STECF[1] which noted that no specific indicator for the assessment of quality for the case of non-probability sampling exists and that this is due to the fact there was no consensus on the indicators that could be used and to the fact that there is no solution readily available in literature to estimate the precision of estimators based on non-random sampling. Furthermore, STECF recommended that a scientific study aimed at addressing the issue of quality reporting and at suggesting appropriate methodologies for the case of non-probability sampling should be carried out. This has been supported by the PGECON[2] as well as the DCF Liaison Meeting[3].Data quality, and transparency of how data are collected and estimates made would be improved if an agreed methodology were used by all EU Member States. It would also be beneficial for end-users if all Member States reported on this issue in a standardized manner.

The applicants should therefore carry out the following tasks:

a. Investigate examples of the assessment of the quality of non-probability sampling strategies applied in other sectors which could be adapted to fisheries
b. Propose a suitable methodology for the estimation of economic variables in case of nonprobability sampling
c. Propose indicators for the assessment of the quality of estimates of economic variables in the case of non-probability sampling
d. Propose a common format for the presentation of these methodologies in the next series of work plans and in the annual reports in order to harmonise quality reporting
e. Propose methods to evaluate the impact of non-response in case of non-probability sampling and also in case of probability sampling and census with low response rates
f. Perform a comparative impact on data quality of different sampling strategies e.g. is sampling preferable to census with low response rate? When a response rate should be considered too low with respect to the reliability of final estimates?

Work package 4

Development and implementation of common methodologies to disaggregate economic variables by activity and area. A wide range of applications for fleet economic data has emerged requiring data on a resolution level higher than currently required under the DCF e.g. to assess economic impacts of fisheries multiannual plans by metier or by area. The conclusion from several workshops and expert discussions with PGECON and the STECF is that the best approach to address this gap is to develop methods to disaggregate fleet

[1] http://stecf.jrc.ec.europa.eu/documents/43805/44851/09-05_SG-ECA+09-02+-+Economic+Data+_JRC57575.pdf

[2] http://datacollection.jrc.ec.europa.eu/documents/10213/e78b1229-068d-47ca-abda-0553b8e81672

[3] http://datacollection.jrc.ec.europa.eu/documents/10213/830e7956-d915-4e7a-abe8-b607191b76dd

economic data using fisheries activity data - which is available at a more detailed resolution – rather than to require the collection of fleet economic data at a finer resolution. It would be beneficial if all EU Member States followed the same approach to disaggregating fleet economic data. Such work has been recommended by PGECON[4] and the DCF Liaison Meeting[5].

The applicants should carry out the following tasks:

a. Determination of cost structures within disaggregated units (e.g. metiers): Thus far, cost structures of operations of the same vessel in different fisheries (e.g. metiers) are regarded constant. This is not necessarily realistic, particularly when both passive and active gear operations are compared. The study should provide a method to break down cost structures with respect to the fishing activity performed. The method should as much as possible operate with data that are already available.
b. Procedures to derive proper correlations of variable cost data with transversal and capacity data to be applied for specific disaggregation tasks (having specific requirements of spatial, temporal or activity-related resolution): The outcome of this point should be a tool, requiring only standard software, which allows for modelling correlations, including an indication of the reliability of the result. The end-user should then be able to calculate correlations using data which is by default available (e.g. through the DCF or the logbook regulation). The end-user should also be able to assess the robustness of the estimated correlation. The method should be applicable to all DCF segments, allowing the end-user to disaggregate variable cost data.
c. Validation procedure: A method should be provided to enable MS to validate the results of the disaggregation procedure. Specifically for the purpose of validation more disaggregated input might be required, e.g. daily cost data.

The disaggregation study is necessary to harmonise procedures for assigning economic data to "fishing units" which are different from fleet segments (e.g. for LTMP evaluation and plenty of other applications).

Work package 5

Methodologies for estimation of intangible assets in EU fisheries. Fishing rights are an essential part of the total value (or assets) for many fisheries and thus, amongst others, also important for the estimation of capital cost. Implementation of the CFP in the various MS has led to an introduction of various types of rights (licenses, individual transfer quotas (ITQs), etc.). Some of these rights are freely tradable; others can be only transferred together with the vessel to which they are attached. Still other rights are officially not transferable, but in reality they too can be transferred. In many countries the value of these intangible assets approaches or even exceeds the value of the tangible assets and it plays an important role in operational decision of fishing companies.

Price information on intangibles is scarce and estimations of their value when linked to tangibles are far from simple. Further research in valuation of intangible will be essential, as their value probably exceeds the value of tangible assets (such as the value of the vessel) in many fisheries. Under the DCF, Member States are required to estimate intangible assets as part of their obligations relating to fleet economic data. Common methodologies to estimate

[4] http://datacollection.jrc.ec.europa.eu/documents/10213/e78b1229-068d-47ca-abda-0553b8e81672

[5] http://datacollection.jrc.ec.europa.eu/documents/10213/852921/11th_Liaison_Meeting_2014_report_FINAL.pdf

these intangible assets do not currently exist so Member States follow different approaches, leading to problems of harmonization when EU-wide analyses need to be done. Further work on this topic has been recommended by the Workshop on Evaluation of data collection connected to Fishing Rights and Capital Costs 2013, PGECON 2014 and the DCF Liaison Meeting 2014.
The intangible assets study is crucial for a more meaningful approach on estimating hidden assets (e.g. implicit quota) and separating them from vessel prices, thus estimating capital costs and depreciation more correctly

The applicants should carry out the following tasks:

a. Identify different types of fishing rights and identify the available data in relation to fishing rights
b. Define a methodology for estimation of the value of different types of rights (license, quota, transferable and non-transferable, etc…); specify the input as required for the estimation
c. Define a methodology to separate the intangible part of capital (quota, license, etc…) from the overall capital value when this value is not directly observable;
d. Investigate factors determining changes in values of intangible assets.
e. Ensure a coverage as large as possible so to address all the possible types of fishing rights present at EU level.
f. Provide guidelines for estimation which allows the estimation for all circumstances which have been observed in Member States and when markets exist for ITQs, that prices could be directly observable.

Work package 6

Processing: Origin and Sources of Raw Material in the European Seafood Industry
Study on the origin of raw material. Such a study is a prerequisite to elaborate a possible link between fleet data and fish processing data. Without that link the data collected on fish processing are pretty much a standalone dataset with no connection to EU fisheries.
The study shall evaluate the feasibility of data collection on raw material by species and origin (catches/aquaculture and domestic/EU/non-EU), also assess the consequences of including semi-processed products (problems of double counting, etc.)
The study shall take into consideration existing data collection in order to assess the possibility to link these sources, as there are EU market observatory, trade statistics, Prodcom statistics, control regulation, input-output tables, data from producer associations, EU traceability regulation. Some fish and fisheries products are used in the pet and farming sector, maybe also in the cosmetics and pharmaceutical sector. The proposed study shall also assess the volume of fisheries and aquaculture products going into these sectors and the importance of those purchasers. Furthermore, small size enterprises may be more linked to regional production of fisheries products or integrated enterprises, e.g. aquaculture producers with processing facilities. This should also be taken into account.
The applicants should carry out the following tasks:

a. Investigate the volume and value of raw materials by species being used in the fish processing industry in a sample of at least eight Member States (MS) and also investigate their source and origin. Raw materials should include fish and other aquatic species.
b. Investigate the type of processed material used in the fish processing industry

c. Investigate the price of raw materials used in the processing industry in the respective countries
d. Investigate the percentage of income coming from processing and that coming from other activities
e. Assess the feasibility of linking raw material use in the fish processing industry with the fishing and aquaculture sector for the respective MS
f. Estimate the costs of regular (could be e.g. every 2 or 3 years) data collection of raw materials used in the fish processing industry
g. The selection of countries or the study shall be done by several criterions, leading to different country groups. Those criterions might be:
h. Market size - Production volume - Important main products (relevant for European market) - Main regions, in order to have a cross over approach by commodity and country/area - Countries with established data collection and countries with less developed data collection on raw materials

Data on raw materials purchased from European fishing companies may provide information on outlet and ex-vessel prices which may be of interest for the fleet policy, while data on imported raw materials should provide information on sourcing (including intra-firm trade) which may be of interest for the external side of the CFP. Furthermore, in order to have the connection to the fleet and to evaluate impacts of management measures for the fleet on the fish processing industry, the study may deliver the necessary empirical data basis.

Work package 7

Development of **social indicators.** Social variables are included in the current EUMAP and additional ones may be included. In order to avoid redundancies, possible end-users and applications have to be clearly defined in a first step. Moreover, it has to be clarified how data should be collected, which data are available through common sources and what are the applications/end users and requirements.

The study should clarify the data needs and, subsequently, elaborate existing sources for social variables and the feasibility of linking them to fisheries. Then it should be specified which data are required but not available through other sources. It has to be born in mind that the use of social indicators might be related to a regional level rather than to a fleet segment level. The work package should cover all the social variables in the current EUMAP as well as the variables as listed in EWG 12-15 and should cover all relevant MS.

Work package 8

For **recreational fisheries** data quality issues in the parameter "catches of recreational activities" collected under the Data collection Framework should be examined. As a result of this examination, the applicant should provide recommendations to improve this parameter. Finally, it should be investigated how socio-economic impact can be assessed and quantified for recreational fisheries, and a proposal for regular data collection should be made.