

EU Data Collection Framework

A Stakeholder Review

Prepared for the Aquaculture Advisory Council

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Background

The value of aquaculture production (in both monetary and volume terms) have long been recorded by Member State (MS) authorities in long-standing censuses for the Food and Agriculture Organisation of the United Nations (FAO), Organisation for Economic Co-operation and Development (OECD) (both of which now do a joint data collection), the World Organisation for Animal Health (OIE), the Statistical Office of the European Union (Eurostat) and the EU European Market Observatory for Fisheries and Aquaculture Products (EUMOFA). The drive for a more improved and efficient dataset at the EU-level began with the growth of the sector and the desire to:

- determine what obstacles are to future growth and ensuring the sustainable management of commercially exploited species; and
- contribute to reaching the objectives of the Common Fisheries Policy (CFP) such as protecting the marine environment (e.g. phasing out use of chemicals), and in particular the achievement of good environmental status in the marine environment by 2020.

The principles for data collection laid out in Article 25(2) of the newly reformed CFP (Regulation EU 1380/2013) are:

- accuracy
- reliability and timeliness
- avoidance of duplication through improved coordination
- safe storage in database systems
- improved availability of data
- compliance with laws on personal data protection
- access for the European Commission, enabling it to check the availability and quality of data and the methodology used to collect them.

An evolving DCF

Since 2000, an EU framework for the collection and management of fisheries data has been in place. This framework was reformed in 2008 resulting in the Data Collection Framework (DCF), the evolution of which is summarised in Table 1. Under this framework, the MS collect, manage and make available a wide range of fisheries data needed for scientific advice.

In 2017, Article 13 of the Data Collection Regulation stated that EU MS are to collect socioeconomic data and sustainability data on aquaculture to enable the socioeconomic performance and the sustainability of the Union aquaculture sector, including its environmental impact, to be assessed.

The European Commission further adopted Implementing Regulations that 1) details the methods that MS should apply to collect data and 2) how MS are meant to report back on data collection to the European Commission.

The Data Collection Framework has been so-far co-funded by the European Commission under the European Maritime and Fisheries Fund (EMFF).

Table 1: Key EU legislation in relation to the Data Collection Framework

EU Legislation		Detail
Data Collection Framework Regulation	2017/1004	sets out broad requirements: <ul style="list-style-type: none"> • use of data collected in the framework of the Common Fisheries Policy (Art. 13: “ecological and socioeconomic data relating to sustainability of aquaculture”); • collection, management and use of data in the framework of multi-national programmes; • the data management process; and • support for scientific advice.
Commission Delegated Decision	2019/910	establishing the multiannual Union programme for the collection and management of biological, environmental, technical and socioeconomic data in the fisheries and aquaculture sector. This act is in force between 2020-2021 but can be repealed earlier (in 2021) if the adoption of the EU-MAP revision is finalised during 2020. The aim is to have the revised EU-MAP in force as of 2021.
Commission Implementing Decision	2016/1701	on the establishment of a Union framework for the collection, management and use of data in the fisheries sector and support for scientific advice regarding the common fisheries policy and repealing Council Regulation (EC) No 199/2008 (recast).
	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.
	2016/1701	laying down rules on the format for the submission of work plans for data collection in the fisheries and aquaculture sectors.
	2018/1283	laying down rules on the format and timetables for the submission of annual data collection reports in the fisheries and aquaculture sectors.
	2019/909	establishing the list of mandatory research surveys and thresholds for the purposes of the multiannual Union programme for the collection and management of data in the fisheries and aquaculture sectors. This act is in force between 2020-2021 but can be repealed earlier (in 2021) if the adoption of the EU-MAP revision is finalised during 2020. The aim is to have the revised EU-MAP in force as of 2021.

Current DCF reporting

To determine which Member States fall within the scope of the DCF for aquaculture, the EU Multiannual Plan for data collection (EU-MAP) threshold is applied (see Box 1 for the definition).

Box 1: Definition of the EU MAP threshold

No social and economic data on aquaculture need to be collected if the total production of the Member State is less than 1 % of the total Union production volume and value. No data need to be collected on aquaculture for species accounting for less than 10 % of the Member State's aquaculture production by volume and value. Additionally, Member States with a total production of less than 2,5 % of the total Union aquaculture production volume and value may define a simplified methodology such as pilot studies with a view to extrapolate the data required for species accounting for more than 10 % of the Member States' aquaculture production by volume and value.

Member States will then collect the data detailed within Tables 7-9 of EU 2016/1251 (Implementing Regulation), as detailed in Table 2 below.

Table 2: Data to be collected by Member States falling within the EU MAP threshold: tables 7-9 of EU 2016/1251 (Implementing Regulation).

Data requested	Issue - variables
Income	Gross sales (total), Operating Subsidies, Other Income
Costs	Wages and salaries, Imputed value of unpaid labour, Energy Costs, Livestock costs, Feed costs, Repair and maintenance, Other operational Costs
Capital	Total Value of Assets, Consumption of fixed capital, Financial Income, Financial Expenditure, Net Investments, Subsidies in investments, Debt
Raw material weight	Livestock used, Fish Feed used
Employment	Persons employed, Persons employed FTE, Number of hours worked by employees and unpaid labour, Unpaid labour, Unpaid labour FTE
Number of enterprises	Number of enterprises with less or equal than 5 employees, Number of enterprises with 6-10 employees, Number of enterprises with more or equal than 11 employees.
Sales	Weight of sales per species, Value of sales per species
Social	Employment, FTE, Unpaid labour
Environmental	Medicines, Mortalities

The Data Collection Framework process

The annual process of the Data Collection Framework is summarised in Figure 1. The data is collected on the basis of National Programmes in which the MS indicate which data is collected, the resources they allocate for the collection and how data is collected. MS must report annually on the implementation of their National Programmes and the Scientific, Technical and Economic Committee for Fisheries (STECF) evaluates these Annual Reports.

Part of the data collected by the MS is uploaded in databases managed by the Joint Research Committee (JRC) in response to data calls issued by DG MARE. This data is analysed by experts of the STECF and forms the basis for scientific opinions and recommendations formulated in STECF reports. The resulting scientific advice is used to inform the CFP decision making process.

JRC assembles the data, storing it in databases, analysing its quality and coverage and making it available to the STECF working groups. Once the STECF reports are finalised the data is disseminated in aggregated form for a target audience of experts for further use in scientific analyses and policy.

The National Programs and Annuals Reports prepared by the MS are evaluated by STECF and the results of these are publicly available on the EC's webpage. On the basis of the proposals by STECF, DG MARE approves the programs and reports.

The Work Plans are prepared by the Member States, submitted to the Commission and screened by independent experts, subject to evaluation by the STECF. On the basis of the STECF opinion, DG MARE approves the Work Plans through Commission Decision.

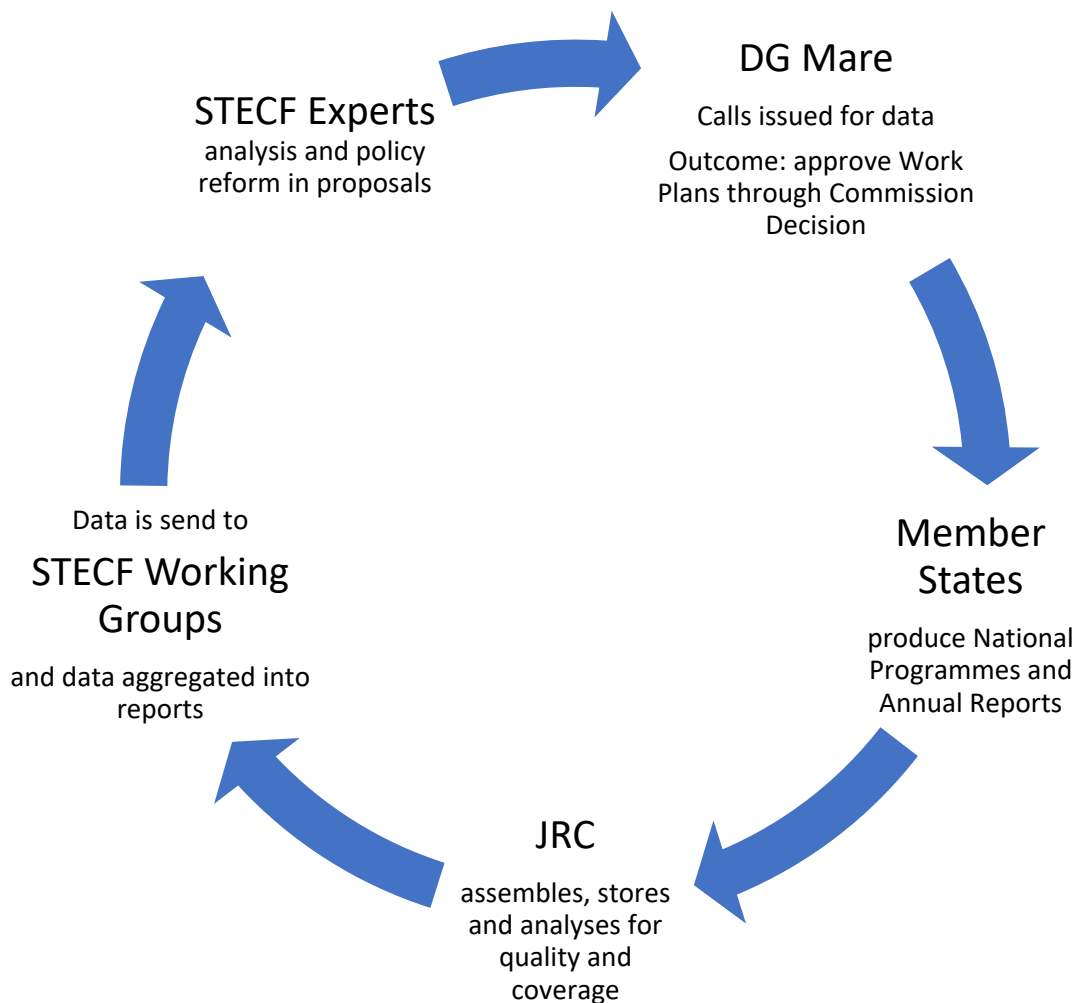


Figure 1: The annual processes of the DCF.

Providing Value for Money

The Fisheries and Aquaculture Monitoring and Evaluation (FAME) fosters the development of the Common Monitoring and Evaluation System (CMES) established by Article 107 of the EMFF Regulation. FAME supports the European Commission and the Member States in building capacity across all components of the CMES. It also ensures that effective and efficient systems are in place to deliver the information required by the Common Provision Regulation (CPR) and the EMFF Regulation. Like all the European Structural and Investment Funds, the EMFF adopted a reinforced result-orientation for the period 2014-2020. This includes monitoring of the effectiveness of supported projects in order to demonstrate that the EMFF delivers results that go beyond mere financial consumption.

Whilst the FAME audit of the DCF may not be of any consequence to operators, the provisions of FAME ensure there is some rationale behind the requests for data. However, to ensure buy-in and trust from the aquaculture industry, it is additionally necessary to audit from the bottom-up. The rationale for this report is to initiate a two-way feedback in scrutiny which the Aquaculture Advisory Council (AAC) will use to ensure a more robust data collection framework that will deliver better, more informed and efficient decisions.

This Report

This review of the DCF stems from Article (14) of the DCF Regulation that states that “In the interest of simplification and rationalisation, the data to be collected should be selected on the basis of needs clearly substantiated by end-users of scientific data”. In a review of the DC MAP (STECF-13-06), Advisory Councils are considered a Type 2 end user, with the classification as follows:

- Type 1: Main end users for whom the DC-MAP was designed, including the Commission, any bodies such as ICES and STECF designated by the Commission to provide them with recurrent advice directly supporting CFP decision making, and other fishery management bodies such as RFMOs, GFCM and EU governments using DC-MAP data to implement their fishery management policies.
- Type 2: Other bodies such as Advisory Councils or subcontractors from whom the Commission may request advice or analysis based on DC-MAP data
- Type 3: All other bodies such as NGOs and Universities with an interest in using DC-MAP data for their own purposes.

As an end-user, the Aquaculture Advisory Council plays a key role in improving data collection. Important questions that have guided the development of this review are:

- Is the data collected relevant for sustainable aquaculture?
- Is the data collected supportive and coherent of other legislations (e.g. environmental/ social)?
- Is the data collected effective (e.g. quality of the data)?
- Is the data collected efficient (e.g. costs)?
- What is the added value of the data collected?

Aims and Objectives

The aim of this work is to carry out a stock assessment of the DCF, with areas to address as follows:

- Review and analyse the efforts already undertaken by Member States to collect data based on the legal obligation of the Data Collection Regulation.
 - Information from the AAC members on how they view data collection in their countries
 - List of services/ operators that are collecting data – who does the job and how this is done
 - Describe the workflow of the data that is collected (e.g. who does the analysis of the data and when is this published)
- Review the breakdown of how much it currently costs EU Member States to collect the data
- Review why Member States are not collecting the data that is mandatory
- Review how the non-confidential data is made public in every EU Member State (e.g. Eurostats)

Through a consultative process with relevant stakeholders, and review of the relevant best available science, the objectives are to compile all information available regarding data that is collected and compare and identify the differences within each EU Member State.

The submission will be used to develop recommendations for approval by the Executive Committee to be submitted to EU Member States and the European Commission.

Methodology - Approach to Gathering Evidence Base

The research work resulted in a combination of literature searches and interviews with representatives of the Member States.

Research Approach - Questionnaire

A qualitative approach to how the AAC members view data collection in their countries was taken before the review began and a summary of these opinions are provided.

A questionnaire was created for the data collecting institutions of the DCF (Annex 1), to quickly gather information from MS on efforts, costs and reasons for non-compliance. The completed questionnaires are provided in Annex 2.

Stakeholder Engagement

National correspondents for data collection are listed on the [JRC webpage](#) and these were contacted in order to find the appropriate personnel responsible for coordinating, collecting and using the data. In most MS, three different officers fulfilled these roles, sometimes based at different organisations (as detailed in respective MS sections of this report). To coordinate a response, in some cases it was necessary to carry out a tele-conference to gather these personnel together.

Representatives from eight Member States responded with completed questionnaires (as detailed in Table 3) via email correspondence. Malta, the Netherlands and Italy were contacted but chose not to participate in the study.

Table 3. Member State's studied and the authorities responsible.

Member State	Authority and role of representative
Denmark	Statistics Denmark, Food Industries
France	University of Nantes, under the responsibility of the Ministry of Agriculture
Germany	Thuenen-Institute for Fisheries Ecology - Data collector and analyst for social and economic data of the aquaculture sector
Greece	Hellenic Ministry of Rural Development & Food, Hellenic Agriculture Organization (Demeter) - Fisheries Research Institute
Ireland	Bord Iascaigh Mhara, Irelands Seafood Development Agency
Spain	Subdirección General De Investigación Pesquera Y Reservas Marinas, Dirección General De Pesca Sostenible, Mº De Agricultura, Pesca Y Alimentación
Sweden	Swedish Board of Agriculture - Aquaculture coordinator
UK	Marine Scotland – data analyst
	Cefas – data collector
	Marine Management Organisation – DCF coordinator

Not all the participative countries fall within the EU MAP threshold: Denmark, Germany and Sweden can submit simplified methodology / pilot studies because their production levels are relatively low. These countries have been included in the review because they have taken part in 'pilot studies' to gather data and it may be possible to glean good practice from their approach.

Of key importance to the evolving role of the DCF, is the opinions of the Aquaculture Advisory Council members – they represent on-the-ground expertise and knowledge of the sector being monitored. Written responses on the first draft of this report were consulted and agreed upon during a webinar held on the 06 June 2020. A second draft was consulted on in September 2020. Details of the comments can be found in Annex 3.

Research Output

Deliverable 1 (Word): DCF Review report. This is the final report of the review, documenting conclusions and recommendations based on an holistic review of each MS approach.

Deliverable 2 (Excel, PDF and Word formats): Example DCF surveys from MS provided as a link within Annex 2 of this report (Deliverable 1).

Conclusions and Recommendations

General Conclusion

The DCF has the potential to provide the framework for measuring the sustainability of aquaculture across Member States. However, in its current format, there is mistrust within the industry, fish health and welfare and environmental stakeholders on the relevancy, reliability, efficiency and accessibility of the data, making it difficult to see any value-added benefit. For the design of the future on-going data collection programme, it will have to be determined what information is relevant (preferably prioritising various indicators) and which level of precision and confidence should be achieved. The on-going data collection programme will then have to be further developed to meet these requirements.

Economic Indicators

The DCF scope for the economic data does include some crossover with environmental and social indicators. Feed and energy usage are arguably an environmental indicator, and gender data collection has recently (2018) migrated to the social data call. Notable examples of using the energy usage data for other assessments is Ireland, Germany and Greece (the latter with no information):

- Ireland have supplied the energy costs to their Green Energy Scheme for an aquaculture / processing crossover project <http://www.bim.ie/our-services/grow-your-business/green-seafood-business-programme/>
- Germany have demonstrated the value of this data by calculating the Energy Return on Investment (EROI) for selected trout production systems on the basis on operational/variable cost.

Environmental Indicators

The environmental data is already collected for finfish under the EU Fish Health Directive (2006/88/EC), and this duplication is not efficient. Mortality data for off-bottom cultured shellfish are relevant and Ireland suggest this has been collected by industry for many years to inform production. The Irish response also highlights that bottom-cultured mortalities are difficult to quantify and so any figures for this will be misleading.

Notable initiatives from MS include Germany's use of DCF data to assess economic impacts of fish loss due to predators, diseases and climate change. The AAC would like to see the scope of the environmental data call expanded, and lessons learned from countries who have developed methodology explored with a common approach in mind. Provided the costs of energy usage and feed are relevantly placed within the economic scope, then other environmental indicators could be related to abiotic and biotic effects, emissions and waste, greenhouse gas emissions, fish health and welfare and mitigation measures.

Social Indicators

The social data collected include employment by gender, age, nationality, education and training and unpaid labour. The fact that only direct employment is collected which underestimates the local importance of the industry: it is well known that the aquaculture sector stimulates economic activity through its spending on goods and services. This expenditure, be it operational or on capital, supports the turnover and employment of those businesses where money is spent, and this is not captured in the DCF.

There exists good coverage of employment by gender data up to 2014 available in economic data tables available here: https://stecf.jrc.ec.europa.eu/reports/economic/-/asset_publisher/d71e/document/id/2457987). After this date, gender-based data is inconsistent among MS and stops at 2018. Given the voluntary nature of the social data pilot, there are gaps in data. France and Germany report this data (as evidenced in Annex 1), but it is not clear where to access this, and indeed if other MS are collecting it under the economic data call. Ireland have incorporated their socioeconomic data collection into their annual economic survey.

Each MS will usually have their own private industry-funded assessments carried out, and for such a diverse industry in the EU, this may be the most appropriate method of data collection. One notable report from France is a joint industry-government study “Contrat d’Études Prospectives du secteur de la conchyliculture” (link provided in Annex 3), which addresses the challenge of maintaining jobs: it did not use DCF data.

Other social indicators for sustainable aquaculture could be related to respect for native culture, employee interests and well-being, social capital of the local community, equity, community integration and community contributions.

Countries Not Within the DCF Threshold

Despite falling outside the threshold for reporting, many smaller producing countries, as well as land-locked, have made good progress on data collection. Of notable mention is Czech Republic’s plans to collect environmental data on escapement success, eel mortality (hydropower, predation), stocking survival and also yellow eel abundance. Methodologies include telemetry studies, electrofishing and spatial meta analyses. Belgium and Czech Republic intend on carrying out pilot studies for socioeconomic and environmental data. Austria, as land-locked country, is just preparing for data collection of freshwater aquaculture. Poland and Portugal collect social data annually within the economic questionnaire and therefore do not require a separate social data pilot.

Collection and Analysis Approach

There is a consistent approach from STECF on the content of data calls, but the response is not based on real-time information and the AAC would like to see more efforts to improve this. Efficiency and accessibility are also an issue, and perhaps a move towards digital collection can solve the data lag, the merging of data calls and the lack of access to end-users.

Data is collected from industry either through postal or digital questionnaire usually by the same authorities or institutions that carry out the analysis. However, there is a potential role for the producer’s associations, particularly as they are “frontline” and collect some socioeconomic and environmental data for other purposes. Having the associations play a role in DCF would increase trust in the final data output and could also lead to information efficiencies. The AAC would like DG Mare to consider a more active role for the associations.

Data is analysed by authorities or institutions that already carry out economic reporting (for EuroStat for example) and so it makes sense to keep this expertise together. The ACC have no recommendations to change this part of the framework.

The costs of the DCF

The costs of the DCF vary significantly between the various MS, depending on the specific local situation. It has been difficult to collate the true cost of DCF responsibilities for aquaculture due to the inclusion of the catch and processing fisheries sectors. Data collection is carried out by organisations

which are already involved in data collection and so it appears that a very small proportion of EMFF funding is provided for aquaculture purposes. The AAC would like to see transparency in breakdown of EMFF.

Data Collection Implementation Approach

STECF assist the development of data collection by providing reporting templates to MS. These templates consolidate compliance with DCF and these compliance indicators have been developed further in this report by reviewing and analysing how the different Member States have dealt with these.

Each MS has come up with its own implementation approach, but there has been some standardisation across MS for economic data, but less so for environmental and social data. An economic methodology workshop (for sampling and estimation methods) was planned for March 2020 in Helsinki, Finland, with a follow-up workshop on Aquaculture Data Collection in June (Gdynia, Poland), but these were cancelled due to the COVID epidemic. The need for workshops on environmental and social data has been highlighted, but these are yet to be arranged.

The MS methodology on data collection can be found in each MS Annual Reports, found here [\[https://datacollection.jrc.ec.europa.eu/ars\]](https://datacollection.jrc.ec.europa.eu/ars). Generally, each MS collects data from aquaculture farms / enterprises through questionnaire. The objective is to minimise the sample size and survey costs while guaranteeing the reliability of the survey results, including achieving a high participation / response rate.

Most MS collect by postal questionnaires and/or site visits but digital collection is becoming more desirable (Ireland hope to be online by 2021; Sweden have recently introduced online questionnaires).

The reporting responsibilities are summarised in Table 4. DCF data collected is sent to the Joint Research Centre (JRC) for analysis and dissemination to STECF. The production (volume and value) data of DCF is also sent to EuroStat, OECD, FAO, and OIE, and employment aspects of the DCF are sent to FAO and OECD. For an explanation on the difference between DCF and EuroStat, refer to Box 2.

Box 2: How does the DCF differ from data collected for Eurostat?

Eurostat and the JRC both collect data on aquaculture on the basis of Statistical Regulation 762/2008 and of the DCF Regulation, respectively. The DCF covers aquaculture production costs, while Eurostat focuses on production volume and value only. Eurostat does not collect costs and earnings data. The two systems overlap in production volume and value figures. However, Eurostat and DCF data are collected by two different institutions and reporting is available at different periods of the year; therefore making it unfeasible to combine data collection into one single questionnaire. There is double transmission from MS to JRC and Eurostat, as no data exchange occurs between these two institutions.

Typically across most Member States, there was a low response rate for the smaller enterprises, and so some countries have, in subsequent years, chosen to target larger enterprises because response

rates are higher: it is generally believed that larger businesses can provide more complete and trustworthy data, and the burden of completion is lower than for small businesses.

There has been one voluntary data call (in 2018) for two years (2015 and 2016) environmental data (chemicals and mortalities), and only two MS submitted (UK and Sweden). For social data, there has been no call yet from DG Mare, but many countries have carried out a pilot study in 2018 (for 2016 data) and have plans to collect again in 2021.

Table 4: Summary of data collection responsibilities under the DCF.

Data requested	Data Collection Frequency	Who collects the data?	Coverage	What organisations have a statutory obligation to use the data?
DCF and long-standing censuses overlap				
Production (volume and value)	Annual	Data for long standing censuses on APBs are collected by the governing authorities. Employment data (an OECD and DCF responsibility) is encompassed.	100% of APBs	<ul style="list-style-type: none"> • FAO, OECD, OIE, Eurostat • JRC (DCF)
DCF only				
Economic	Annual	Varies between MS – government departments, universities, industry bodies.	Only applies to high production species (i.e. those that fall within the EU MAP threshold) - variable response rates	JRC (DCF)
Environmental	Every 2 years (under review)			
Social	Every 3 years			

Relevancy of Data

Currently, reporting of sales data is broken down into 150 segments to represent the different cultured species and equipment (Table 9 of the Commission Implementing Decision EU 2016/1251: <https://datacollection.jrc.ec.europa.eu/web/dcf/dc/aqua/templates>). One of the stakeholders consulted for the study (Annex 3) considered this over-segmentation which can lead to misinterpretation.

One of the comments from the webinar (Annex 3) were that Associations want accurate and real-time economic data: reporting is currently two years in retrospect. As evidenced from the consultation with Member States in this study, some countries (Sweden and Ireland) have, or are in process of, introducing electronic software to collect data online, and this is the first step in addressing this inadequacy.

Recommendation 1: DG Mare should provide a number of enabling incentives to support Member States in reporting real-time data.

A template for the environmental data variables (as per table 8 of Commission Implementing Decision 2016/1251) are provided to each MS (found here:

<https://datacollection.jrc.ec.europa.eu/web/dcf/dc/aqua/templates>). In summary, the following data are requested:

- Medicines – Medicines or treatments administered by type; value (grams) of each medicine per year; sample size (how many businesses); population (no. of businesses per segment); the achieved sample rate (%); sampling strategy (whether it was collected from a random selection or all members of the population); precision level (coefficient of variation).
- Mortality – Mortality rate (%); sample size (how many businesses); population (no. of businesses per segment); the achieved sample rate (%); sampling strategy (whether it was collected from a random selection or all members of the population); precision level (coefficient of variation)

It is notable that these data are collected for the EU Fish Health Directive (2006/88/EC), and indeed the UK re-used this data for the pilot environmental DCF call from DG Mare in order to avoid duplication in collection. Of the MS who did collect environmental data, none have used this for any purpose. Given the data requested is duplicated with other legislation, there is no value-added benefit.

One Member State interviewed recognised that social data may be better studied at a local level using case studies of selected farms rather than using DCF collected data, and this has been echoed in the consultation with the AAC members (Annex 3). The AAC wish to see more data collected on the local importance of the industry. Currently, the social variables are more applicable to the fisheries catch sector than to aquaculture.

Recommendation 2: The scope of environmental and social data variables relevant for sustainable aquaculture should be consulted upon with the Aquaculture Advisory Council.

Compliance

Currently, STECF non-compliance would go to various committees and for each compliance breach, a MS can have a reduced allowance of between 5 – 50% (of EMFF funding).

STECF evaluate compliance with DCF and the 2018/19 Annex WP evaluation sheets are publicly available [here](#). As socioeconomic and environmental data reporting has so far been voluntary, it is not appropriate to assess compliance at this stage. Most MS have carried out pilot studies in the collection of socioeconomic data. On the other hand, most MS have not reported on environmental data. In the evaluation of Greece on environmental data, it is noted that companies were reluctant to provide antibiotics data. Spain stated that no pilot study for environmental data was planned as this is collected through Regional Authorities dealing with Animal and Public Health. Anecdotal evidence from the AAC WG3 corroborates this (Annex 3) as a reason for not taking part – the duplication in data collection is a

valid reason for MS not to report through the DCF on this and this has been addressed in Recommendation 3 of this report.

Size of the Survey and Response Rates

Most MS have a high response rate of >80% for fish and shellfish farming, but this is probably because companies are targeted with a response in mind i.e. the firms are large enough to have the resources. Good response rates suggest results are reliable, but the fact that large firms are targeted could introduce bias.

Sweden noted low coverage and have addressed this by combining the questionnaires and making them available online, and these approaches are expected to become adopted by other countries.

Germany have low response rates (<40%) and this could be due to several reasons:

- the considerable efforts required on the side of the farmers to fill in the forms and the fact that the majority of German farmers (around 70%) farm fish part-time and this provides <50% to their income
- a general reluctance of German fish farmers to provide economic information
- the view that such a survey would be of neither immediate nor potential benefit for the farmers.

Recommendation 3: Member States should make every effort to combine the questionnaires and make them available online.

Reliability and Access

Data is published in English by the European Commission after submission:

- [STECF reports](#)
- [JRC database](#)

One of the comments on accessibility from the webinar (Annex 1) were that STECF reports are available only in English and this restricts access for the majority of the European community. This may form the basis of opinion from stakeholders that “the administration has to be more user-friendly”, but could also relate to the over-segmentation and unwieldy datasets produced in the STECF reports.

Stakeholders comments on reliability (provided in Annex 3) demonstrate a lack of trust in economic / production data, who state: “the figures are wrong or don’t mean much because the companies fake their returns because it is anonymous”.

Clearly the aim of any data collection ethos should be: “collect once, use often”. The farmers associations (comprehensively represented within the Aquaculture Advisory Council), say that “companies approach the producer’s associations to ask for data” instead of approaching the data collecting authorities or reading the STECF reports. Furthermore, “the producers (companies) don’t get anything back (from the DCF)” and “the associations don’t want exactly the same data that producers give”. Some Associations collect data in their own way e.g. Poland, and perhaps there are lessons to be learned in collaborating so the needs of all end-users are satisfied and the collection is more efficient and streamlined.

One of the stakeholder comments (Annex 3) pointed out that shellfish segments are mixed up between bottom and water-column cultivation (“bouchot”). The misinterpretation of segments has lowered the confidence levels of the end-user.

Data is also used for internal analysis on industry structure, profitability of other sectors, cost structures, and these can and do feed into various commissioned research. There are many examples with links included within Annex 2 of this report.

Recommendation 4: STECF must make more effort to make the data collected more accessible to end-users.

Suitable Organisation

DCF regulations are typically coordinated by MS government authorities: some absorb the data collection and analysis roles by employing staff (Denmark, Greece, Spain); some employ data collectors and analysts as well as contracting out to industry bodies (Ireland, Sweden and UK) or Universities (France, Germany, Netherlands).

There was some suggestion from ACC members that “a greater role should be given to producer’s associations”. The viability of this was not within the scope of this work, but would need to be assessed for feasibility. Organisations currently carrying out DCF responsibilities have the digital infrastructure for data storage and access, transmission, quality control and dissemination: the associations do not have this capacity.

Recommendation 5: A feasibility study should investigate the potential for the farmers associations to play an active role in collecting data.

Estimation of Costs

The majority (80%) of the DCF is funded by the European Maritime and Fisheries Funds (EMFF). The EMFF is the fund for the EU’s maritime and fisheries policies for 2014-20 and post-2020. It supports the objectives of the Common Fisheries Policy and encourages the development of the EU Integrated Maritime Policy. During interviews with MS for this study, many were quick to point out that the majority of EMFF funding for DCF went to the catch and processing sectors rather than aquaculture. A summary of EMFF contributions to DCF responsibilities, provided by MS for this study, is provided in Table 5.

With reference to the cost figures in Table 5, the UK, despite being the largest producer in the EU, has the lowest awarded funding. One explanation for this figure being relatively low is that funding for Eurostat returns was not included and this makes up the majority of workload in comparison to DCF responsibilities. This would suggest that figures for the other MS in Table 5 are over-estimated.

The return for funding ensures that adequate staff are employed to carry out the DCF responsibilities. Staff resourcing typically includes two-three officers, covering separate roles for data collection, analysis, and coordination. Coordination covers the logistics of dividing catch fisheries / processing / aquaculture work streams and so only a small proportion can be attributed to aquaculture and so has

not been accounted for in Table 5. For aquaculture, each officers time is typically 0.5 Full Time Equivalent (FTE).

Table 5: Summary of staff resourcing, funding and actual investment costs (€) of the DCF (aquaculture only).

	Staff Resourcing (FTE)			Annual Funding vs Actual Costs	
	Coordinator	Collect data	Analyse data	EMFF contribution (€)*	Actual investment costs (€)
Denmark	-	0.5	1.0	160,000	290,000
France		3	1	271,397	325,676
Germany	-	0.6	0.5	75,000	90,000
Greece	Not disclosed				
Ireland	-	1	-	65,000	78,000
Spain	-	2.39	1.14	183,000	219,600
Sweden	-	0.1	0.2	65,000	78,000
UK	-	0.5	-	35,000**	42,000

* EMFF provides only 80% of actual costs for DCF.

** Only the collection of economic and environmental data and collation of data for data calls is included. The production census, whilst contributing to DCF figures, is not included in the costs as its primary purpose is for Eurostat returns.

It has been difficult for MS to provide actual costs due to the combined nature of CFP and EMFF. It is important to be transparent in costs of collection and analysis.

Recommendation 6: Member States should publicise the EMFF funding contribution to data collection for aquaculture separately.

Recommendations

- 1. DG Mare should provide a number of enabling incentives to support Member States in reporting real-time data.**

Maximum efficiency and effectiveness of an on-going data collection scheme can be only achieved if the future intended data use is up-to-date.

- 2. The scope of environmental and social data variables relevant for sustainable aquaculture should be consulted upon with the Aquaculture Advisory Council.**

Data calls should not duplicate any other legislation. Indicators of sustainability can be well defined with cooperation of the AAC, which will also allow a precise formulation of the objectives as well as prioritisation of the indicators to be collected or estimated.

- 3. Member States should make every effort to combine the questionnaires and make them available online.**

Combining social data into economic surveys is becoming common practice and the same approach should be encouraged for environmental data. An efficient use of online questionnaires for data transfer is essential for simple and fast collection and analysis.

- 4. STECF must make more effort to make the data collected more accessible to end-users.**

Full access to questionnaire results are imperative to promote buy-in from all end-users.

- 5. A feasibility study should investigate the potential for the farmers associations to play an active role in collecting data.**

Co-operation of the producer's associations is indispensable for several reasons:

- they are an end-user – the link between detailed indicators (as proposed below) and data collection will be beneficial for prioritisation and implementation
- to promote the legitimacy of analysis based on that data, so that the results are not disputed or discredited as being based on biased information
- data analysis should remain to be executed by organisations already involved in compilation of statistical data.

- 6. Member States should publicise the EMFF funding contribution to data collection for aquaculture separately.**

There is a legal requirement for publicising EMFF contributions to MS, but AAC members wish to see the divisions between the sectors published.

Please provide any other cost information:
Compliance
Have you been able to fully comply with the regulation? If not, please explain why.
Cross-over with other legislation
With reference to Article 14 of the DCF “the data to be collected should be selected on the basis of needs clearly substantiated by end users of scientific data”, as an end-user, please explain what you have used the data for?
Have you used any environmental data to assess compliance with Good Environmental Status targets and/or the phasing out of certain chemicals? Please explain.
Have you used any cost data to look at energy useage?
Have you been able to demonstrate added benefits of the DCF? Please explain further.
Please write down or send relevant links you think relevant:

Annex 2 - Selected Member State efforts in data collection

Questionnaires were circulated to DCF data collecting and analysing authorities and the following results are mostly verbatim.

Denmark

Link to Denmark's Economic Survey: [Denmark - Economic Survey.xls](#)

Relevant organisation

The aquaculture aspect of Denmark's DCF responsibilities are carried out by Statistics Denmark, Food Industries. [Statistics Denmark](#) is a Danish governmental organisation under the Ministry for Economic and Interior Affairs.

Method of data collection and reporting

Economic data is collected on spreadsheets every year. Environmental data is compiled from register data every second year. Social data is compiled from register data every third year. Denmark submit the data to Joint Research Center (JRC), European Commission (EC). Data is accessible in the yearly publication Account Statistics for Aquaculture and in electronic tables on the internet page of StatBank Denmark.

Size of survey and response rates

Denmark claim a response rate of 100% as they only ask those with whom they already have an agreement. Indicated below are the approximate achieved sample rates:

Segment reported	Response rate (%)
Trout combined (seg2.3)	50
Trout cages (seg2.4)	100
Other freshwater fish combined (seg5.3)	50
Mussel Long line (seg7.2)	70

Estimation of costs

Denmark receive approximately €160,000 per annum to carry out the aquaculture aspect of their DCF responsibilities. This is 80% of the possible applicable amount. However Denmark's actual costs are far greater than the applicable amount, which amount to approximately 290,000 Euros, but due to DCF regulations, only approximately 200,000 Euros are acceptable costs.

Compliance

Denmark have been fully compliant.

Cross-over with other legislation

Individual data is made available for researchers at the University of Copenhagen. Compiled data is mainly used by the business organization Danish Aquaculture and the Danish Fisheries Agency and other governmental agencies. Compiled data is also submitted to JRC. Denmark have not used any environmental or energy usage data for any other assessments to date.

France

Relevant organisation

University de Nantes (LEMNA) – Partner with SSP-MAA in the national program of the DCF.

Method of data collection and reporting

For fish-farming, questionnaire under Excel format sent, via accountancy companies or professional organisations, to a representative sample of fish-farmers and extrapolation

- Annual census and for economic and social data: persons employed, FTE by gender, Employment by gender, Gross sales per species, Number of hours worked by employees and unpaid workers, Number of enterprises (by category on the number of persons employed), Unpaid labour by gender, Unpaid labour, Weight of sales per species
- Annual non-probability sample survey: Debt, Consumption of fixed capital, Energy costs, Feed costs, Financial expenditures, Financial income, Livestock costs, Net Investments, Other income, Other operating costs, Personnel costs, Fish Feed used, Livestock used, Repair and maintenance, Subsidies on investments, Operating subsidies, Total value of assets, Value of unpaid labour
- Every 3 years for environmental data by census

The university of Nantes supply their data to JRC only, which is published on European Commission website: [<https://stecf.jrc.ec.europa.eu/dd/aqua>].

Size of survey and response rates

Segment reported	Response rate (%)
1- Fish farming techniques: Tanks and raceways Trout	83%
2 - On-bottom Oyster	80%
3 – Raft Oyster	78%
4 – On-bottom mussel	84%
5 – Raft mussel	92%
6 – On-bottom Multispecies	86%
7 – Raft Multispecies	87%

CIPA say there are around 50 fish-farms.

Estimation of costs

Not disclosed – according to report 678,493 euros / per year. The University of Nantes responded to this to say this is fisheries and aquaculture – the latter only representing 40% of this (271,397). About 80% of this goes toward data collection, but the exact figure is difficult to calculate because they use sub-contractors.

Compliance

The university have fully complied with all data calls.

Cross-over with other legislation

France respond that they have used cost data to look at energy usage but they do not explain further. They point out that it is too early to look into compliance with GES targets or phasing out of chemicals using the environmental data.

Germany

Link to Germany's Economic Survey: [Germany - Economic Survey.pdf](#)

Relevant organisation

The aquaculture aspect of Germany's DCF responsibilities are carried out by Thuenen-Institute for Fisheries Ecology [<https://www.dcf-germany.de/index.php?id=4>].

Method of data collection and reporting

Economic data is collected on spreadsheets every year on:

- Statistics on employment, landings (mussels) and agriculture
- Survey
- Network of representative farms

There are no deviations from general data collection timing: economic data = annual; social data = triennial; environmental data = aim to do a pilot study until 12/2020.

Germany submit their data to the JRC. They publish their data in a variety of formats, including:

- Unregularly scientific papers; access via journal.
- Biannual STECF report 'The Economic Performance of the EU Aquaculture Sector' – online available e.g. https://stecf.jrc.ec.europa.eu/reports/economic/-/asset_publisher/d71e/document/id/2446795
- Annual Thuenen Overview about the Aquaculture Sector (in German): <https://www.thuenen.de/de/thema/nutztiershyhaltung-und-aquakultur/aquakultur-landwirtschaft-unter-wasser/>

Size of survey and response rates

Survey response rates per species in 2019:

Blue mussel = 50%

Carp = 34%

Trout = 37%

Employment by gender, Employment by nationality, Employment by employment status have an additional source (National Employment Agency) = 100%

Estimation of costs

Germany receive approximately €75,000 per annum to carry out the aquaculture aspect of the DCF responsibilities. This provides for one senior scientist to analyse data (0.6 FTE) and one student assistant to collect data (0.5 FTE).

Gap Analysis

Germany claim there is no bias in resulting. The majority of German farmers (around 70%) farm fish in part-time and fish farming provide <50% to their income. Notwithstanding, the farmers, working in full-time in aquaculture (around 30%) are still SMEs.

Compliance

Germany have been fully compliant.

Cross-over with other legislation

Germany use the data for:

- Informing the public, industrial and scientific community about the performance of the sector
- Giving advice to the national and European political decision makers

Whilst they have not used the environmental data for any other purposes, they have calculated the Energy Return on Investment (EROI) for selected trout production systems on the basis on operational/variable costs.

The DCF representative presents the results of data collection regularly to fisheries officers of the federal states in Germany and directly to fish farmers to inform them about the status of the sector. They evaluate the potentials and drawbacks of different aquaculture production systems, to show, which system is most competitive. Currently they are working on impact analyses based on DCF data to assess the economic impacts of fish loss due to predators, diseases and climate change.

Greece

Link to Greece's DCF Survey: [Greece - All DCF.docx](#)

Relevant organisation

Fisheries Research Institute of the Hellenic Agriculture Organization (Demeter) coordinate DCF in Greece. Methodologies have been uploaded and are available on the Fisheries Research Institute web site of ELGO Demeter (Ministry of Rural Development and Food), in the data collection section [https://inale.gr/national-fishing-data-collection-program_el/].

Method of data collection and reporting

The type of data collection scheme is census for all the variables, except for a few such as livestock used and cost and unpaid labour. The frequency of data collection is annual for economic data, 2 years for environmental data (pilot study – data not yet available) and 3 years for social data. There are no deviations.

Data are only given to the Ministry of Rural Development and Food for covering DCF data calls, who then report to JRC. Data is made available to the public through the Ministry of Rural Development and Food.

Size of survey and response rates

Trout - Tanks and race-ways (≈90%)

Sea bass - Sea bream - Hatcheries and nurseries (100%)

Sea bass - Sea bream – Cages (≥95%)

Other marine fish – Cages (≥95%)

Other fresh water fish - Ponds (≥80%)

Mussel - long line (≥85%)

Missing data are completed from: 1) The Integrated Monitoring System of Fisheries Activities (OSPA), operating under Ministry of Rural Development and Food, that is used also for data cross checking and validation and can be found in the following Link: <http://portal.alieia.minagric.gr/wps/portal/fishing#> and 2) from the published balance sheets of the companies.

Estimation of costs

No costs were provided, stating “there is no distinct budget for this activity. Expenses are included in budget of all DCF activities”. Five FTE staff numbers are involved in data collection and analysis.

Compliance

Full compliance.

Cross-over with other legislation

Greece respond that they have used cost data to look at energy useage but they do not explain further. In terms of added benefits of the DCF, they state there is a better collaboration of enterprises.

Ireland

Relevant organisation

The Marine Institute supports the responsibilities of the DCF and contracts out Bord Iascaigh Mhara (BIM) to conduct the economic aspect for aquaculture. BIM are Irelands Seafood Development Agency

https://emff.marine.ie/sites/default/files/sites/default/files/datatcollection/docs/data_collection_scheme.pdf

Method of data collection and reporting

The type of data collection used follow in order of choice and/or necessity:

- Direct:- census survey or sample survey questionnaires to clients,
- Indirect:- Online sample survey of Business accounts, aggregated data of other surveys conducted in-house or by other state agencies or a combination of methods where appropriate.

The census is conducted on all commercial businesses of the population. That is, all businesses producing stock for purposes of sale and profit generation. This means that non-profit state-owned enterprises and moribund businesses (no stock, no employment or activity, that generates data, sought by the survey, during surveyed period) are excluded from the frame. The 25 % sample is extracted from the same frame as the census. The rotating 25% sample was chosen by choosing a profile through the population, based on average turnover from each aquaculture business. The segments are from the templates provided, populated by businesses based on Species and culture technique.

Segment / Data	Production	Economic	Environmental	Social
Tanks, ponds and FWT cages - Atlantic Salmon	✓	✓	✓	✓
Sea Cages - Atlantic Salmon	✓	✓	✓	✓
Tanks and Ponds - Rainbow Trout	✓	✓	✓	✓

Tanks and Ponds - Other Freshwater Fish Spp.	✓	✓	✓	✓
Long Lines - Blue Mussel	✓	✓	✓	✓
Seabed Culture - Blue Mussel	✓	✓	✓	✓
Seabed Culture - Oyster Spps.	✓	✓	✓	✓
Off-Bottom - Oyster Spps.	✓	✓	✓	✓
Seabed Culture - Other Bivalve Shellfish Spps.	✓	✓	✓	✓
Combined Techniques - Shellfish hatcheries and Novel Spps.	✓	✓	✓	✓

Census and sample questionnaires and online surveys, along with access to in-house and other agency datasets are used and all variables are collected for annually for maintenance/build-up of response rates and administrative convenience. Data is securely stored electronically. The new environmental and socio-demographic variables have been incorporated into the national survey. As discussed at PGECON the definitions of the variables were not defined sufficiently in the regulation and a lot of effort has gone into defining these variables and how they were going to be reported.

In our Work Plan Ireland has indicated that 'Data will be collected by direct census survey and by access to indirect sources if these can be identified and collated. It is not known what level of data quantity or quality will be gathered for Chemical/medicinal inputs. As Irish aquaculture is mainly extensive bivalve mollusk or organic salmon production, these inputs would be very small. The percentage of mortality should be gathered to a reasonable level of accuracy for off-bottom mollusc culture such as oysters, but it will be more difficult in the case of extensive bottom cultures such as bottom mussels and native oysters.'

Through our surveys it was found that mortality data was freely offered by shellfish operators and had already been collected for numerous years. It was therefore incorporated into the annual census portion of DCF data collection. For finfish, data was collected by derivation, using census data numbers input and numbers harvested. The resultant estimate may be an over estimate of mortality level as some of a given fish stock may be transferred elsewhere for different purposes between input and harvest. A direct question has since been included on the census questionnaire. Medicines or treatments administered has been incorporated into the annual census questionnaire as it is felt that such a question is no great burden to an extensive sector that rarely has reason to use such aids.

Size of survey response rates

Response rates vary for the two methods of collection. The direct survey, by census questionnaire, has a response rate generally of approximately 80% of the population but at variable and segment level, this can be down to 40%. The sample questionnaire gets a general response corresponding to 9- 15% of the population but again, for certain variables and segments, this can drop to zero responses. The indirect survey of economic and other data provides from 25 to 100% of population responses.

IRL hope to roll out an online survey form at some point in future. <http://www.bim.ie/aquaculture-survey/>

Estimation of costs

BIM carry out data collection are subcontracted by the Marine Institute but are not allowed to claim for staff time for two staff. A third staff member, is EMFF funded (based at BIM). The cost of surveying is low (BIM often print the surveys themselves). Phone surveys are conducted by central staff and regional staff are called upon as back-up. Up to 7 additional staff therefore, may be deployed, without additional funding, for up to several days to chase reluctant participants. BIMs regular costs are less than 3,000 Euros (for T&S). The T&S to ICES WG SEDA is covered under the EMFF so can reclaim costs for this. A one-off award of 19k was given to evaluate sampling methodologies for aquaculture and processing project in 2019. It is considered very good value for money. In 2019 the total costs submitted under aquaculture, excluding this once off study, totalled €2,797.

Compliance

Ireland have been fully compliant.

Cross-over with other legislation

The annual aquaculture survey collects a common pool of raw data to supply all clients; in-house needs for national programs as well as the requirements of Regs 199/2008 (DCF) and 762/2008 (Eurostat) and SI 132. The data collected supplies DCF, Eurostat, FAO and OECD annually and other bodies on occasion. Data collection overlap occurs for volume, value and basic employment data.

The environmental data of this data-set has not been built up to a useable degree yet and in any event, other more specialized data-sets are gathered by other units in BIM to do this. Such activity is client orientated as BIM is a developmental rather than a regulatory or academic remitted organization. For example, BIM assists clients to meet organic or other certification requirements for their produce which include maintaining environmental standards.

BIM provided data to the Green Energy Scheme for an aquaculture / processing crossover project.

<http://www.bim.ie/our-services/grow-your-business/green,seafood,business,programme/>

Annual STECF reports https://stecf.jrc.ec.europa.eu/reports/economic/-/asset_publisher/d71e/document/id/2446795

Annual production report – <http://www.bim.ie/media/bim/content/publications/aquaculture/BIM-National-Seafood-Survey-Aquaculture-Report-2019.pdf>

Added benefits of DCF include publishing a [Business of Seafood Report](#).

Spain

Link to Spain's Economic Survey: [Spain - Economic Survey.pdf](#) and Production Survey: [Spain - Production Survey.pdf](#)

Relevant organisation

Secretaría General De Pesca. Ministerio De Agricultura, Pesca Y Alimentación

Method of data collection and reporting

Social, economic and environmental data are collected every year.

Social and economic data are collected by questionnaires, meanwhile environmental data are requested to Autonomous Regions that have aquaculture competency in Spain.

The Ministerio De Agricultura provide their data to JRC and EuroStat. Data are made public in Ministry of Agriculture, Fisheries and Food web page. Economic data are public, but where number of enterprises are low, data is grouped to comply with statistical confidentiality.

Size of survey and response rates

Techniques	Species group	Response Rate (%)
Polyculture.All methods.	Salmon	75
Fish farming techniques.Tanks and raceways.	Trout	68,18
Hatcheries and nurseries.All methods.	Trout	0,00
Fish farming techniques.Tanks and raceways.	Sea bass & Sea bream	75,00
Fish farming techniques.Cages.	Sea bass & Sea bream	83,33
Hatcheries and nurseries.All methods.	Sea bass & Sea bream	100,00
Fish farming techniques.Ponds.	Carp	100,00
Fish farming techniques.Tanks and raceways.	Carp	80,00
Fish farming techniques.Cages.	Tuna	100,00
Fish farming techniques.Tanks and raceways.	Other fresh water fish	87,50
Fish farming techniques.Tanks and raceways.	Other marine fish	100,00
Polyculture.All methods.	Other marine fish	83,33
Shellfish farming techniques.Off bottom.Rafts	Mussel	89,47
Shellfish farming techniques.Off bottom.Long-line	Mussel	75,00
Shellfish farming techniques.On bottom.	Mussel	100,00
Shellfish farming techniques.Off bottom.Rafts	Oyster	92,86

Shellfish farming techniques.Other.	Oyster	83,33
Shellfish farming techniques.Off bottom.Rafts	Clam	75,00
Shellfish farming techniques.On bottom.	Clam	83,33
Shellfish farming techniques.Other.	Clam	100,00
Fish farming techniques.Recirculation systems.	Crustaceans	50,00
Shellfish farming techniques.Other.	Other molluscs	88,89
Fish farming techniques.Enclosures and pens.	Multispecies	86,67
Polyculture.All methods.	Seaweeds	100,00

Estimation of costs

The Ministry receive 183.020 euros/ year to carry out DCF responsibilities for aquaculture. This provides for 2.39 FTE and 1.14FTE staff to collect and analyse data, respectively.

Compliance

Spain have fully complied with DCF data calls.

Cross-over with other legislation

The data have been used for answering the needs stated in the Spanish Statistical Plan and requests resulting of aquaculture management in Spain. They have not used any environmental data to assess compliance with Good Environmental Status targets and/or the phasing out of certain chemicals nor have they used any costs data to look at energy usage. In terms of added benefits of the DCF, Spain state there is not enough information to answer this yet.

Sweden

Link to Sweden's Economic Survey: [Sweden - Economic Survey.PDF](#)

Relevant organisation

The aquaculture aspect of Sweden's DCF responsibilities are carried out by the Swedish Board of Agriculture. The Swedish Board of Agriculture (Swedish: Statens jordbruksverk, commonly known as [Jordbruksverket](#)) is a Government agency in Sweden that answers to the Ministry of Agriculture.

Method of data collection and reporting

From 2019, Sweden have collected all the variables annually through national records and a questionnaire that is sent to all enterprises. Reporting annually makes the reporting easier for the enterprises, and for further efficiency, they have adapted the methodology so that only one digital form is returned (rather than typical two paper returns).

Sweden submit their data to the JRC and FAO.

Sweden only publish via the STECF's webpage [<https://stecf.jrc.ec.europa.eu/reports/economic>].

Size of survey response rates

Sweden is below the threshold for reporting but despite this they do include all aquaculture in their statistics (they have approximately 1% of the production in EU).

They report segments 8.1, 8.2, 8.4, 8.6, 8.8, 10.12 and 13.12 and they do not record response rates. However they were aware of low response rates and have addressed this by combining the questionnaires and making them available online.

Estimation of costs

Sweden receive approximately €65,000 per annum to carry out the aquaculture aspect of the DCF responsibilities. This provides for one member of staff to analyse data (0.2 FTE) and one staff member to collect data (0.1 FTE). The reason the staff commitment is so low compared to the total funding received is because Sweden contract out some of the data collection (Statistics Sweden collect the data and segment it before delivery to the Swedish Board of Agriculture), costing €45,000.

Compliance

Sweden have been fully compliant despite data reporting not being mandatory for them due to low production. a low response rate that we have now taken measures to reduce and hope that the combined online questionnaire together with information have helped increase the response rate.

Cross-over with other legislation

Compiled data is submitted to JRC. Sweden have not used any environmental or energy usage data for any other assessments to date.

United Kingdom

Link to UK's Economic Survey: [DCF - Economic Survey - UK.xlsx](#) and Social Pilot Survey: [DCF - Social Survey - UK.docx](#)

Relevant organisation

The aquaculture aspect of the UK's DCF responsibilities are carried out by The Centre for Environment, Fisheries and Aquaculture Science ([Cefas](#), who collect data), the Marine Management Organisation (MMO, who coordinate the process) and Marine Scotland Science (MSS, who analyse the data). Data on Weight of sales, Persons employed and Number of enterprises is collected by the three separate long-standing annual censuses of all registered APBs conducted by Cefas, MSS and Department of Agriculture, Environment and Rural Affairs (DAERA). Gross sales per species will be calculated from Weight of sales and expert estimates of farm gate price (for EC Regulation 762/2008 requiring Member States to submit annual data on the volume of production).

Method of data collection and reporting

The remaining economic variables not covered by the long-standing annual censuses is collected by a non-probability sample survey undertaken by Cefas. The survey approach had been developed over four years and was restricted to the Salmon, Trout and Mussel segments in 2015-2016.

Four different datasets are collected:

1. 'Production (volume and value)' – Three annual census' are collected from each of the UK regions (Scotland, England & Wales, NI). These censuses also collect employment data (a DCF responsibility). The data is collected by postal questionnaires and/or site visits.
2. Economic data – postal questionnaires are sent to all salmon enterprises and selected trout and mussel enterprises (due to larger number of enterprises). For trout and mussel, initial surveys targeted all enterprises, but the larger enterprises "self-selected" by responding. Larger enterprises are now targeted.
3. Environmental (chemicals and mortalities) – there has only been one data call (in 2018) for two years (2015, 2016) data. UK used pre-existing data collected by SEPA.
4. Social – there has been no call yet, but UK did a pilot in 2018 (for 2016 data). Data was collected by postal questionnaire to Scottish salmon, trout and mussel enterprises.

The three registers of APBs represent the UK population of aquaculture enterprises which encompasses: Salmon, Trout, Seabass, Carp, Other freshwater fish, Other marine fish, Mussel, Oyster, Crustacean and Other mollusc enterprises.

In 2015 (as in 2014), the Salmon segment dominated UK aquaculture: 81% volume, 89% value. All other segments fall below the threshold of 10% of the MS's production by volume and value.

Size of survey response rates

The UK is only obliged to submit data on the salmon segment - all other segments are <10% MS aquaculture production by volume and value.

However, as some data are collected in annual censuses, they have been collated for submission as tabulated below. Techniques are pooled for species segments as many enterprises operate across techniques.

Annual censuses for production, employment, enterprises achieved a 100% response rate. DCF economic data survey for Salmon, Trout, and Mussel achieved mixed response rates of 30%, 75%, and 25% respectively. As the environmental data (mortality and medicines) for Salmon had been collected for another purpose, the response rate was 100%. The Pilot DCF social data survey returns were: Salmon 68%, Trout 74%, and Mussel 58%. It has yet to be decided how the new social variables will be collected for the Salmon segment: options are a non-probability sample survey of Salmon enterprises or inclusion in an annual census (MSS in Scotland only).

Segment / Data	Production	Economic	Environmental	Social (pilot 2018)
Salmon-other methods	✓(100%)	✓(30%)	✓(100%)	✓ (68%)
Trout-other methods	✓(100%)	✓(75%)		✓ (74%)
Sea bass and sea bream - Recirculation	✓(100%)	(employment & enterprise 100%)		
Carp – other methods	✓(100%)	(employment & enterprise 100%)		
Other freshwater fish – other methods	✓(100%)	(employment & enterprise 100%)		
Other marine fish – other methods	✓(100%)	(employment & enterprise 100%)		
Mussel-other	✓(100%)	✓(25%)		✓ (58%)
Oyster-bottom	✓(100%)	(employment & enterprise 100%)		
Other molluscs-other	✓(100%)	(employment & enterprise 100%)		

Scottish employment and production figures are published on SG website

<https://www2.gov.scot/Topics/marine/Publications/stats> <https://data.marine.gov.scot/group/aquaculture>

DCF economic data have been used to produce ‘Scotland’s Marine Economic Statistics 2017’ and associated Topic Sheet <https://www.gov.scot/publications/scotlands-marine-economic-statistics/> [<https://www2.gov.scot/Topics/marine/Publications/TopicSheets/tlist/economy>]

The environmental data is pre-existing published on <http://aquaculture.scotland.gov.uk/data/data.aspx>

Results of the pilot social survey have not yet been published.

Estimation of costs

EMFF provides € 52.4M for the entire UK DCF programme covering a period of seven years and this covers aquaculture, catch fisheries and processing. This partially funds delivery of the UK programme (<80%) and the rest is funded by government. The UK said it was not able to estimate the full costs of providing DCF aquaculture data but that the contribution to aquaculture data collection is very small compared to fisheries.

Furthermore, the UK said it was not possible to say what proportion the DCF collection is because it is embedded within wider aquaculture statistics responsibilities.

EMFF and subsidised government funding, provides for one member of staff to collect, collate and submit DCF economic (and pilot social) data (0.5 FTE).

Compliance

During the initial years of DCF (2008-2010), the UK was not compliant as no aquaculture economic data were collected or submitted. Following a 'disallowance penalty', a pilot survey for economic data (in 2013 for 2011 data) was introduced and has subsequently been developed. The UK has since been compliant, and met additional requirements for pilot surveys for environmental and social data in 2018.

Cross-over with other legislation

GVA figures are calculated from the DCF economic data and published within the Marine Economic Statistics (see above for Marine Scotland reports).

Internal analysis – industry structure, profitability of other sectors, cost structures, this feeds into various commissioned research, e.g. wider impacts on supply chains; potential impact of EU-exit on tariffs and EU exports (Defra); how industry might respond to US exports and resilience of the sector (Scottish salmon).

Environmental data - Nutrient (nitrogen, phosphorous) output – considered by STECF in 2019 (refer to meeting minutes). They considered what was needed by the EU. Current variables (as per tables in Commission Implementing Decision 2016/1251) are not useful by themselves.

Social data - it was recognized that it would probably be better to do case studies of selected farms than using DCF collected data. This variable more applicable to catch sector than to aquaculture.

Annex 3: Stakeholder comments

Stakeholder	Comment	Action
CNC-France	page 12, “ bouchot ” (Gaelic origin) to substitute “bouchard”.	Adopted change.
CNC-France	In France a social study was collected in 2012 by the National organisation of employers (SNEC), not the French State because the law gives the responsibility to do so to employers, the State only co-funded for: it is called “ Contract of prospective study ”. It's mentioned on the SNEC Internet site , but the link is wrong because the last modification of the French Code of Work reorganised the public entities that collect the taxes from enterprises so as to finance the long-life training of their workers [<i>the link points to the former organisation (sppcm.fr) and the correct page of the new organisation (opacia.fr) is not updated</i>]. To obtain thus a copy of this study, ask directly the SNEC (Goulven Brest, contact@snece-france.fr) or ITHAQUE (Remi Debeauvais , the consultant who did the job).	Requested report and referenced.
Women in Seafood Industry	<p>Find below our comments on the data collection. We at WSI would like to stress that collecting sex disaggregated data is fundamental to grasp the reality that women experience in aquaculture. This dimension is not only important to women, but to the attractiveness of this business among the young generation. It has been evidenced hundreds times that Businesses that actively support gender equality tend to make better business decisions. We have indices that this is not the case in the European industry and we think that AAC should consider digging in this essential socio-economic dimension.</p> <p>From our understanding the social dimension of aquaculture (intrinsic dimension of sustainability) has not received much attention, by contrast with what has been done for the fisheries sector (Social data in the EU fisheries sector (STECF 19-03)) ; by contrast with what is done in a country such as Norway where the number, position and earnings by sex are published on a monthly basis.</p> <p>The absence of sex disaggregated data in the STECF data bank makes it impossible to appraise the level of gender (in)equity. Though it would be of primary importance to measure variables such as the wages and salaries, the input of unpaid labour, to only mention a few.</p> <p>Could Lorraine tell us more about what has been done and what could be done in this field?</p> <p>FYI - A report published for the French Department of Fisheries in 2017, evidenced that</p>	<p>Employment statistics by gender used to be collected up until 2016 (under DCF regulation 199/2008) but when this regulation was repealed and replaced (with 2016/1701), this data call stopped. Good coverage of data up until 2014, and is available here: https://stecf.jrc.ec.europa.eu/reports/economic/-/asset_publisher/d71e/document/id/2457987</p> <p>The importance of the issue will be carried forward to a recommendation</p>

	<ul style="list-style-type: none"> • First, it appeared to the consultants in charge of the investigation that this issue was of no relevance to stakeholders, whether private or public, individual or collective. • Second, France is endowed with good up-to-date sex disaggregated statistics; however, they are dispersed, fragmented and of variable quality. Assembling and exploiting these data sources would require a dedicated effort. Will the French authority do it? • Third, the gender mainstreaming criteria now introduced for accessing the European Fisheries Funds is not well understood by the administration nor by private projects' holders. This will inevitably curtail its enforcement. 	to reintroduce this data call.																																																	
CIPA (France)	<p>These data can be found on : https://www.europe-en-france.gouv.fr/fr/ressources/liste-des-operations-du-programme-national-feamp-2014-2020</p> <table border="1" data-bbox="453 741 1217 1167"> <thead> <tr> <th>Code nature bénéficiaire (P / M)</th> <th>Dénomination sociale</th> <th>Numéro de dossier Initial</th> <th>Numéro de navire</th> <th>Intitulé de l'opération</th> <th>Description de l'opération</th> <th>Date</th> </tr> </thead> <tbody> <tr> <td>M</td> <td>UNIVERSITE DE NANTES</td> <td>PFEA28007DM0530001</td> <td></td> <td>Consolider et pérenniser le GIS pour l'évaluation des pratiques de pêche pour de nouvelles activ</td> <td>Consolider les approches méthodologiques par un accroissement de la capacité de travail, pérenniser un partenariat entre scientifiques et pêcheurs existant. Contribuer aux réflexions portant sur les mesures d'adaptations spatiales pour soutenir la</td> <td></td> </tr> <tr> <td>M</td> <td>UNIVERSITE DE NANTES</td> <td>PFEA77007FA100001</td> <td></td> <td>DCF 2014</td> <td>DCF 2014</td> <td></td> </tr> <tr> <td>M</td> <td>UNIVERSITE DE NANTES</td> <td>PFEA77007FA100008</td> <td></td> <td>Mesures 77collecte de données</td> <td>La participation de LEMNA à cette opération s'inscrit dans le cadre du plan de travail national 2017. L'université de Nantes désignée partenaire de la DPMA pour la mise en oeuvre de données socio-économiques du secteur pêche maritime français.</td> <td></td> </tr> <tr> <td>M</td> <td>UNIVERSITE DE NANTES</td> <td>PFEA77007FA1000029</td> <td></td> <td>Collecte de données 2015</td> <td>Collecte de données économiques</td> <td></td> </tr> <tr> <td>M</td> <td>UNIVERSITE DE NANTES</td> <td>PFEA77007FA1000007</td> <td></td> <td>Collecte de données 2016</td> <td>Collecte de données halieutiques</td> <td></td> </tr> <tr> <td>M</td> <td>UNIVERSITE DE NANTES</td> <td>PFEA77007FA1000012</td> <td></td> <td>Collecte de données 2018</td> <td>Obtenir des données comptables et extra-comptables</td> <td></td> </tr> </tbody> </table>	Code nature bénéficiaire (P / M)	Dénomination sociale	Numéro de dossier Initial	Numéro de navire	Intitulé de l'opération	Description de l'opération	Date	M	UNIVERSITE DE NANTES	PFEA28007DM0530001		Consolider et pérenniser le GIS pour l'évaluation des pratiques de pêche pour de nouvelles activ	Consolider les approches méthodologiques par un accroissement de la capacité de travail, pérenniser un partenariat entre scientifiques et pêcheurs existant. Contribuer aux réflexions portant sur les mesures d'adaptations spatiales pour soutenir la		M	UNIVERSITE DE NANTES	PFEA77007FA100001		DCF 2014	DCF 2014		M	UNIVERSITE DE NANTES	PFEA77007FA100008		Mesures 77collecte de données	La participation de LEMNA à cette opération s'inscrit dans le cadre du plan de travail national 2017. L'université de Nantes désignée partenaire de la DPMA pour la mise en oeuvre de données socio-économiques du secteur pêche maritime français.		M	UNIVERSITE DE NANTES	PFEA77007FA1000029		Collecte de données 2015	Collecte de données économiques		M	UNIVERSITE DE NANTES	PFEA77007FA1000007		Collecte de données 2016	Collecte de données halieutiques		M	UNIVERSITE DE NANTES	PFEA77007FA1000012		Collecte de données 2018	Obtenir des données comptables et extra-comptables		Member States are obliged to publish every 6 months the list of operations (projects) supported by European funds, in accordance with Regulation (EU) 1303.
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CIPA (France)	<p>No direct use by the sector since shellfish and finfish data are gathered</p> <p>No data for marine fish farming (pb of statistical secret and production under the threshold)</p>																																																		
API (Italy)	<p>A problem that is often encountered, and also emerges from your document, is the overlapping of requests made by different authorities or subjects; this is counterproductive in terms of economic cost, time expenditure and homogeneity of the data collected. This leads to a disaffection of farmers to data collections if they are not conducted with a common thread and often the discrepancy of the data.</p> <p>The role of the associations especially in light of what has been expressed in the previous point should be to collect more homogeneous, consistent and consistent data or facilitate their collection (if a common track is provided at EU level and maintained a certain level of anonymity); this based on the trust and patronage relationship that characterizes the exchange between farmers and associations.</p>																																																		

	<p>Another thing that often creates confusion is the lack of clarity in the classification of some data, an example is the placement of fish mortality data or therapeutic treatments among environmental data. A rationalization of the competences of the various entities responsible for collecting also in this sense can only help to obtain more congruous data.</p> <p>Given that several associations have emphasized their willingness to play a more important role in data collection and can help the authorities, also in defining the data to be collected on the basis of what is available in the farms.</p> <p>On the second question, I think that many associations want and can collaborate even if I believe that competences must be clearly clarified and fixed.</p>	
Eaa-europe	I have only one point concerning table 2 “Data to be collected by Member States”: If not made obligatory already, I would suggest to add ‘escaped fish’ to the section “Environmental: Medicines, Mortalities”.	Adopted and made into recommendation.
Asociatia Nationala a Producatorilor din Pescarie ROMFISH	Please include Romania in this study.	No scope to include – Romania report and have no exemplar practice.
Irish Farmers Association	Just a short comment in relation to cross-over with other obligations/legislation – In Ireland we find the request for mortality data as part of the Environmental data for DCF can be confusing and often leads to figures collated being at variance with mortality data collected under the EU Fish Health Directive (2006/88/EC) – the Marine Institute collects reports of mortality on aquaculture sites and it may be a better system that the DCF data collected for mortalities could be streamlined and reports under the Fish Health Directive would be sufficient, thereby aquaculture producers would only be reporting mortality data on one, most relevant source.	Noted and referenced in report.
Oliver Robinson, webinar	Real-time data is essential and should be a recommendation of the report.	Adopted.
CNC-France, webinar	<ul style="list-style-type: none"> • Companies and associations are not considered an end-user and this is a big issue with the DCF. • Reports are available in English, but this is difficult to access for a lot of people. • Associations want accurate and real-time data. 	<ul style="list-style-type: none"> • The AAC are considered a Type 2 end user and do have some power to make improvements, hence this report.

		<ul style="list-style-type: none"> • Latter two bullet points brought into main report.
Eaa-europe, webinar	A definition of treatments within DCF would be helpful. Elaborate on the environmental variables – does it include volumes used? Escapees should be included.	A definition of requested data is provided (volumes are requested). Included escapees recording in recommendation.
The Danish Aquaculture Organisation	In terms of employment the data only deals with direct employment at the farms/companies. It is know from e.g. analysis performed in Norway that indirect employment is significantly higher. In Norway the factor for marine farming was found to be app. 5 (i.e. 1 job at a farm 'generates' 5 jobs (feed, processing, suppliers, research etc.)). This should be mentioned in the report as the current figures underestimates the local social impact of aquaculture. In fact it might count as a recommendation to explore this issue further.	Added text on page 13 and page 17 to highlight this issue. The current recommendation on improving environmental and social indicators has been kept general so not to omit issues.
The Danish Aquaculture Organisation	Climate is a hot political topic but we lack a common methodology. The report could/should recommend the development of a common methodology for aquaculture in order to include 'CO2eqv' in the data set at a later stage.	Added text on page 13 to highlight that other countries have developed methodology in climate change and there could be valuable lessons here. The current recommendation on improving environmental and social indicators has been kept general so not to omit issues.

- END -