SEPTEMBER 2012
DG FISHERIES AND MARITIME AFFAIRS

Study to support Impact Assessment of Marine Knowledge 2020

INCEPTION REPORT

COWI

COWI

ADDRESS COWI A/S
Parallelvej 2
2800 Kongens Lyngby
Denmark

TEL +45 56 40 00 00
FAX +45 56 40 99 99
WWW cowi.com

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1 Introduction

This report constitutes the inception report on the Study to support the forthcoming IA on Marine Knowledge 2020.

The report is submitted in accordance with the reporting schedule of the Terms of Reference. The background for preparing this report is 1) the proposal and the Terms of Reference, 2) the kick-off meeting held on 23rd August; 3) a desk study of available literature, and 4) joint planning within the Consortium.

The report first presents the overall scoping of the study. Thereafter, the detailed planning is explained for each of the seven thematic areas that the study will cover. Thereafter, the report presents the resulting detailed planning of the study which ensures that an interim report can be delivered on 6rd December with the contents stipulated in the Terms of Reference. Finally, the report presents preliminary and tentative versions of the questionnaires to be used. These will be further worked on during the coming weeks as explained in the planning chapter.

1.1 Study background

The improvement of marine knowledge is one of the main objectives of the European integrated maritime policy. In 2010 the European Commission in its Communication on Marine Knowledge 2020 presented a strategy on improving marine knowledge as a "key element to achieve smart growth in the European Union in line with the 'Europe 2020' strategy". The objectives of the Marine Knowledge 2020 strategy are to reduce operational costs related to data use, increase competition and innovation from marine knowledge and to reduce uncertainty on the state of the oceans and seas.

A central aspect of the strategy on improving marine knowledge is the integration of the fragmented regional and national systems for collecting and assembling marine data. In this context the European Commission in 2010 launched an Impact Assessment on the European Marine Observation and Data Network (EMODNet). The purpose of this Impact Assessment was to contribute to the setting up of a common European network for the sharing of marine knowledge. As a preparatory

action projects for the establishment of EMODNet pilot portals were created for the sharing of hydrographical, geological, physical, chemical and biological data.

1.2 Purpose and delineation of the study

Against the background described above the present study aims at gaining a deeper understanding of the current practices and opportunities and benefits of future marine knowledge sharing. It will use the Impact Assessment on EMODNet and the other work that has been undertaken as a starting point and take these activities further. It will supplement the current knowledge level and focus on benefits from improved marine knowledge as well as role of the private sector in gathering and providing marine data.

The study will analyse current practices in the Member States regarding the gathering of marine data by the private sector in the process of applying for licensed activities and a possible re-use of this data by public authorities. It will also collect information on the data collection, management and dissemination cost up to 2020 borne by the Member States for complying with the Marine Strategy Framework Directive and on the cost of data for offshore wind farms in Europe until 2020. Regarding benefits from improved marine knowledge the study will provide examples of innovation from marine data in the aquaculture, insurance, tourism and bio-economy sectors. Additional benefits could arise from reductions in uncertainty in the behaviour of the sea or the state of the seabed and marine life. The study will therefore furthermore provide examples of economic benefits from such reduced uncertainty.

Additionally to benefits from improved marine knowledge and the role of the private sector in data gathering the study will assess the legal basis for a Regulation or Directive on marine knowledge. Furthermore it will provide examples of governance options for the European Marine Observation and Data Network as well as costs and benefits of the proposed governance options.

1.3 Overall information gathering tools and data presentation

The questions this study aims to provide answers to are very complex and require a targeted information gathering approach. Several data gathering tools will be used for collecting the relevant data on marine knowledge in the EU. This section introduces the tools that will be used in the 7 thematic areas.

One data collection tool is *questionnaire surveys.* They will be used to target a wide group of stakeholders and thereby collect information from a wide range of stakeholders in the respective industries in all Member States. Questionnaire surveys will be used to collect data on current licensing practices and re-use of data, the cost of data for offshore wind farms and in relation to the MSFD.

Another data collection tool is *personal interviews:*

- *In-depth telephone interviews* can be used to expand on the information gathered through questionnaire surveys and to elaborate more on some issues. Through telephone interviews with the most relevant stakeholders sufficient background understanding to feed into the future extrapolation will be obtained.

- *Face-to-face interviews* will be conducted to provide answers that are more elaborate and presumably also of a more qualitative and open nature, and face-to-face interviews are also useful to identify and expand on concrete examples.

In this study, there is a risk of a relatively low response rate of the questionnaire surveys. The information requested is not immediately retrievable in most cases, and it may be difficult for respondents to allocate the time needed. Therefore, we foresee that we will have to do interviews with many of those that we submit the questionnaire to, and the questionnaire will consequently also constitute a basis for these interviews.

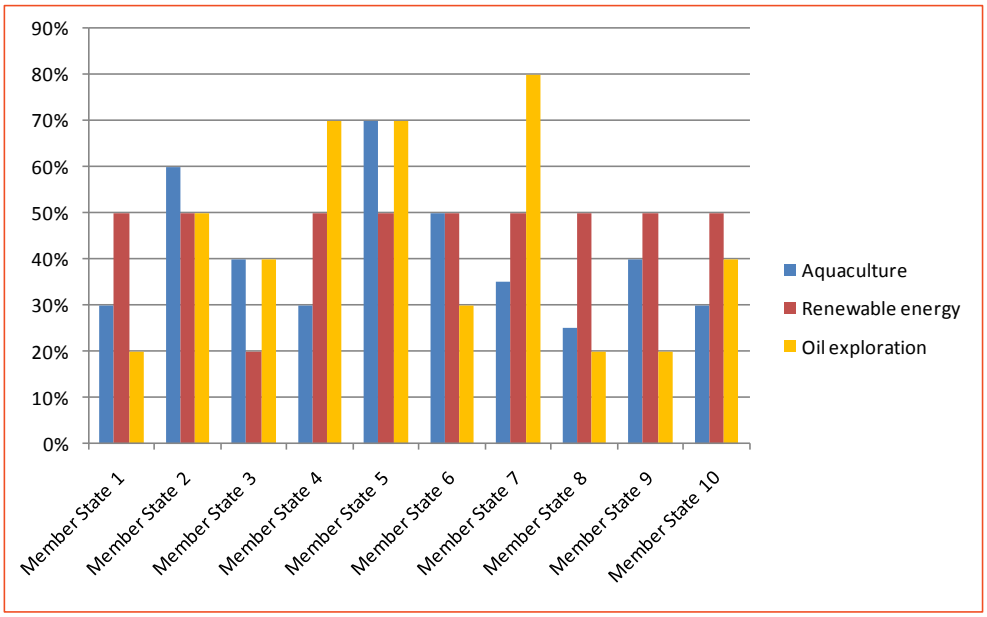
An additional data gathering tool that is intended to stimulate more 'out-of-the-box' thinking is *focus group interviews*. For these a group of stakeholders that have in-depth knowledge of certain issues will be invited. Through interactive interviews and discussions with and between the participants we aim at gathering novel answers e.g. regarding governance options for EMODNet and benefits from improved marine knowledge.

Expert workshops will be an additional means of colleting inspiration and examples regarding possible benefits from improved marine knowledge. They will be conducted with experts from the respective sectors.

The data gathered using these collection tools will feed into an *Access database* designed to allow for relevant cross tabulation and re-analysis. It will show, for example, the differences across Member States for data costs for offshore wind farms or all available information on data costs for the MSFD in Estonia. The access database will be used for generating graphic presentation of the data gathered on each of the thematic components, as exemplified below. These graphics will feed into the interim and final reports and complement the assessments on the thematic areas.

The exact structure of the database will be established as the study progresses. The final formulation of the questionnaires will constitute a basis against which the tentative structure of inputs can be envisaged. However, the final structure and the final types of input data that will enter the database depend on the comprehensiveness, character and type of information that we succeed in obtaining. Among other things, this determines the types of assumptions that must be established as well.

Figure 1 *Illustration of how the results could be presented - for example share of data that are bought by country and by sector (hypothetical data)*

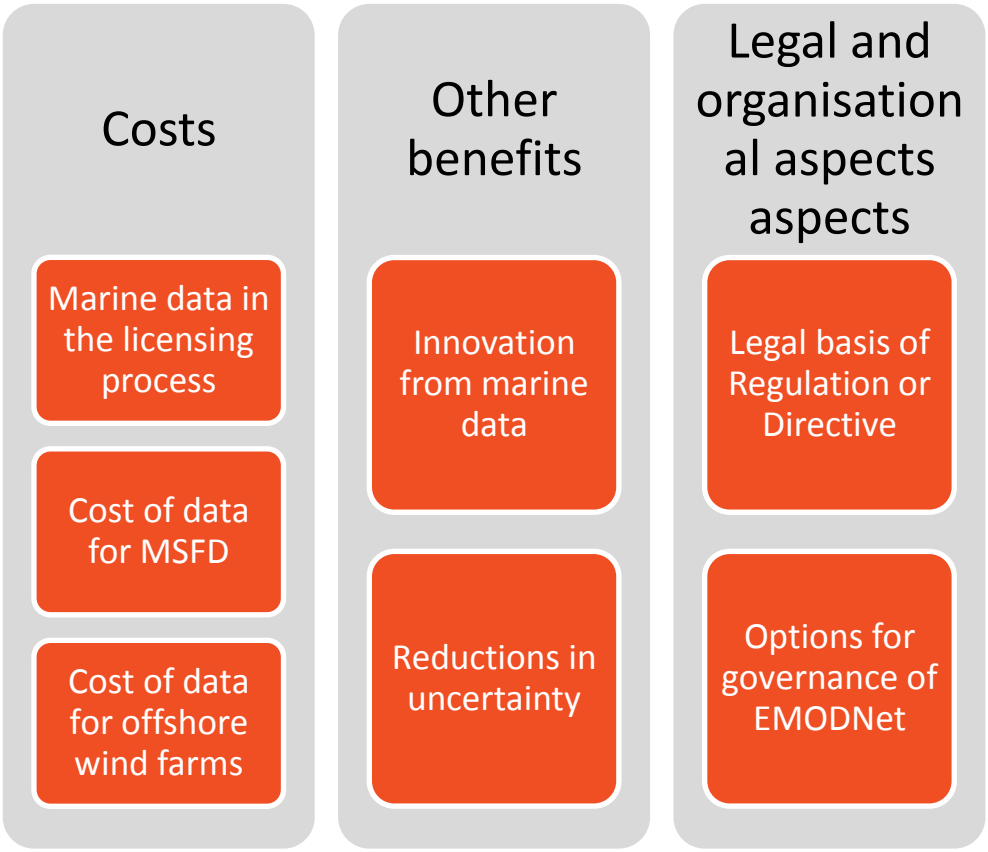


1.4 Study components and interlinkages

The study includes 7 study components covering a set of 18 individual questions to be answered. The study components are:

- Marine data in the licensing process
- Costs of data for Marine Strategy Framework Directive
- Cost of data for offshore wind farms
- Legal basis of Regulation or Directive
- Innovation from marine data
- Reductions in uncertainty
- Options for governance of EMODNet

While all being self-contained some of the study components are interlinked and can be addressed in a similar way. The individual components can be grouped into 3 categories, covering costs, benefits and legal aspects of marine knowledge.



The questions of costs arising from the collection, assembly and processing of marine data will relate to licensing processes, the Marine Strategy Framework Directive and offshore wind farms. While the costs of data in licensing processes and for offshore wind farms are incurred by the private sector the cost of data for the MSFD will be incurred by the public sector. However, there are interlinkages between the study components. The component on marine data in licensing processes could concern the re-use of marine data collected by the private sector. It links to the question on costs related to the MSFD as such privately collected data might be used for complying with the reporting requirements of the Directive and vice versa. The same holds true for data need related to the construction of offshore wind farms in Europe until 2020. That being said, it is the understanding that this study should focus on characterising the situation as it is today, i.e. given the current conditions but taking into account further already planned actions.

The study components of innovation from marine data and reductions in uncertainty both cover possible benefits from improved marine data and are closely interlinked. Reduced uncertainty in the behaviour of the sea and the state of the seabed and marine life will, besides providing direct economic benefits also spur innovation. While this study will clearly separate the questions of innovation and economic benefits from improved knowledge, there will be overlaps in the data collection processes.

The legal aspect of this study on marine knowledge will cover the legal basis of a Regulation or Directive on marine knowledge as well as possible governance options for the European Marine Observation Network.

2 Marine data in the licensing process

2.1 Key observations at this stage

Commercial activities in marine and coastal aquaculture, renewable energy, minerals extraction, oil exploration and exploitation, port and harbour development and pipeline and cable laying are all subject to licensing. When applying for such a license potential operators need bathymetric, metrological and hydrological data to use for modelling in connection with preparations of EIAs and environmental permits. Costs are typically covered by the operator and are involved at two different stages: when collecting or acquiring the data and when using the data. Data usage costs are typically costs for licences related to the specific model that is used; calibration costs; running of the model; and interpretation of results. The assessment of cost for data types will hence cover not only raw data but also assembled and processed data that can be used for developing indicators.

The data collected by the private sector when preparing license applications could be of use for public authorities in the Member States. A study on the "Use of industrial monitoring data for MSFD reporting purposes" by the European Commission found that many Member States wish to explore the use of industrial monitoring data, among others for data collection for the MSFD. Obligations for the private sector to disclose data collected and assembled in connection with licensed activities differ across the European Union. The study hence attempts to determine the present practices and systems in the Member States, and to assess how radical a change it would be to oblige the private sector to provide the data it collects.

Based on our experience and by reviewing a few specific EIAs, we can present very preliminary answers to some of key questions.

Regarding the payment for data (meteorological, bathymetric and geological), the preliminary indication is that operators generally pay to obtain data that have been produced by national agencies/institutions. Their payments comprise a minor share compared to other data related costs of the licensing application; for example, undertaking own surveys and monitoring constitute a larger costs.

Table 2-1 illustrates the kind of data used in the EIA, the estimate of the cost of data acquisition, an estimation of the fraction that it constitutes out of the total EIA costs and whether the data have been made public. In most (of the few) cases the data acquisition costs are below 1-2% of total costs of preparing the EIA.

The table also illustrates an example that the costs of obtaining for example biological data could be much higher. The costs of data related to benthos and fish are high as field surveys were needed in order to produce these data.

Table 2-1 Selected marine EIAs and their data requirement

Sector	Project example	Hydrographic, meteorological and geological data types								Benthos, fish	Estimated cost for data acquisition, EUR	Estimated cost relative to total EIA cost	Data made public?
		Wind force and direction	Wind fields	Air pressure fields	Bathymetry	Water level	Water temperature	Water salinity	Sediments				
Renewable energy	Fuel switching project for major coastal power plant (from coal to straw)	X		X	X	X	X	X	X		EUR 10,000	<1%	No
Oil production	Oil and gas field development project	X	X	X	X	X	X	X	X		EUR 10,000	<1%	No
Port development	Major port development project	X	X	X	X	X	X	X	X		EUR 10,000	<1%	No
Renewable energy	Baltic offshore wind farm	X	X	X	X	X	X	X	X		EUR 30,000	<2%	No
										x	EUR 400,000	15-20%	No

The data that an operator would collect as part of the licensing process are typically those necessary to assess the possible impacts of the marine activity. Hence, cheaper data would generally not lead to a request for more data though there could be such cases.

Regarding the obligation to hand over data, it is our experience that the EIAs are typically out in public consultation which means the EIA is public. The

background data which has been used to produce the EIA are generally not published or handed over to the public authority.

From the report *"Use of Industrial Monitoring data for MSFD reporting purposes"*, the conclusion seems to emerge that the Member State's CAs has data or has access to data related to monitoring of the requirements included in the licences.

This suggests that there is a difference between the data related to preparing a license including the data for the EIA and the data related to monitoring of conditions included in the licence or permit.

While the obligation to hand over data is likely to be linked to the conditions in the license/permit more than related to the activity as such there could be sector differences in the access to and the use of the data that have been handed over. For example if data have commercial implications for the operators, they might not want to data to be publicly available. An example could be wind data from off-shore wind farm operators.

2.2 Information needs

The data collection in relation to the licensing activities aims to gather enough information to be able to answer the questions 1 to 5 defined by the Terms of Reference with a reasonable level of robustness in the assessment. The following table gives a more detailed account of the data needs on marine licensing and lists examples of specific questions for the data collection and the respective stakeholders to address.

	Study question	**Information/Data need**	**Examples of specific questions for the data collection**	**Complexity of the question**	**Stakeholders**
(1)	Do potential operators of licensed activities mentioned in point 2.2 pay for meteorological, bathymetric or geological data when preparing their application for a licence?	Regarding activities in aquaculture, renewable energy, minerals extraction, oil exploration, oil exploitation, port, harbour or marina development, cable and pipeline laying in the Member States: - Costs of meteorological, bathymetric and geological data incurred by operators applying for licences	What are the sources of the following types of data: Meteorological, bathymetric or geological? Share of the data purchased and share produced? What are the costs of data purchased for the application for a licence? What are the costs of data collected for applying for a license?	Relatively simple question that should be easy to answer through a questionnaire The challenge will lie in obtaining data from a substantial number of operators in the respective sectors	- Operators in aquaculture, renewable energy, minerals extraction, oil exploration, oil exploitation, port, harbour or marina development and cable and pipeline laying undertaking licensed activities
(2)	Would they request more data (i.e. higher resolution in time or space) if it were substantially cheaper or easier to access.	- Actual vs. desired data use - Data usage if data was available at lower price	For the data that is purchased how important is the price? Would lower costs increase your demand for data? Which data would you demand if it was available at a lower price? Is availability of data a problem? Which data is not available?	Specific questions are relatively easy to formulate The challenge will lie in obtaining data from a substantial number of operators in the respective sectors	- Operators in aquaculture, renewable energy, minerals extraction, oil exploration, oil exploitation, port, harbour or marina development and cable and pipeline laying undertaking licensed activities
(3), (4)	Is the licensee obliged to hand over to public authorities the data collected or acquired in order to plan, develop or engage in the licensed activities mentioned in point 2.2.?	- Obligation to hand-over colleted or acquired data to public authorities If the answer to question (3) is yes: - Details regarding hand-over and re-use of data	This question and the associated sub-questions in case the answer is yes will be developed - they will be close to the formulations in the ToR.	Finding the right contact person in the respective public bodies will be crucial	- Licensing authorities in the Member States
(5)	Are there plans to reduced requirements on the hand-over of data from licensed activities?	If there is no obligation yet: - are the MS planning to introduce an obligation for licensees to hand over data collected or acquired	Are there plans to reduced requirements on the hand-over of data from licensed activities?	If plans exist it would be important to get as much information as possible on the planned obligation	- Licensing authorities in the Member States

2.3 Information sources

Data on marine data used in licensing processes in the sectors of aquaculture, renewable energy, minerals extraction, oil exploration and exploitation, port development and cable and pipeline laying will be obtained from operators and European associations active in the respective sectors.

As an initial step, face-to-face interviews will be conducted with the European industry associations to determine how the variation across the 25 countries and potentially regional differences can be covered. For some activities such as oil exploration and exploitation there is a limited number of operators with activities in several countries, while for e.g. ports there are many operators only operating in one Member State.

The initial consultation of the European industry associations and a few key operators in the sectors will also determine which data can be collected through a questionnaire and in which cases interviews will be needed. If the specific issues can be covered by simple and closed questions, it might be feasible to do the data collection through questionnaire surveys to reach a higher number of operators across Europe. However, in-depth telephone interviews will be used in any case to elaborate more on some issues and to obtain estimates of data costs for marine licensing. Also, the initial consultations will serve to provide specific suggestions for interviewees and it will allow the different associations to present their views and considerations on the different relevant study themes.

The table below provides an initial list of stakeholders to be contacted in the data gathering phase. The focus lies on the European industry associations that will be our initial points of contact. Additionally to industry contacts to be obtained through the industry associations the list below names key stakeholders from the respective industries.

Stakeholder	Sector	Country
Federation of European Aquaculture Producers (FEAP)	Aquaculture	EU
European Wind Energy Association EWEA	Offshore wind	EU
European Association of Mining Industries, Metal Ores & Industrial Minerals	Minerals extraction	EU
International Association of Oil &	Oil & gas exploration and exploitation	Internatio nal

Gas producers (OGP)		
European Sea Ports Organisation (ESPO)	Port, harbour and marina development	EU
Euromarina - European Federation of Yachting Harbours	Port, harbour and marina development	EU
Statoil	Oil & gas exploration and production	NO
Shell	Oil & gas exploration and production	UK, NL
BP	Oil & gas exploration and production	UK, NO
Vestas	Wind turbine producer	EU
DONG	Offshore wind	DK, UK
Vattenfall	Offshore wind	SE, UK
E.ON	Offshore wind	DK, UK, DE
RWE	Offshore wind	UK, BE
SSE	Offshore Wind	UK
Centrica	Offshore wind	UK
Mainstream Renewable Power	Offshore wind planning and construction	UK, DE
GALAXIDI MARINE FARM S.A.	Aquaculture	EL
Marine Harvest	Aquaculture	NO, IE
British Marine Aggregate Producers Association	Minerals extraction	UK
CEMEX UK Marine	Minerals extraction	UK
Tarmac	Minerals extraction	UK
Group De Cloedt	Minerals extraction	BE, NL, DK
Dredging International	Cable and pipeline laying	IE
Nordstream AG	Cable and pipeline laying	FI, SE, DK, DE

Question 3) to 5) of the Terms of Reference will be addressed through consultation with the stakeholders listed below and/or the Member States CAs where relevant. In some Member States questions 3) to 5) and questions 6) to 8) refer to the same stakeholders. However, in some Member States the stakeholders for these sets of questions are not completely identical.

Stakeholder	Country
Ministry of Economy	BE
Ministry of the Environment	BE
Ministry of Economy, Energy and Tourism	BG
Centre for Economic Development, Transport and the Environment	FI
Bundesamt fuer Seeschifffahrt und Hydrographie	DE
Department of Communications, Energy and Natural Resources	IE
Department of Environment, Community and Local Government	IE
Ministry of Economics	LV
State Environmental Service	LV
Ministry of Economic Affairs, Agriculture and Innovation	NL
Ministry of Infrastructure and the Environment	NL
Ministry of Infrastructure	PL
Ministry of Environment	SI
Ministry of Industry, Tourism and Trade	ES
Ministry of Environment and Rural and Marine Affairs	ES
Svensk Vattenbruk	SE
The Crown Estate	UK
Marine Management Organisation	UK
Marine Scotland	UK
Welsh Government - Marine Consents Unit	UK
Department of Environment Northern Ireland	UK
Ministry of the Sea, Transport and Infrastructure	HR
Ministry for the Environment and Natural Resources	IS
Ministry of Fisheries and Coastal Affairs	NO
Ministry of Petroleum and Energy	NO

2.4 Relations to other thematic areas

The thematic area on marine data in licensing relates closely to marine and coastal activities including renewable energy. Thematic area 4 on the cost of data for offshore wind farms covers both data costs related to planning, construction and operation of wind farms and data costs for licensing. The stakeholders to be contacted in this regard are hence the same as those to be contacted regarding licensing practices. Close coordination between these two areas will be necessary.

The question of sharing and re-use of data from marine licensing furthermore relates to a number of other thematic areas. Access to private sector marine data could help Member States comply with the requirements of the Marine Strategy Framework Directive. In Belgium, Bulgaria, Ireland, Poland and UK consent compliance monitoring data results are already being used in national assessments of marine status.

Publicly available marine data from licensed activities could reduce uncertainty in the behaviour of the sea or the state of the seabed and marine life. Additionally this improved marine knowledge might spur innovation. The thematic areas 6 and 7 will try to assess innovation from marine data and economic benefits from reductions in uncertainty.

2.5 Final outputs

The data collection phase will produce information answering questions 1 to 5. This raw data will then be assessed and supplemented by additional estimations.

2.5.1 Question 1) and 2)

The possible format of the answers to the questions 1) to 2) could be:

- Countries (22 MS plus 3 other countries)
- Sectors (7 sectors)
- Type of data (meteorological, bathymetrical and geological data)

The degree to which operators have to pay for different types of data is likely to depend on the Member State and not on the sector. The data needs for licensing will vary across sectors so the implication whether there is a payment or not can therefore vary across sectors.

It means that the answer could be reported in tables like the following:

Q1.A: Do operators pay to obtain data?

Table 2-2 Reporting for Member State A on Q1..A

	Meteorological	Hydrographical	Geological	Bathymetrical
Belgium	Yes/no	Yes/no	Yes/no	Yes/no
Etc	Yes/no	Yes/no	Yes/no	Yes/no
	Yes/no	Yes/no	Yes/no	Yes/no
	Yes/no	Yes/no	Yes/no	Yes/no
	Yes/no	Yes/no	Yes/no	Yes/no
	Yes/no	Yes/no	Yes/no	Yes/no
	Yes/no	Yes/no	Yes/no	Yes/no

If the answer to question Q1 is yes then the following question will be asked and the answers could vary across MS and sector and hence there will be tables for each Member Sate.

Q1:B: Is the costs of obtaining data significant compared to overall licence costs?

<1% of total project cost	>1% of total project cost
Not significant	Significant

Table 2-3 Reporting for Member State A on Q1.B

	Meteorological	Hydrographical	Geological	Bathymetrical
Aquaculture	Yes/no	Yes/no	Yes/no	Yes/no
Renewable energy	Yes/no	Yes/no	Yes/no	Yes/no
Minerals extraction	Yes/no	Yes/no	Yes/no	Yes/no
Oil and gas exploration	Yes/no	Yes/no	Yes/no	Yes/no
Oil and gas exploitation	Yes/no	Yes/no	Yes/no	Yes/no
Port, harbour and marinas	Yes/no	Yes/no	Yes/no	Yes/no
Cable and pipeline laying	Yes/no	Yes/no	Yes/no	Yes/no

Q2.A: Would more data be requested if the costs of obtaining the data were lower than today?

Table 2-4 Reporting for Member State A on Q2.A

	Meteorological	Hydrographical	Geological	Bathymetrical
Aquaculture	Yes/no	Yes/no	Yes/no	Yes/no
Renewable energy	Yes/no	Yes/no	Yes/no	Yes/no
Minerals extraction	Yes/no	Yes/no	Yes/no	Yes/no
Oil and gas exploration	Yes/no	Yes/no	Yes/no	Yes/no
Oil and gas exploitation	Yes/no	Yes/no	Yes/no	Yes/no
Port, harbour and marinas	Yes/no	Yes/no	Yes/no	Yes/no
Cable and pipeline laying	Yes/no	Yes/no	Yes/no	Yes/no

Q2.B: Would more data be requested if the data were easier to access?

Table 2-5 Reporting for Member State A on Q2.B

	Meteorological	Hydrographical	Geological	Bathymetrical
Aquaculture	Yes/no	Yes/no	Yes/no	Yes/no
Renewable energy	Yes/no	Yes/no	Yes/no	Yes/no
Minerals extraction	Yes/no	Yes/no	Yes/no	Yes/no
Oil and gas exploration	Yes/no	Yes/no	Yes/no	Yes/no
Oil and gas exploitation	Yes/no	Yes/no	Yes/no	Yes/no
Port, harbour and marinas	Yes/no	Yes/no	Yes/no	Yes/no
Cable and pipeline laying	Yes/no	Yes/no	Yes/no	Yes/no

2.5.2 Questions 3) to 5)

Questions 3) to 5) are targeted towards the competent licensing authorities. If the answer to Q3 is yes, then each of the questions a) to q) under Q4 will be asked for each of the sectors and the reporting will include answer primarily by Member Sate (and Croatia, Iceland and Norway). If the answer to Q3 is no, only Q5 will be asked.

The questions 3) and 4) can be seen as covering the following key dimensions:

- Countries (22 MS plus 3 other countries)
- Sectors (7 sectors)
- Aspects of a possible the obligation to hand over data:
  - Type of data
  - Preparation of the license/monitoring of license/permit conditions
  - Format of data to be handed over
  - Use of handed-over data

There are addition aspects regarding legal basis, cost of compliance etc. that are covered by the questions and that will be reported.

The reporting in the Access data base will include answers to all the questions. The data base will them allow for extraction of cross-tabulation by all relevant dimensions.

A few examples are included below to illustrate how such cross-tabulation could look. They illustrate how answers to Question 3 combined with relevant aspects of Questions 4) could be presented.

Table 2-6 Reporting for Member State A on Q3 (22 MS plus Croatia, Iceland and Norway) on the existence on an overall obligation

	Data related preparation of licensing	**Data related to monitoring of license conditions**	**Comments if the requirement only covers certain activities**
Belgium	Yes/no	Yes/no	
Etc	Yes/no	Yes/no	
	Yes/no	Yes/no	
	Yes/no	Yes/no	
	Yes/no	Yes/no	
	Yes/no	Yes/no	
	Yes/no	Yes/no	

The above overview table will be relevant if obligation is more or less similar across activities and across types of data. If that is not the case a more detailed presentation including both types of data and types of activity is illustrated below.

Table 2-7 Reporting for one Member State on details of a possible obligation to hand over data

	Aquaculture	Renewable energy	Minerals extraction	Oil exploration	Oil exploitation	Port, harbour or marina	Cable and pipeline laying
Meteorological data	Yes/no						
Oceanographic/ Hydrographic data							
Water quality data							
Bathymetry data							
Sediment and geological data							
Plankton data							
Benthic vegetation data							
Benthic fauna data							
Fish data							

Birds data							
Marine Mammal data							
Other data							

3 Cost of data for Marine Strategy Framework Directive

3.1 Key observations and this stage

The Marine Strategy Framework Directive (MSFD) establishes a framework within which Member States must take the necessary measures to achieve or maintain good environmental status (GES) in the marine environment by 2020. The determination of GES shall be done on the basis of the 11 descriptors included in annex 1 of the MSFD. Until 2020 the MSFD prescribes regular monitoring and assessment of the marine environmental status.

The 11 descriptors of good environmental status reflect the following characteristics of and pressures and impacts on the marine environment that form the basis for the reporting sheets used by the Member States to assess the marine environmental status of their waters.

Characteristics, pressures and impacts	Examples
Physical and chemical features	› Topography and bathymetry of the seabed › Spatial and temporal distribution of nutrients and oxygen
Habitat types	› Identification and mapping of special habitat types › Habitats in areas which by virtue of their characteristics, location or strategic importance merit a particular reference
Biological features	› Information on angiosperms, macro-algae and invertebrate bottom fauna › A description of the population dynamics of marine mammals
Other features	› A description of the situation with regard to chemicals

Characteristics, pressures and impacts	Examples
Physical loss	› Smothering (e.g. by man-made structures, disposal of dredge spoil)
Physical damage	› Changes in siltation › Abrasion
Other physical disturbance	› Underwater noise › Marine litter
Interference with hydrological processes	› Significant changes in thermal regime › Significant changes in salinity regime
Contamination by hazardous substances	› Introduction of radio-nuclides
Systematic and/or intentional release of substances	› Introduction of other substances resulting from their systematic release into the marine environment
Nutrient and organic matter enrichment	› Inputs of fertilizers and other nitrogen
Biological disturbance	› Introduction of microbial pathogens › Selective extraction of species

In its Decision on criteria and methodological standards on good environmental status of marine waters on September 1st 2010 the European Commission defined the set of criteria to be used by the Member States in assessing good environmental status. While the assessment criteria are clearly defined by the Commission it is up to the Member States to collect data and document status on each of these criteria.

The Member States will until 2020 need to spend effort on the collection, management and dissemination of marine data related to these criteria describing physical, chemical and biological influence on the environment, pressures and their impacts, and the effect on human activities. Marine monitoring systems have been in place in the Member States prior to the introduction of the MSFD and some of the required data might hence already exist. Costs will then relate mainly to the assembly and dissemination of such data. The extensive scope of the criteria for GES however means that additionally the MS will need to spend resources on collecting new data.

The Member States are currently in the process of finishing the first assessment on the Marine Strategy Framework Directive that is due on the 15th of October and that includes a mapping of the current marine status and reporting on the indicators in a set of reporting sheets. The respective competent authorities should hence have a good understanding of the existing data gaps and experienced costs.

The initial assessment report of the Member States will be delivered together with report on the determination of good environmental status and a report establishing environmental targets and associated indicators.

The table below presents the reporting requirements of the Member States under the MSFD:

Reporting requirement	Deadline
Initial assessment report	15th October 2012
Determination of Good Environmental Status (GES)	15th October 2012
Establishment of environmental targets and associated indicators	15th October 2012
Establishment and implementation of a monitoring programme for ongoing assessment and regular updating of targets	15th July 2014
Programme of measures designed to achieve or maintain Good Environmental Status	2015
Entry into operation of the programme to achieve or maintain GES	2016
Interim report on the implementation of the programme of measures	Every 3 years

3.2 Information needs

The information needs of this study are guided by the three study questions from the ToR and cover the cost of acquisition, management and dissemination of marine data for compliance with the Marine Strategy Framework Directive.

The study aims at collecting information on the data costs to Member States until 2020 for fulfilling the reporting requirements described above. Besides an overall estimation of the costs for data linked to compliance with the Directive there is also a need for more detailed information. The cost for acquisition of data will need to be broken down into information on costs for assembling existing data and information on costs for collection of new data.

To assess the costs related to the MSFD, it will be necessary to map data already existing in each of the coastal Member States plus Croatia against the data needs. In this respect the data gathering strategy will build strongly upon the initial assessments that the MS are currently preparing or have already submitted and on the Commission Decision on criteria that provides a gross list of data that will be used for mapping existing data against data needs.

This mapping of data gaps will provide the basis for an analysis of the costs for data collection and for the assembly of existing data to meet the requirements of the MSFD.

For estimating the total data costs as well as collection and assembly costs related to the MSFD we will collect the following information:

- Cost of monitoring equipment (ships/boats, measuring equipment, computer systems to register and analyse measure results, reporting systems for results)
- Manpower needed (number of employees, types of employees such as biologists, laboratory technicians etc., full-time/part-time, annual costs of staff by category etc.) for collecting data
- Frequency of monitoring
- Cost of assembling existing and new data
- Cost of establishing an administrative system to coordinate nationally or regionally all monitoring data from each marine water, and to analyse and report on the necessary results to authorities and the EU. It is also necessary to ensure compatibility with other countries' monitoring systems within the same marine water/marine region etc.
- Data dissemination costs

The following table presents the study questions and the associated data needs and gives account of the complexity of the information to be collected.

	Study question	**Information/Data need**	**Examples of specific questions for the data collection**	**Complexity of the question**
(6)	How much effort will Member States spend up to 2020 on data acquisition, management and dissemination (including enabling access to the Commission and the European Environment Agency) in meeting the requirements of the Marine Strategy Framework Directive (includes physical, chemical and biological data on environment, pressures and their impacts and on human activities)? This should be expressed both in terms of full-time equivalent manpower and in terms of euros.	For each MS: - Required vs. already existing data necessary to meet the MSFD - Costs relating to acquisition, management and dissemination of new data - Costs relating to assembly of already existing data and the management and dissemination of this data - Costs related to MSFD data that have accrued until now - Future costs arising for MSFD data compliance	The questions to the Member States will be developed through initial consultations with a few selected Member States. The questions will be organised around the specific MSFD requirements and supplemented with questions about allocated resources and staff for the implementation of the MSFD, and questions concerning the cost of processing existing data.	Data requirements of the MSFD cover: - Physical and chemical features - Habitat types - Biological features - Other features - Physical loss - Physical damage - Other physical disturbance - Interference with hydrological processes - Contamination by hazardous substances - Systematic and/or intentional release of substances - Nutrient and organic matter enrichment - Biological disturbance
(7)	How much of this cost is assembling existing data (i.e. data already collected, or being collected for other purposes)?	For the MSFD data that is already existing in the MS: - Cost of assembling the existing Data to meet MSFD requirements	As above	As above
(8)	How much will be spent on collecting new data (i.e. data from new monitoring and survey programmes that would not have been collected without the Marine Strategy Framework Directive needs)?	For the data gaps arising from the MSFD: - Cost of collection of the necessary data to meet the Directive	As above	As above

3.3 Information sources and challenges

Key stakeholders for this study will be the MSFD Competent Authorities (CAs) of the 22 coastal states in the EU plus Croatia as they are the public bodies in charge of the MSFD in the Member States. An additional important stakeholder in the data gathering will be the Working Group on Data, Information and Knowledge Exchange under the Common Implementation Strategy of the MSFD. Furthermore the regional sea conventions, namely OSPAR, HELCOM, the Barcelona convention and the Black Sea Commission will be consulted.

Figure 2 Draft overview of the knowledge available at the different sources

	Costs of monitoring program			
	Man hours	**Investment**	**Administration**	**Frequency of monitoring**
CAs	*X*	*X*	*X*	*X*
Regional sea conventions	*X*	*X*		*X*

Data will be collected from these stakeholders using a comprehensive, yet well-explained questionnaire covering information about the monitoring, gathering, maintaining and reporting of data as well the manpower needed, investments, administration and frequency of monitoring. We will develop the questionnaire and provide a draft version to the Commission for comments. Furthermore this draft will be tested on two (we propose Denmark and France) MSFD authorities to collect additional feedback on it. Based on the comments the questionnaire will then be submitted to all CAs together with an introduction letter from the Commission.

We will allow the CAs 3-4 weeks to respond to the questionnaire thereby allowing time for follow-ups and clarifications in due time prior to the meeting in the WG DIKE. The WG DIKE will be consulted during its next meeting in Brussels on October 30/31. We will use this opportunity to present preliminary finding and identify national representatives that would be able to elaborate further on cost calculations. We suggest however that we in the period between the consultation with WG DIKE and the submission of the questionnaire organise and conduct interviews with a few selected authorities. Germany and Belgium could be candidates for this as they appear quite advanced in regards to MSFD implementation milestones.

We expect that national authorities may be little aware of what they have actually invested and what they will in the future need to invest in order to comply with the data requirements of the MSFD. Further, identifying and/or constructing the data can be a difficult and time consuming task for the national authorities and they may therefore be reluctant to enter into the exercise of responding to the Study's needs.

We will therefore us the WG DIKE meeting as an opportunity to identify 3-4 additional national focal points that we expect could and would be interested to contribute to a more elaborate calculation of the costs involved, and with whom we would organise one or two joint meetings afterwards. It may also prove relevant to gather more involved parties in one single Member States to discuss the issue further.

Support by DG MARE and WG DIKE will be crucial for the success of the data collection phase. We therefore kindly request the Commission to support in the identification of contact persons in the Competent Authorities and to establish contact with the CIS WG on Data, Information and Knowledge exchange.

Institution	Type	Country
FPS Public Health, Foodchain safety and Environment - Service Marine environment	Public (MSFD Competent Authority)	Belgium
FPS Science Policy, Management Unit of the North Sea Mathematical Models	Public (MSFD Competent Authority)	Belgium
Croatian Environment Agency	Public	Croatia
Minister of Agriculture, Natural Resources and Environment	Public (MSFD Competent Authority)	Cyprus
Danish Nature Agency (Naturstyrelsen)	Public (MSFD Competent Authority)	Denmark
Ministry of the Environment and Rural and Marine Affairs	Public (MSFD Competent Authority)	Estonia
Ministry of the Environment	Public	Finland
Institut francais de recherché pour l'exploitation de la mer (IFREMER)	Public	France
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety	Public (MSFD Competent Authority)	Germany
Bundesamt fuer Seeschifffahrt und Hydrographie	Public	Germany
Ministry of the Environment, Energy and Climate Change	Public (MSFD Competent Authority)	Greece
Department of Environment, Community and Local Government	Public (MSFD Competent Authority)	Ireland
Ministry of the Environment and Protection of Land and Sea	Public (MSFD Competent Authority)	Italy
Ministry of the Environmental Protection and Regional Development	Public (MSFD Competent Authority)	Latvia
The Environmental Protection Agency	Public (MSFD Competent Authority)	Lithuania

Office of the Prime Minister	Public (MSFD Competent Authority)	Malta
Ministry of Infrastructure and the Environment	Public (MSFD Competent Authority)	Netherlands
Ministry of Economic Affairs, Agriculture and Innovation	Public (MSFD Competent Authority)	Netherlands
		Poland
Portuguese Environment Agency	Public	Portugal
Ministry of Environment and Forests	Public	Romania
Ministry of Agriculture, Food and Environment	Public (MSFD Competent Authority)	Spain
Swedish Agency for Marine and Water Management	Public	Sweden
Department of the Environment	Public (MSFD Competent Authority)	UK
Marine Strategy Framework Directive, WG DIKE	Working group	EU
OSPAR Commission	Regional Sea Convention	Atlantic
HELCOM Commission	Regional Sea Convention	Baltic Sea
Barcelona Convention	Regional Sea Convention	Mediterranean
Commission on the Protection of the Black Sea against Pollution	Regional Sea Convention	Black Sea

3.4 Relations to other thematic areas

The information collection strategy for data costs of the MSFD will target the Competent Authorities in the Member States as the main bodies responsible for transposition and implementation of the Directive. Unlike the other thematic areas for which this study will collect information, this section on costs related to the MSFD will focus on efforts to be borne by the public sector. The information needs will hence not be covered by other thematic areas. Yet, the questionnaire here should be coordinated with the questionnaire on re-use of marine data; and it should consult with the themes on governance and on legal aspects to ensure that relevant questions in that regard are brought forward here.

3.5 Final outputs

Based on the information gathered from questionnaires and interviews with the Member State CAs, WG DIKE and the regional sea conventions, data will be compiled in a Microsoft Access database that will allow for the generation of specific data tables.

This collected data will be used to estimate the costs of the required monitoring programmes. The estimation of the man hours in monetary terms will be done by asking for the type of skills needed and then using an average salary.

Investments costs for monitoring systems can be used directly and will only need to be discounted. The monitoring frequency will be important to know for calculating costs in NPV or on a yearly basis. If information is missing for some countries then extrapolation can be applied to derive the missing estimates.

We will collect data separately on the costs that the Member States have covered for complying with the data requirements of the MSFD until now and future costs that will arise in relation with the monitoring and reporting requirements of the MSFD.

4 Cost of data for wind farms

4.1 Key observations and this stage

At present offshore wind farms with a total capacity of about 2000MW have been built in nine European countries. In its "Energy trends to 2030 -2009 update" to the Renewable Energy Roadmap the European Commission projected an installed offshore wind farms capacity of 55.6 GW for the year 2020. The EWEA expects an installed capacity of about 40 GW for the same year. Regardless of which projection will show to be more precise, Europe will see major growth in offshore wind capacity. A big share of this growth will come from Member States that currently have no or only very few operational wind farms. Industry trends also show that offshore projects will increasingly be built in deeper waters and further away from shore.

Moving into new geographical areas and into deeper waters with offshore wind projects will require an increased knowledge of the marine environment. Operators will need to collect or purchase marine data and further assemble and process it for preparing licence applications, planning, building and operating wind farms. With many projects being planned in new areas this will mean considerable costs as data might not be existent or difficult to access.

4.2 Information needs and challenges

This study aims at collecting information on the costs related to data collection and usage for offshore wind farms in the EU coastal countries plus Croatia, Norway and Iceland until 2020. In order to estimate the data cost the study will first gather information on the need for marine data for planning, building and operating offshore wind farms. Data needs for offshore wind projects are very extensive and a gross list of data needs will therefore be tested with one or two operators before the data gathering questionnaire will be finalised.

The information on data needs for offshore wind farms will serve as a basis for the estimation of costs for collection, purchase, assembly and processing of this data. Additionally to this information estimates on the offshore wind capacity to be planned, built or operational in each of the countries by 2020 will be collected. Data and estimations on data needs, capacity growth and data costs will allow projecting the total costs related to marine data of the growth in offshore wind farms until 2020. The table below presents the study questions, the information needs and examples of specific questions for collecting answers to these needs.

	Study question	**Information/Data need**	**Examples of specific questions for the data collection**
(9)	What marine data will be required for planning, building and operating offshore wind farms in Europe up till 2020, including also surveys	- Information on the need for data on wave height, wave period, wave direction, current speed, current direction, sea-surface elevation, water level, salinity, water temperature, ice, etc for offshore wind projects	The planning of wind farms require many types of data and based on our experience we will develop the gross list and have it confirmed by one or two operators before finalising the questionnaire.
(10)	How much will be spent collecting, purchasing, assembling and processing these data?	- Estimation of the offshore wind capacity to be planned, built or operating until 2020 - Data quality needs - Data collection or purchase costs for offshore wind projects	- How much do offshore wind operators pay for data related to the planning of a project? - How many offshore projects will be planned and/or built until 2020?

The challenge in relation to the collection of data on costs for offshore wind farms will lie in obtaining estimates for data needs and their respective costs that allow for extrapolation until 2020 across Europe. We expect that operators may be reluctant to share information on data costs for confidentiality and competition reasons. Furthermore we expect that operators have outsourced much of the data related work on site selection, planning, building and operation of offshore wind farms. The following section on information sources will elaborate on this challenge.

4.3 Information sources

European operators of offshore wind farms have been identified as the main sources of information on data costs. Based on informal investigations with one or two offshore operators we will draft a pilot questionnaire that will be discussed with the Commission before being finalised.

An initial face-to-face interview with the European Wind Energy Association will provide first answers to this questionnaire and will be used to discuss the most targeted information collection strategy for the offshore operators. The proposed strategy for collecting information from operators is through bilateral face-to-face or telephone interviews. Face-to-face interviews will be carried out whenever at least three interviews can be conducted in the same country and at locations fairly close to one another. As mentioned in the previous section there is a risk that operators are not willing to share information on data costs or that they may only be little aware of the data costs involved in projects due to analytical work having been outsourced to an external consultant.

We will try to address the challenge of operators not willing to share information due to confidentiality or competition reasons by engaging in a close dialogue with the operators and by using fictive examples for estimating data costs for planning, building and operating. In case offshore operators are unable to quantify data costs as they have little knowledge on costs for marine data the information gathering strategy will be extended to consulting firms servicing the offshore sector with analytical work related to marine data for planning, building and operating. In that case, we will however assume that the consultants are identified to us by the operator in question, and that the operator in question also willingly takes on the task of requesting them to provide us with the needed information. Our first informal consultations with offshore operators however showed that operators typically do have knowledge of the collected data and the costs for collecting this data.

The initial consultation with the EWEA will also inquire about differences in costs across Member States. We expect that data collection and acquisition costs as well as monitoring requirements vary across Europe. An extrapolation will need to be based on cost estimates for each country that by 2020 will have offshore wind projects in the planning, construction or operation phase.

Institution	Type	Country
European Wind Energy Association EWEA	Industry association	EU
DONG	Offshore wind operator	DK, UK
Vattenfall	Offshore wind operator	SE, UK
E.ON	Offshore wind operator	DK, UK, DE
RWE	Offshore wind operator	UK, BE
SSE	Offshore Wind operator	UK
Centrica	Offshore wind operator	UK
Mainstream Renewable Power	Offshore wind planning and construction	UK, DE

Vestas	Wind turbine producer	EU

4.4 Relations to other thematic areas

The present thematic area of costs of data for offshore wind farms is closely linked to the question on marine data in the licensing process. The offshore wind sector will be covered during the data collection on licensing practices and a first understanding of the costs of data will be gained at that point. The present section will expand this information and collect additional data on costs related to planning, building and operation of offshore wind farms until 2020.

4.5 Final outputs

The data collected in the section on cost of data for offshore wind farms will feed into the Microsoft Access database that will allow for the generation of specific data tables.

The database will list the identified types of data required for

- Planning
- Construction
- Operation

of offshore wind farms. This data is not country specific and will hence be gathered for all countries together. For the following categories data will be collected and reported in the database per country:

- Number of wind farms up to 2020 in
  - Planning stage
  - Construction stage
  - Operational stage
- Cost of purchasing or producing data

The combination of these datasets will allow an estimate of costs until 2020 by Member State and for the EU as a whole.

5 Legal basis of regulation or directive

No obvious legal basis for EU's marine policy in the Treaty

As discussed in the Impact Assessment (IA) it is a key issue that there is not direct legal basis for the EU's marine policy. The objective is thus to investigate what legal basis could be used. Justification for Community action may be found within other policy areas as has been the case with existing instruments for maritime action. One example may be the ongoing discussion within the Commission on the future legal basis for the Commission's effort on integrated coastal zone management (ICZM) and Maritime Spatial Planning (MSP).

Different policy areas could provide the legal basis e.g. fisheries, transport, environment, research and technological development, enterprise, Trans European Networks etc. Existing marine policy measures have different legal basis as demonstrated in the MRAG report[1] legal analysis, which forms part of our data and information basis that we will take into consideration when framing the relevant options. As outcome of our analysis, we will present the various relevant examples of different legal basis.

Large differences among the Member States

The level of marine knowledge and availability of data vary greatly from MS to MS as does the organisational setup and responsibility for the data. Existing studies indicated that integrated action is highly likely to need European driver to succeed as e.g. shown in the IA on EMODnet. This is important in the analysis of subsidiarity. The MRAG report on Legal Aspects of Marine Environmental Data[2] indicates that some countries have a very vague setup for managing environmental data and data sharing, e.g. Bulgaria, whereas other countries already have a framework for this. In France for example the overall situation for availability of data is good according to the above mentioned MRAG report[3].

[1] Framework service contract no FISH/2006/09-lot 2 from November 2009
[2] Framework service contract no FISH/2006/09-lot 2 from October 2008
[3] Framework service contract no FISH/2006/09-lot 2 from October 2008

The MRAG report also indicates that the institutional setup of data gathering has great influence on the availability. In general there are three main types of data holders:

- Universities/academia
- Public research institutions
- Public authorities

And to a lesser or more variant extent

- NGOs - mainly environmental organisations gathering and sharing environmental data
- Private interests such as sector organisations e.g. within aquaculture, or private companies e.g. larger oil companies

5.1 Information needs

Information needs will relate to the questions of:

- Which legal basis can be used for this EU action?

- Is the initiative in accordance with the principles of subsidiarity and proportionality?

Legal basis

In order to determine the legal basis, our specific information needs for the legal analysis is to get to the core of the raison d'être of the Marine Knowledge in order to determine what the appropriate basis for a measure is. Information is therefore needed to compare with similar initiatives and analyse the basis used for these. This will build on the analysis presented in the Final MRAG report[4]. Other essential sources of information here will be consultations with key experts on other initiatives of a similar kind such as for example the ICZM regulation and the initiative on MSP.

Subsidiarity and proportionality

In order to determine that the subsidiarity principle is fulfilled knowledge about practices in Member States is important to verify that the objectives set forth:

- cannot be fulfilled to an adequate degree by the Member States drawing up their own legislation;

- can better be fulfilled by legislating at EU rather than national level

[4] Framework service contract no FISH/2006/09-lot 2 from November 2009

The results of the stakeholder consultation for the impact assessment of EMODnet will create a starting point for the data gathering on this issue and will further be build upon with interviews with stakeholders on their perception on possibility of reaching the same goal with action at local level will be gathered, and/or their perception of the value-added that an EU initiative will bring.

5.2 Information sources

Apart from consulting written sources, we consider EU desk officers to be a prime source of information. We will first consult with legal staff in DG MARE and with staff in DG MARE with knowledge on the legal aspects of MSP. In these consultations we will deepen our understanding of the legal challenges and opportunities in regards to marine information as perceived by DG MARE, and we will extract from the MSP process lessons learned of relevance to marine information. Also, we will use these consultations to discuss other possible EU initiatives that could inspire the present work, such as ICZM.

We kindly request DG MARE to identify the key persons to interview on legal aspects of the marine information initiative and on the MSP initiative.

Moreover, we anticipate that a few interviews will be carried out with Member States in order to substantiate further our analysis and conclusions regarding subsidiarity and proportionality.

5.3 Final outputs

This part of the study will provide two analytical outputs:

- An analysis of potential legal basis for Community action in regards to a measure on marine knowledge, based on existing practices and experiences.
- An analysis of whether such action is in line with the principles of proportionality and subsidiarity.

That will rest on the analysis of a selected sample of comparable EU initiatives (ongoing or completed) based on interviews and analysis of documents, as well as on an analysis of the relevant parts of the completed public consultation plus a few additional interviews with selected Member States.

To ensure that the scope of the outputs of this task aligns with the needs of DG MARE, we propose to include a more detailed reporting of the progress of this task in the two progress reports.

6 Innovation from marine data

A key objective of improving marine knowledge is to increase competitiveness and innovation amongst users and re-users of marine data by providing wider access to quality-checked, rapidly available, coherent marine data. Knowledge is a key component of the EU's plan to integrate marine and maritime research and a contribution to the Digital Agenda.

The current inability of researchers and private companies to access marine data to develop new products and services – for instance in bio-prospecting or coastal protection – is blocking innovation.[5] The Impact Assessment of 2010 conservatively estimated that these new products and services would be worth between €60 and €200 million annually.

It is very challenging to estimate what concrete new services could be developed given improve marine knowledge. The objective of this present study in terms of promoting innovation is therefore to hypothetically identify what impacts historic and real-time data would have on:

- *Reducing risks for aquaculture producers* – for example, if aquaculture operators had advanced warnings of approaching toxic algal blooms or jellyfish invasions
- *Enabling insurance companies in coastal regions to better assess risk* – for example, data on past extreme events to assist in estimating the likelihood of future damage and to develop climate-proof coastal infrastructure.
- *Prolonging the season for coastal tourism* – data to assist in the diversification of marine activities and enable the creation of new jobs and stronger economic activity.

[5] European Commission, *Marine Knowledge 2011-2013: Background Document for Maritime Policy Member States' Expert Group on Marine Knowledge*, 23 February 2011

› *Helping the bio-economy to discover new products* – for example, data on where to look for strange life forms that can live without light or withstand extremes of temperature, can assist the search for pharmaceuticals or enzymes to catalyze industrial processes

Fifteen examples of innovation are required in total: three examples of innovation for each of the four sectors mentioned above, as well as three additional examples from an alternative marine sector.

Ultimately, the objective is then to qualify and quantify the impacts associated with innovative products and services resulting from the improved availability and accessibility of this data.

6.1 Methodology: information and outputs

The methodology to address the study questions relating to innovation is developed below. It has been designed to be consistent with the broader approach to the study as a whole, and is composed of three phases:

› Identify as many examples of innovative products and services as possible from desk research, interviews and an experts panel

› Decide on shortlist of innovation examples, where relevant and feasible, depending on the results of the data collection above

› Develop case studies that present the potential innovations and estimate benefits

As a reminder, the following study questions relate to innovation from marine data:

Assuming historical and real-time data were available on a series of parameters, including chemical pollution, non-native species, coastal erosion and storm intensity, what innovative services based on these and other data;

12. *Might reduce risks for **aquaculture producers**?*

13. *Might enable **insurance companies** in coastal regions to provide a better assessment of risk?*

14. *Could support a longer **season for coastal tourism***

15. *Could help the **bio-economy** to discover new products (pharmaceuticals, enzymes, cosmetics, etc)*

Three examples of innovative products and services are to be identified for each of the four sectors above, as well as three examples to be sourced from an alternative sector.

6.1.1 Phase 1: Identify examples of innovative products and services

The data collection approach for addressing the theme of innovation will comprise two steps:

› Step 1: Review of secondary data sources (desktop research)

› Step 2: Collection of primary data, as detailed below.

Examples of innovative services and products that may be positively impacted by improvements in marine knowledge may include the following:

Source of innovation example	Collection method
Examples drawn from non-EU countries where improved accessibility and interoperability of marine data and knowledge has positively impacted on research and development, and facilitated the development of innovative products or services	1. Desktop research
Examples drawn from past examples, since it may be easier to obtain more complete data and estimate the effect of the generic application of the example	2. Desktop research 3. Stakeholder interviews
Examples drawn from existing research and development areas currently under analysis that face barriers or for which the potential is not reached due to marine data and knowledge issues, such as access to affordable and timely data	4. Stakeholder interviews 5. Desktop research
Examples of potential future research and development areas that would be hypothetically pursued should there be progress in the types of marine data collected and their accessibility, interoperability and affordability	6. Stakeholder interviews

Step 1.1: Review of secondary data sources (desktop research)

There is general knowledge about what impact improved marine knowledge and accessibility could contribute to innovation (illustrated in the introduction section above), however specific concrete examples are not readily available or evident in existing data.

Therefore, a first step will be to undertake desktop research to confirm and investigate the level of data available in this area, such as data on research and development facilitating innovation in other jurisdictions, papers on barriers to innovation in the marine industries, and papers on innovative ideas in the marine sectors.

This exercise will contribute to the drafting of a list of potential innovative products and services, which will be further developed and complemented by the stakeholder primary data collection process.

Information sources for the desktop research may include the following types of documents:

- Academic papers and journals, published by research institutions
- Presentations made at European marine conferences
- National and regional Marine Knowledge, Research & Innovation strategies and initiatives

This initial desktop research phase will also assist in preparing for and finalising interview questions and guidelines for Step 1.2 described below.

Step 1.2: Collection of primary data

Given the limited existing available data, the desktop research exercise will be complemented by a data collection exercise in order to collect necessary primary data.

In line with the wider approach for the study, the primary data collection exercise relating to the innovation theme is envisaged as follows:

- First interview with EC staff and pan-European organisations, such as the Federation of European Aquaculture Producers, to obtain a first view of potential examples and identify and confirm the best stakeholders to consult
- In-depth telephone and face to face interviews with a selection of key stakeholders, such as the research community, industry organisations and public authorities to elaborate on specific issues and themes gathered through the desktop research exercise, in an effort to develop concrete examples
- Focus group / workshop to stimulate joint 'out-of-the-box' thinking in order to e.g. reflection on the quantification of benefits, and where examples of innovation are not readily apparent (see phase 2).

At this stage, we plan to interview key stakeholders in each of the four marine sectors within the scope of the broader study process. It is also important to note that data will be gathered through the workshops organised for the other themes (particularly 1, 2 and 3) of the study, to ensure efficient use of people's time.

Findings from this round of data collection will be complemented by a data collection exercise from Member States, in the form of a questionnaire, which will cut across several study themes, and provide additional comparable data.

Specific study questions regarding the four marine sectors will be developed throughout the desktop research stage and will address the information needs highlighted in the table below. Interviews will ideally provide ideas on:

› What types of data would promote innovation and

› How the availability of the detailed marine data could concretely support innovation within the industry.

If examples are not easily identifiable, we may undertake additional targeted interviews to supplement this data collection exercise.

Information needs and sources

The types of stakeholders to be contacted in relation to the specific questions addressing innovation are presented in the table below, along with a first analysis of the information needs.

Table 6-1 Indicative list of stakeholders and information needs

Sector	Stakeholder name	Type	Indicative information needs
Aquaculture	Advisory Committee on Fisheries and Aquaculture (ACFA) working group	Pan-European organisation	7. Data/information on risks that potentially could be reduced from improved accessibility, interoperability and affordability of marine data: 8. Risks to production from pollution (e.g. approaching toxic algal blooms, assessment of health risk from marine pollutants) 9. Invasive species (e.g. jellyfish invasions, algal blooms) 10. Meteorological conditions 11. Identify if and how better marine knowledge would assist in developing and promoting deep sea aquaculture, and exploiting waste for nutrition
	European Aquaculture Technology and Innovation Platform	Pan-European organisation	
	Federation of European Aquaculture Producers (FEAP)	Pan-European organisation	
	European Aquaculture Society	Civil society organisation	
	IFREMER - Institut français de recherche pour l'exploitation de la mer	Research community	
	Ferme Marine de Douhet, France	Commercial company	
	Direction des pêches maritimes et de l'aquaculture, Ministère de l'Écologie, du Développement durable et de l'Énergie	Public authority	
Insurance in coastal areas	Insurance Europe	Pan-European organisation	12. Examples of where better quality of data could lead to more site specific risk assessments 13. Understand from insurance companies an estimate of the decrease in the risk premium due to the ability to offer insurance policies tailored to the local risk profile
	International Union of Marine Insurance	International organisation	
	Lloyd's	Insurance provider	
	Munich Re	Insurance provider	
Coastal tourism	Conference of peripheral marine regions: sustainable tourism workgroup	Think tank	14. The estimated impact different types of data relating to weather and sea conditions could have on extending the tourist season 15. Also the impact of better information about marine life on the tourism season, allowing for example fishing, diving or whale watching to take place outside the
	Coastal & Marine Union (EUCC)	Pan-European organisation	
	DG ENTR, Tourism Unit	EC DG	
	National Coastal Tourism Academy	Research community	

	European Travel Agents' and Tour Operators Associations	Pan-European organisation	"normal" season 16. Estimating the improved experience of the tourist within the "normal" tourist season and thereby potentially attracting more tourists.
New bio-economic products	CSA MarineBiotech	Pan-European Organisation	17. While the specific discovery of marine species that could have a potential commercial application is likely to depend on vary detailed sampling, it might be that such sampling searches could be planned more efficiently. 18. How better knowledge regarding strange life forms that can live without light or withstand extremes of temperature can positive impact Biotechnology companies' search for new pharmaceuticals or enzymes to catalyse industrial processes 19. Potential impact of high quality and available data on improved efficiency of harvesting marine products
	Europabio	Pan-European Organisation	
	Directorate-General for Research and Innovation	EC DG	
	Centre de Recherche en biotechnologie marine	Research community	

The table above is indicative at this stage, and will be further developed and completed in the preparation phase. Additional meetings are likely to take place with national research institutes, such as the CNRS in France.

6.1.2 Phase 2: Decide on shortlist of innovation examples

This second phase will seek to validate and prioritise the examples of innovative products and services identified. It is composed of two steps:

- Step 2.1: Workshop to assist in developing a shortlist and identifying other examples not yet envisaged
- Step 2.2: Decide on shortlist of examples

An important consideration is the timing of the shortlist in relation to the data collection exercise in Member States. Ideally, a shortlist of innovation examples will be decided upon prior to the request for information from Member States. This will assist in obtaining complete and comparable data, particularly on the potential quantitative benefits.

Step 2.1: Workshop to assist in developing a shortlist and identifying other examples not yet envisaged

The data collection exercise described above will assist in producing a list of potential innovative products and services that could result from better accessibility, interoperability and affordability of marine knowledge.

In order to obtain a critical view of this list of examples, we propose to undertake a brief workshop (in Brussels at COM premises) of a half-day's duration, involving approximately 4-5 stakeholders. The objective of this workshop would be to validate, prioritise and quantify the examples, ultimately resulting in a shortlist.

The workshop may also assist in identifying other examples not previously envisaged. This could therefore be a particularly important step given the anticipated potential difficulties in defining and quantifying examples.

Step 2.2: Decide on shortlist of examples

The workshop described above would result in a shortlist of innovation examples. This shortlist of examples could then be elaborated upon where relevant and feasible, in order to draft the case studies in Phase 3.

6.1.3 Phase 3: Develop case studies

This final phase will seek to develop upon the shortlisted examples of innovative services identified and result in the output for this study theme – a case study for each example. It is composed of two steps:

- Step 3.1: Further research and investigation into shortlisted examples
- Step 3.2: Drafting of case study examples

Step 3.1: Further research and investigation into shortlisted examples

Depending on the level of data available and provided by stakeholders regarding the shortlisted examples, there may be a need to undertake further investigations in order to further develop the case studies. Some examples may be more detailed than others based on the level and quality of information available.

As a result, there may be need for addition telephone or face-to-face meetings, or alternative workshops, in order to expand upon the initial ideas with concrete facts and data.

Step 3.2: Drafting of case study examples

For each of the shortlisted innovation examples, we will develop a case study (2 to 3 pages approximately), which will address:

- Description of the innovation
- The types of marine data that would specifically promote the innovation
- The estimated value added from the innovation and other qualitative benefits
- The potential turnover generated as a result of the innovation

- Key assumptions in our analysis and general applicability to a broader context

The quality of the assessment will depend on the data and information that can be gathered from the research institutes or from the industry stakeholders.

6.2 Challenges and limitations

In the context of this study and particularly the questions prescribed in the Terms of Reference, the area of innovation poses a number of challenges, outlined below.

- Access barriers to information
  - Potential lack of time and knowledge to provide information, or potential reluctance to divulge information (particular for private sector actors)
  - The industries have or are in the process of developing new services but due to commercial reasons not willing to disclose the detailed information.
- Shortage of identifiable examples of innovation
  - There is little existing information readily available related to innovation that could be generated by improved marine knowledge
  - The industries might not have developed ideas related to improved access to high quality data and are therefore not able to estimate any benefits
- Difficulties associated with the quantification of benefits
  - This exercise will necessarily be quite speculative and hypothetical – the benefits derived from improved marine knowledge may be largely indirect, and therefore difficult to define and quantify
  - Respondents must be able to understand what the study needs and must be willing to think both in terms of likely future developments and in terms of past concrete examples where better data and reduced uncertainty provided good positive impacts.
  - Some examples may be easier to elaborate upon compared to others, resulting in case studies that are not uniform in detail and format
  - The output for this question will be largely qualitative case study examples, with quantitative estimates where possible. Economic modelling is not feasible within the context of this study and its timeframe.

› Finally, it is important to recognise the existence of externalities, in terms of other barriers to innovation that will prevent the commercialisation of innovative products and services regardless of potential improvements in marine knowledge.

7 Reduction in uncertainty

The lack of an effective marine data infrastructure and an over-sparse observation network compound uncertainty in the ocean's future behaviour. A study suggests that an expenditure of €70 million on marine mapping in Irish waters would reduce uncertainty to industry and result in benefits of €415 million to the fisheries, aquaculture, biodiversity, renewable energy, energy exploration and aggregate industries.

Furthermore, a 25% reduction in uncertainty in future sea-level-rise could reduce Europe's annual sea-protection costs by some €100 million per year.[6] Although climate change is expected to raise temperatures on a global scale, it is not clear whether European regions will be warmer, cooler, drier or wetter. Without better ocean monitoring it will be impossible to reduce this uncertainty.[7]

A better measurement infrastructure will reduce uncertainty in the future behaviour of the oceans. This will allow more certainty by business and public authorities in planning for the future. Better access to existing data will reduce uncertainties. For example, the offshore wind sector uses marine data to a large extent and access to broader datasets may help reduce effort and the uncertainty related to site selection. For the fishing sector, reduced uncertainty could lead to better estimation of stocks.

The objective of this present study is to gain a better understanding of the benefits of improved marine knowledge. In line with this, the objective of this study question regarding reduced uncertainty is to provide three examples from industry, research and the public sector of the economic benefits of reduced uncertainty in the behaviour of the sea or the state of the seabed and marine life (over and above the examples cited in the 2010 Impact Assessment).

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[6] COM(2010) 461: SEC(2010) 998, *European Marine Observation and Data Network: Impact Assessment – Executive Summary*, Brussels, 8 September 2010
[7] European Commission, *Marine Knowledge 2011-2013: Background Document for Maritime Policy Member States' Expert Group on Marine Knowledge*, 23 February 2011

7.1 Methodology: information and outputs

The methodology to address the theme of reduced uncertainty is developed below. It has been designed to be consistent with the broader approach to the study as a whole, and is composed of three phases:

- Identify as many examples of the economic benefits of reduced uncertainty as possible from desk research, interviews and an experts panel
- Decide on shortlist of examples of benefits, where relevant and feasible, depending on the results of the data collection above
- Develop assessment of the examples of economic benefits, demonstrating where possible the impact of the reduction in uncertainty.

As a reminder, the theme of reduced uncertainty is addressed in the following study question: ***"Provide three more examples of the economic benefits of reduced uncertainty in the behaviour of the sea or the state of the seabed and marine life".***

7.1.1 Phase 1: Identify examples of the economic benefits of reduced uncertainty

The data collection approach for addressing the theme of reduced uncertainty will comprise two steps:

- Step 1: Review of secondary data sources (desktop research)
- Step 2: Collection of primary data, as detailed below.

These examples of economic benefits will be sourced from the marine industries, research and the public sector that are affected by the behaviour or state of the sea.

Step 1.2: Review of secondary data sources (desktop research)

The objective of this study question is to go beyond the examples of benefits of reduced uncertainty presented in the 2010 Impact Assessment by providing three additional examples of how better knowledge regarding the behaviour of the sea and/or the state of the seabed will generate positive economic benefits.

To address this question, we will firstly undertake detailed desktop research to confirm and investigate the level of data already available in this area, such as studies and conferences regarding the benefits of better data in relation to the sea, seabed and marine life.

This exercise will contribute to the drafting of a list of potential economic benefits resulting from reduced uncertainty, which will be complemented by the stakeholder data collection process.

Information sources for the desktop research may include the following:

- Academic papers and journals, published by research institutions
- Presentations made at European marine conferences

This initial desktop research phase will also assist in preparing for and finalising interview questions and guidelines for Step 1.2 described below.

Step 1.2: Collection of primary data

Given there is no readily available data relating to the economic benefits of reduced uncertainty, the desktop research exercise will be complemented by a data collection exercise in order to collect necessary primary data.

In line with the wider approach for the study, the primary data collection exercise relating to the theme of reduced uncertainty is envisaged as follows:

- First interview with EC staff and pan-European organisations to obtain a first view of potential examples of benefits and identify and confirm the best stakeholders to consult
- In-depth telephone and face to face interviews with a selection of key stakeholders, such as the research community, industry organisations and public authorities to elaborate on specific issues and themes gathered through the desktop research exercise, in an effort to develop concrete examples
- Focus group / workshop to stimulate joint 'out-of-the-box' thinking in order to e.g. reflection on the quantification of benefits, and where examples of innovation are not readily apparent (see phase 2).

At this stage, we plan to interview key stakeholders in the marine sectors within the scope of the broader study process. It is also important to note that data will be gathered through the workshops organised for the other themes (particularly 1, 2 and 3) of the study, to ensure efficient use of people's time.

Findings from this round of data collection will be complemented by a data collection exercise from Member States, in the form of a questionnaire, which will cut across several study themes, and provide additional comparable data.

Specific study questions will be developed throughout the desktop research stage and will address the information needs highlighted in the table below. Stakeholders will be asked about which additional data or better quality of data would decrease the level of uncertainty in their activities.

If examples of benefits are not easily identifiable, we may undertake additional targeted interviews or workshops to supplement this data collection exercise.

Information needs and sources

A sample of the types of stakeholders to be contacted in relation to reducing uncertainty is presented in the table below, along with a first analysis of the information needs.

For each example of benefits, we will seek to understand the impacts of the existing uncertainty, the type of knowledge that would reduce this uncertainty, and the economic benefits of the reduced uncertainty.

Table 7-1 Indicative list of stakeholders and information needs

Sector	Stakeholder name	Type	Indicative information needs
Fisheries	Advisory Committee on Fisheries and Aquaculture (ACFA) working group	Pan-European organisation	20. Information/data relating to the economic benefits of being able to better estimate fish stocks, e.g. on the efficient implementation of the CFP, sustainable management of fisheries, etc 21. By reducing uncertainty about the causes of observed changes in fish stocks, fisheries can properly decide to reduce the allowable harvest - to keep the fishery sustainable – or increase the allowable harvest - to allow more short-term economic benefits.
	Danish Institute for Fisheries Research (Difres), DK	Research community	
	IFREMER - Institut français de recherche pour l'exploitation de la mer, France	Research community	
Coastal tourism	Coastal and Marine Research Center, UCC Cork	Research community	22. Information/data relating to the economic benefits of better seasonal forecasts 23. Information relating to the benefits to tourism activites of a better understand of the seabed (e.g. identification of potential dive and game fishing sites such as shipwrecks, seamounts and sunken reefs. 24. Information how improved marine knowledge could attract investors to establish new tourism projects.
	CRPM Tourism Working Group	Pan-European organisation	
Offshore wind	European Wind Energy Association EWEA	Pan-European organisation	25. Understand how access to broader datasets may help reduce effort and the uncertainty related to site selection
	Department of Wind Energy, DTU, DK	Research community	
	LORC, DK	Research community	
	DONG	Operator	

The table above is indicative at this stage, and will be further developed and completed in the preparation phase. Additional meetings are likely to take place with national research institutes, such as the CNRS in France, as well as sector representatives where particular examples of economic benefits are sourced.

7.1.2 Phase 2: Decide on shortlist examples of benefits associated with reduced uncertainty

This second phase will seek to prioritise the identified benefits and is composed of two steps:

- Step 2.1: Workshop to assist in developing a shortlist and identifying other examples of benefits not yet envisaged
- Step 2.2: Decide on shortlist of examples

An important consideration is the timing of the shortlist in relation to the data collection exercise in the Member States. Ideally, a shortlist of benefits will be decided upon prior to the request for information from Member States. This will assist in obtaining complete comparable data, particularly on the potential quantitative benefits.

Step 2.1: Workshop to assist in shortlisting and identifying other examples of benefits not yet envisaged

The data collection exercise described above will assist in producing a list of potential benefits that could result from reducing uncertainty.

In order to obtain a critical view of this list of benefits, we propose to undertake a brief workshop (in Brussels at COM premises) of a half-day's duration, involving approximately 4-5 stakeholders. The objective of this workshop would be to validate, prioritise and quantity the examples, and ultimately result in a shortlist.

This workshop may also assist in identifying other examples not previously envisaged. This could therefore be a particularly important step given the anticipated potential difficulties in defining and quantifying examples.

Step 2.2: Decide on shortlist of examples

The workshop described above would result in a shortlist of economic benefits. This shortlist could then be elaborated upon where relevant and feasible, in order to draft the case studies in Phase 3.

7.1.3 Phase 3: Develop case studies

This final phase will seek to develop upon the shortlisted examples of benefits identified and result in the output for this study theme – an assessment following the model described below. It is composed of two steps:

- Step 3.1: Further research and investigation into shortlisted examples
- Step 3.2: Drafting of assessment

Step 3.1: Further research and investigation into shortlisted examples

Depending on the level of data available and provided by stakeholders regarding the shortlisted examples, there may be a need to undertake further investigations in order to further develop the case studies. Some examples may be more detailed than others based on the level and quality of information available.

As a result, there may be need for addition telephone or face-to-face meetings, or alternative workshops, in order to expand upon the initial ideas with concrete facts and data.

Step 3.2: Drafting of assessment

In identifying the shortlisted examples of economic benefits, we will draft the assessment, according to the following proposed structure:

- Estimate the baseline:
  - What are the impacts of the existing uncertainty;
- Estimate the effect of the options:
  - The type of knowledge that would reduce this uncertainty and
  - The economic benefits of the reduced uncertainty.

Given that the results of this study feeds into an impact assessment, the data on benefits of options should estimated against a clear baseline.

7.2 Challenges and limitations

Given the limited timeframe and resources allocated to this part of the study, the analysis is not expected to be as comprehensive as that undertaken as part of the 2010 Impact Assessment. The structure will instead follow the process described in Step 3.2 above. This is consistent with the scope of the project, which is not to provide a full impact assessment study but rather to deliver targeted and specific inputs to the IA that the DG MARE is responsible for preparing.

It has been recognised during the kick-off meeting for this project that it is expected to be very difficult to quantify the monetary benefits. Rather, the focus should lie on providing concrete examples of the (in-kind) benefits of improved marine knowledge. We will seek to quantify where possible, however the ability to do so will be limited by the data available and assumptions that need to be made.

Finally, in terms of quantifying monetary benefits, the extrapolation of collected data will be challenging and should therefore be handled and interpreted with caution since data collection and processing costs vary significantly between Member States and sites.

8 Options for governance of European marine observation and data networks

8.1 Key observations and this stage

In the technical proposal we presented the three step approach to address the options for "Governance of the European Marine Observation and Data Networks" (hereafter the secretariat).

- Step 1: Assess the organisation and tasks of proposed secretariat.
- Step 2: Analyse different organisational option for the secretariat.
- Step 3: identify the strength and weaknesses of each option as well as the potential monetary costs.

In the following we address main observations made for the different steps and the required information needed at this stage.

Step 1: Assess the organisation and tasks of proposed secretariat

The options for governance of the European marine Observation and Data Network will be based on the proposed secretariat addressed in the "Marine Knowledge 2020 Communication". A secretariat for the European Marine Observation and Data Network would:

- Deliver an annual work programme to achieve a set of objectives
- Negotiate approval of the work programme with a "governing board"
- Implement the work programme in a way that is compatible with the EU's Financial Regulation

A number of observations were made in the open consultation[8] on Marine data infrastructure published in 2010, the 2010 impact assessment[9] and the 2012 road map[10].

In the 2012 Roadmap for European Marine and Data Network it was stressed that the data should be available at marginal cost which means that data distributed through the internet should be free of charge.

Step 2 - secretariat options.

In ToR a number of secretariat governance options were mentioned:

- Joint Programming Initiative on Healthy Seas and Oceans
- Through the Joint Research Centre
- An executive agency
- Through a public-private partnership

Each of these options will be outlined based on the available information and the options will be further assessed once the study progresses.

The next activities will be:

- To carry out exploratory interview with DG MARE to better understand the background of the proposed options in ToR and the options mentioned in the impact assessment and the roadmap.

- Identification of relevant governance structures. Review of the potential structures mainly through desk research and interviews with Commission officials.

- Interviews with selected representatives of these structures would provide important lessons learnt both in terms of the considerations on the organisation of EMODnet as well as lesson learnt in implementing similar work.

8.2 Information needs

The two questions put forward in ToR to assess governance of the secretariat are:

- How would such an arrangement work? Are there any examples (other than EU Agencies)?

[8] Outcome of public consultation on Marine Data Infrastructure SEC(2010)73
[9] Impact assessment – European marine Observation and Data Network (SEC(2010)998 final
[10] Ref:Ares(2012)275043 – 08/03/2012

› Could it be done through the Joint Programming Initiative on Healthy Seas and Oceans? Or through the Joint Research Centre? Or through an executive agency? Or through a public-private partnership? What would be the costs and benefits in each case?

In order to start answering the questions we would have a number of exploratory questions to DG MARE:

› Why is the secretariat not a Commission core task (according to the road map there is a EU value added)?

› Have alternative secretariat options been assessed (in-house in DG MARE, GMES, EMSA, EEA)?

› Have there been any thoughts of the location of a secretariat?

› Is there more information on the PPP considered above? It is stated in the roadmap that the service delivered by the secretariat should be "at marginal costs" does this fit with a PPP solution?

› DG Enterprise is conducting a study on externalisation of work in the European Commission – this would be an important study to follow in order to utilise the same method and line of argumentation in setting up the secretariat.

› The financing of the agency was not mentioned in ToR. However in the 2012 road map it is mentioned that the Commission has proposed an annual budget of EUR 30 Million. Are there more details behind this amount?

8.3 Information sources

The sources of information for assessment of governance will mainly be literature review, interviews with key personnel in the Commission[11] and staff in other similar organisations indentified under step 2.

In addition DG Enterprise is carrying out a study on the externalisation of work by the Commission. It would be advisable to have access to the outcome of this work.

Interviews with DG Budget and DG ADM can provide input on the financial and staff regulation and any limitations there may be.

[11] Parent DG MARE and recommendations from DG ADM/DG Budget

It would be important to have interview with relevant persons in DG MARE in order to better under stand the ideas of the DG.

In order to learn about differences and similarities to be brought into the considerations on the organisation of EMODnet it is proposed to make interviews with existing governance set ups (this is part of step two). It can be structures which carry out similar tasks and activities to the secretariat. It could also be structures that could potentially host the secretariat. Examples of target of such structure could be:

- Regulatory agencies (Ex. EEA, EMSA)
- Executive agencies (Ex. TEN-T EA, REA, EACI)
- JRC/JUs/JPIs
- GMES programme

8.4 Relations to other thematic areas

The governance part of the study (particularly step 1) will be partly defined by the outcome of the thematic parts of the study.

Thus the thematic parts of the study will provide input to the specific tasks of the secretariat.

8.5 Final outputs

The final outcome of step 1 will be a presentation of the tasks that the secretariat is expected to undertake (which will rely on the other parts of the assignment).

The outcome of step 2 will be a presentation of the different options to hosts such a secretariat.

Step 1 and 2 will be presented in accordance with the structured used when setting up and evaluating Agencies:

- Identification of the tasks of the secretariat and the justification for outsourcing.
- Requirement of coordination and checks.
- Human resources needs.
- Possible administrative costs and savings.

- Efficiency and flexibility of the secretariat model.
- Proximity to beneficiaries and stakeholder.
- Visibility of the Community.
- Know-how maintenance.

Step 3: identify the strength and weaknesses of each option as well as the potential monetary costs.

Step 3 of the governance exercise will be the assessment of strength and weaknesses of the selected option(s). The different options will be assessed finding the strengths and weaknesses of each option.

The monetary costs of the organisational set-up will be calculated given that suitable options for the secretariat becomes evident in step 1 and 2. It is proposed to identify the number of staff, staff costs, overheads of the organisation, and programming costs.

The costs will be presented and compared for each option for a time period (e.g. 7 years 2013-2020). A benchmark could be the costs of doing it inside the Commission e.g. in DG MARE and the presentation of costs could be made in the light of expected savings made in the Impact Assessment.

9 Project plan

This chapter first explains in more detail about our method for data collection. The analytical elements of the study are explained in more detail above. Thereafter, the chapter explains our organisation of the work including proposals for internal workshops and for meetings with the Commission.

9.1 Information gathering

Essentially, this study must collect and compile a wealth of primary data and information. To that end, a good plan for data collection is critical to the success of the project, i.e. to deliver conclusions and analyses by 6 December that rest on a broad, comprehensive, relevant and high-quality data set.

At the same time, we foresee that much of the data can be time consuming and difficult to collect for a variety of reasons:

- National authorities may be little aware of what they have actually invested (purchase, time and resources) in data for MSFD and not least: what they will invest. Further, identifying and/or constructing the data can be a difficult and time consuming task for the national authorities and they may therefore be reluctant to enter into the exercise of responding to the Study's needs.

- Obtaining information from private actors (licencees and operators) may be confronted with several difficulties: First, they may be reluctant to share such data on grounds of confidentiality and competition issues, and second, they may have outsourced much of the analytical part. That means that they will have contracted an external consultant to undertake this task, and hence the actual applicant or owner of a licence may be only little aware of the data costs involved in establishing the necessary and requested documentation.

- Obtaining data that can inform an assessment of benefits in terms of innovation contribution and in terms of reduced uncertainty will be difficult as this is not only hypothetical, but also quite demanding on the side of the

respondents. That means that respondents must be able to understand what the study needs and must be willing to think both in terms of likely future developments and in terms of past concrete examples where better data and reduced uncertainty provided good positive impacts.

To meet these challenges – that are further enhanced by the tight time schedule, we propose the following:

In regards to **information on current practices** and in regards to the costs and requirements concerning off shore wind mills, we will:

- Carry out a few informal investigations that can assist to scope and phrase our questions in a relevant and appropriate manner
- Draft a pilot questionnaire that will be discussed with the Commission and which will contain all the essential questions that we need to ask all those that we interview on the issue of current practises
- Test the agreed questionnaire through interviewing (face-to-face) the identified pan-European organisations.
- Consult with the pan-European organisations (during the above interview) to validate and add to our list of concrete interviewees
- Complete the questionnaire and organise bilateral interviews (face-to-face or by telephone. We will aim to organise face-to-face interviews in cases where at least three interviews can be carried out in the same country and at locations fairly close to one another)
- Carry out interviews and share the conclusions and lessons learned across the team through continued and timely reporting on each interview

In regards to the **information on off-shore wind mill farms** these interviews will be carried out with interviewees within this sector that are also interviewed on the above. There may be a need for a more intense dialog with a few (more) licence holders.

Thus, on the above issues we rely on interviews rather than a broad questionnaire. This we will discuss with the pan-European associations, but we strongly anticipate that a broad questionnaire survey would give us a very low response rate, and that some of the issues are complicated to answer to in a one-way questionnaire, whereas interviews are more suited for that. Yet, we will apply a detailed questionnaire as the basis for the interviews. This will also provide for the maximum comparability across responses.

As regards the **marine strategy framework directive** we envisage to consult with all national focal points. We will do this through a relatively simple questionnaire which we will submit to them all accompanied by the introduction letter from the Commission. We will allow them 3-4 weeks to respond thereby allowing time for follow-ups in due time prior to the meeting in the WG DIKE. We will make use of the opportunity given to us there to identify national focal points that we expect could contribute to a more elaborate calculation of the costs involved, and organise one or two joint meetings afterwards. Location would be dependent on what would be most practical. Thus, it may prove relevant to gather more involved parties in one single Member States to discuss the issue further, in which case the meeting will take place in the country concerned. It could also be envisaged that 3-4 national focal points would b interested in a joint session on the topic in which case the location could be Brussels or whatever would be most convenient.

As regards the benefit assessment (on gains from **reduced uncertainty** and on **innovation** gains), we expect that questionnaires to be used on the current practices; the windmills and presumably also on the MSFD, will address these issues in an open manner. Thus while carrying out the interviews, ideas and views on this will be sought identified. Given that this is a highly preparatory part of this, the main purpose of it is mainly to provide information that can feed into the concrete scoping and delineation of these assessments and that provide suggestions on key resource persons and knowledge centres that can be contacted at a later stage on the particular themes that are brought up.

A number of complementary data collection methods will be necessary in addressing these two study areas, since we anticipate difficulties in both identifying concrete examples and being able to accurately quantify the impacts. As a first exercise, we will undertake a documentary review in the search for new examples and ideas that can be discussed with stakeholders. We will then proceed to some stakeholder interviews in order to both develop on some of the examples identified and search for additional examples. We also propose a group workshop in order to validate and prioritise examples with a number of key stakeholders, which is intended to result in a shortlist of examples and benefits. Where necessary, a final round of targeted interviews will be undertaken so that shortlist examples can be developed into concrete case studies. Refer to section **Error! Reference source not found.** and 7.1 for additional detail regarding the approach to Innovation and Reduced uncertainty.

The exact plan for the information gathering is presented in the below section on organisation and timing.

9.2 Organisation and timing

We have organised the study so that each of the tasks is carried out by a team, and so that each time is headed by a responsible task manager who drives the process,

and who is responsible that the final output is delivered and that appropriate coordination takes place across the tasks.

Task	Contents	Responsible
Project management	Coordination and management including organisation of reporting, internal coordination across tasks, consolidate questionnaires, submission of questionnaires, providing frameworks for interview reporting, document library, quality assurance	Malene S Jespersen COWI A/S
Current practice and challenges	Question 1-5 (inclusive)	Michael Munk Sørensen COWI
Cost of data MSFD	Questions 6-8 (inclusive)	Michael Munk Sørensen COWI A/S
Cost of data off shore wind mill farms	Questions 9-10 (inclusive)	Erling Povlsen COWI A/S
Legal basis for initiative	Question 11	Dinne Smederup Hansen COWI A/S
Innovation from marine data	Question 12-15 (inclusive)	Christina Castella Ernst & Young
Reductions in uncertainty	Question 16	Christina Castella Ernst & Young
Options for governance of EMODnet	Questions 17-18 (inclusive)	Martin Rune Jensen COWI Belgium

Further, the allocation for each task is tentatively as described below. The total number of man-days has been distributed among the different tasks with a separate allocation made for what has been termed 'phase 2', i.e. the period after submission of the interim report and until the final report has been approved.

The last table here shows provides our detailed planning of the information gathering, and it covers the period up till delivery of the interim report on the 6th December.

Last, it should be underlined that the detailed planning described here applies to the period until 6 December where the interim report is due. The period thereafter, will be focused on the following activities:

Task	Inception	Data collection			Assessment	Reporting	Phase 2	Total
		Preparation	Interviews	Compilation				
Project management	12	7	4	5	13	8	7	56
Current practices and challenges	20	5	12	5	15	9	9	75
MSFD Costs	13	5	12	5	15	5	10	65
Off shore windmills	7	4	7	5	10	5	7	45
Legal options	7	2	2	3	15	10	6	45
Innovation	15	5	13	5	22	8	12	80
Uncertainty	10	5	13	5	25	5	7	70
Governance	6	2	2	2	25	5	8	50
Total	90	35	65	35	140	55	66	486

- Gap filling focusing on Member States and others that have not replied or replied only to a limited extent to our questions. We will continue to contact these to investigate whether more information can be offered. This we will do both in terms of inviting them again to contribute and in terms of requesting them to assess the validity of assumptions that we need to make in order to fill the gaps.

- Consideration and possible inclusion of feedback, comments and additional material provided by stakeholders. This will include also taking into account the replies to the public consultation which closes around the time when the interim report is delivered. We will not do this on a continuous basis. Rather, we plan to keep a continuously updated log of such inputs, and to revisit and revise the interim report on two occasions:

  - During the month before the presentation of the results to Marine Observation and Data Experts Group and Member States Expert Group for Maritime Policy. In order to provide a presentation of updated and relevant results, we will undertake a consolidated analysis of the incoming inputs from stakeholders (including the above gap-filling exercise) and their implications for the analyses and results of the interim report.

  - During the last month of the project (i.e. after the above presentations and until the final report is due) in order to also take into account comments and additional information received as a result of these presentations.

- Delivery of the final report on the 6 April which includes complete answers to all the questions; tables and diagrams suitable for presenting on web/as power points; list of references; and a 10-page executive summary targeted towards the non-expert reader). Also, the Access database will constitute part of the final deliverable. Attention will be paid to it that no personal data are included unless permission has been granted.

Start	End	Week no	Activities	Output	Contractual deliverables
			Draft questionnaire to private actors ready for COM comments	Questionnaire submitted to MARE	
			Draft questionnaires to authorities (MSFD and re-use of marine data) ready for COM comments	Questionnaire submitted to MARE	
07.09.2012	13.09.2012	1	Organisation of consultations of pilot MSFD authorities and of European organisations	Plan for agreed meetings	
			Submission of introduction mail with COM introduction letter to all national authorities to prepare them for the questionnaire		
14.09.2012	17.09.2012		Commission comments to questionnaires and submission of short introductory questionnaire	Comments from MARE	
18.09.2012	20.09.2012	2	Completion of questionnaires and list of questions Test of questionnaires vis-á-vis national authorities in two Member States First interviews on uncertainty/innovation	Final pilot questionnaires	
21.09.2012	22.09.2012		Submission of questionnaire on MSFD and on re-use of data with COM introduction letter		
			Test of questionnaires to private sector vis-à-vis European associations	Final questionnaires	
21.09.2112	27.09.2012		List of interviewees completed with inputs from European associations and organisation of interviews with private licence holders/applicants	Final list of interviewees	
			Organisation of consultations (questionnaire submission and organisation of interviews)	Plan for interviews	
02.10.2012	04.10.2012	3	Interviews	Interview reports	
05.10.2012	11.10.2012	5	Interviews/expert workshops	Interview reports	Progress report
12.10.2012	18.10.2012	6	Interviews/deadline for questionnaire replies	Interview reports	
19.10.2012	25.10.2012	7	Interviews/compilation of incoming replies	Interview reports	
26.10.2012	01.11.2012	8	Interviews/Expert work shops/focus group interviews/Participation in DIKE meeting	Interview/meeting reports Compilation of replies	
02.11.2012	08.11.2012	9	Interviews/Expert work shops/focus group interviews	Interview/meeting reports	Progress report
09.11.2012	15.11.2012	10	Preparation of report/final interviews/wrap up questions	Interviews/meeting reports	
16.11.2012	22.11.2012	11	Preparation of report/wrap up questions		
25.11.2012	29.11.2012	12	Preparation of report		Access database
30.11.2012	06.12.2012	13	Preparation of report		Intermediate report