# **Questionnaire:** DG MARE Study to support Impact Assessment on Marine Knowledge 2020

## Purpose

The purpose of this questionnaire is to collect information from private sector operators regarding data needs for planning, building and operating off shore wind farms as well as mapping the cost of obtaining the needed data. Moreover the questionnaire aims to identify how many wind farms are planned across Europe up till 2020.

In the context of the Marine Knowledge 2020 strategy DG MARE is undertaking a study to determine current practices in the Member States and in Croatia, Iceland and Norway regarding the re-use of marine data assembled by operators for undertaking licensed activities.

Your participation and contribution is very important and will be highly appreciated.

## Practical information

Please send the filled-out questionnaire to jtey@cowi.dk. If you fill out the questionnaire by hand, please scan it and use the same email address.

We would appreciate if you could return the questionnaire to us by 18 October 2012.

If you have any questions, don't hesitate to contact Ms Malene Sand Jespersen (msj@cowi.dk and +45 5640 1239) or Ms Julia Teyssen (jtey@cowi.dk and +45 5640 4266) by email or phone.

Question 1 – the planning phase

Aim: This question aims to gather information on the data needs and cost of obtaining the data in the planning phase. The planning phase includes site selection, licensing/EIA preparation for one wind farm.

Request: Which data is needed in the planning phase and what is the cost of obtaining this data? Please fill in Table 1 below.

The following types of data may also be required for the preparation of an EIA, Archaeology and other historical uses of the seabed, human activities (such as fishery, ship traffic, mines/ammunition etc). However these issues are not covered in this study as it focuses on marine data.

**Table 1. Planning phase including site selection and licensing/EIA preparation for one wind farm site.**

| **Which data is needed in the planning phase and what is the cost of obtaining this data?** | Data needed yes/No | Source: Own collection/private sector/public sector | Cost of collection /purchasing | Cost of assembling and processing of data | Total cost |
|---|---|---|---|---|---|
| **Meteorological data** such as:<br>Wind direction and force<br>Atmospheric pressure and<br>Air temperature | | | | | |
| **Oceanographic/Hydrographic data such as:**<br>Water level,<br>Salinity<br>Water temperature<br>Currents (direction and velocity)<br>Wave height<br>Wave amplitude and<br>Wave direction | | | | | |
| **Water quality data such as:**<br>Suspended sediment concentrations (SSCs)<br>Secchi depth<br>Nutrients, chlorophyll<br>Hazardous substances<br>Oxygen conditions | | | | | |
| **Bathymetry data** | | | | | |
| **Data from detailed geophysical/geotechnical survey such as**<br>Echosounder data<br>Side scan sonar data<br>Vibrocore data<br>Sub bottom profiler data<br>Magnetometer data | | | | | |
| **Sediment and geological data such as**<br>Composition of sediments (geochemical properties, grain size distribution, organic content loss on ignition)<br>Contaminants in sediment | | | | | |

| **Which data is needed in the planning phase and what is the cost of obtaining this data?** | Data needed yes/No | Source: Own collection/private sector/public sector | Cost of collection /purchasing | Cost of assembling and processing of data | Total cost |
|---|---|---|---|---|---|
| (nutrients, heavy metals, other hazardous substances) | | | | | |
| **Plankton** such as<br>Abundance/biomass of different species | | | | | |
| **Benthic vegetation** such as<br>Abundance /biomass of different species<br>Coverage of macroalgae<br>Coverage of seagrasses | | | | | |
| **Benthic fauna such as**<br>Abundance of different species of infauna<br>Coverage/abundance of different species of epifauna on hard substrates | | | | | |
| **Fish data such as**:<br>Species composition<br>Spawning grounds<br>Nursery grounds<br>Feeding grounds<br>Overwintering areas<br>Migration routes | | | | | |
| **Birds data such as**<br>Abundance of different species of birds<br>Bird migration<br>Feeding areas<br>Breeding areas<br>Moulting areas | | | | | |
| **Marine Mammal data such as**<br>Abundance of different species in the area<br>Routes and movements in/around or through the site<br>Relative importance of the site to each species<br>Specific uses of the site including temporal and spatial use. For example: haul out and pupping areas for seals and feeding and breeding grounds for seals and cetaceans | | | | | |
| **Other data needed: please specify** | | | | | |
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Question 2 – the design and building phase

Aim: This question aims to gather information on the data needs and cost of obtaining the data in the design and building phase.

Request: Which data is needed in the design and building phase including data for any monitoring activities pre-and during construction stipulated in the conditions for licensing and what is the cost of obtaining this data? Please fill in Table 2 below.

**Table 2. Detailed design and building phase including any monitoring activities pre-and during construction stipulated in the conditions for licensing**

| **Which data is needed in the design and building phase and what is the cost of obtaining this data?** | Data needed yes/No | Source: Own collection/private sector/public sector | Cost of collection /purchasing | Cost of assembling and processing of data | Total cost |
|---|---|---|---|---|---|
| **Meteorological data** such as:<br>Wind direction and force<br>Atmospheric pressure and<br>Air temperature | | | | | |
| **Oceanographic/Hydrographic data such as:**<br>Water level,<br>Salinity<br>Water temperature<br>Currents (direction and velocity)<br>Wave height<br>Wave amplitude and<br>Wave direction | | | | | |
| **Water quality data such as:**<br>Suspended sediment concentrations (SSCs)<br>Secchi depth<br>Nutrients, chlorophyll<br>Hazardous substances<br>Oxygen conditions | | | | | |
| **Bathymetry data** | | | | | |
| **Data from detailed geophysical/geotechnical survey such as**<br>Echosounder data<br>Side scan sonar data<br>Vibrocore data<br>Sub bottom profiler data<br>Magnetometer data | | | | | |
| **Sediment and geological data such as**<br>Composition of sediments (geochemical properties, grain size distribution, organic content loss on ignition)<br>Contaminants in sediment (nutrients, heavy metals, other hazardous substances) | | | | | |
| **Plankton** such as<br>Abundance/biomass of different species | | | | | |
| **Benthic vegetation** such as<br>Abundance /biomass of different species | | | | | |

| **Which data is needed in the design and building phase and what is the cost of obtaining this data?** | Data needed yes/No | Source: Own collection/private sector/public sector | Cost of collection /purchasing | Cost of assembling and processing of data | Total cost |
|---|---|---|---|---|---|
| Coverage of macroalgae<br>Coverage of seagrasses | | | | | |
| **Benthic fauna such as**<br>Abundance of different species of infauna<br>Coverage/abundance of different species of epifauna on hard substrates | | | | | |
| **Fish data such as**:<br>Species composition<br>Spawning grounds<br>Nursery grounds<br>Feeding grounds<br>Overwintering areas<br>Migration routes | | | | | |
| **Birds data such as**<br>Abundance of different species of birds<br>Bird migration<br>Feeding areas<br>Breeding areas<br>Moulting areas | | | | | |
| **Marine Mammal data such as**<br>Abundance of different species in the area<br>Routes and movements in/around or through the site<br>Relative importance of the site to each species<br>Specific uses of the site including temporal and spatial use. For example: haul out and pupping areas for seals and feeding and breeding grounds for seals and cetaceans | | | | | |
| **Other data needed: please specify** | | | | | |
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Question 3 – the operation phase

Aim: This question aims to gather information on the data needs and cost of obtaining the data in the operation phase.

Request: Which data is needed in the operation phase **including any post construction monitoring activities stipulated in the conditions for licensing** and what is the cost of obtaining this data? Please fill in Table 3 below.

**Table 3. Operation phase including any post construction monitoring activities stipulated in the conditions for licensing**

| **Which data is needed in the operation phase and what is the cost of obtaining this data?** | Data needed yes/No | Source: Own collection/private sector/public sector | Cost of collection /purchasing | Cost of assembling and processing of data | Total cost |
|---|---|---|---|---|---|
| **Meteorological data** such as:<br>Wind direction and force<br>Atmospheric pressure and<br>Air temperature | | | | | |
| **Oceanographic/Hydrographic data such as:**<br>Water level,<br>Salinity<br>Water temperature<br>Currents (direction and velocity)<br>Wave height<br>Wave amplitude and<br>Wave direction | | | | | |
| **Water quality data such as:**<br>Suspended sediment concentrations (SSCs)<br>Secchi depth<br>Nutrients, chlorophyll<br>Hazardous substances<br>Oxygen conditions | | | | | |
| **Bathymetry data** | | | | | |
| **Data from detailed geophysical/geotechnical survey such as**<br>Echosounder data<br>Side scan sonar data<br>Vibrocore data<br>Sub bottom profiler data<br>Magnetometer data | | | | | |
| **Sediment and geological data such as**<br>Composition of sediments (geochemical properties, grain size distribution, organic content loss on ignition)<br>Contaminants in sediment (nutrients, heavy metals, other hazardous substances) | | | | | |
| **Plankton** such as<br>Abundance/biomass of different species | | | | | |
| **Benthic vegetation** such as<br>Abundance /biomass of different species<br>Coverage of macroalgae<br>Coverage of seagrasses | | | | | |
| **Benthic fauna such as**<br>Abundance of different species of infauna<br>Coverage/abundance of different species of epifauna on hard substrates | | | | | |
| **Fish data such as**:<br>Species composition | | | | | |

| **Which data is needed in the operation phase and what is the cost of obtaining this data?** | Data needed yes/No | Source: Own collection/private sector/public sector | Cost of collection /purchasing | Cost of assembling and processing of data | Total cost |
|---|---|---|---|---|---|
| Spawning grounds<br>Nursery grounds<br>Feeding grounds<br>Overwintering areas<br>Migration routes | | | | | |
| **Birds data such as**<br>Abundance of different species of birds<br>Bird migration<br>Feeding areas<br>Breeding areas<br>Moulting areas | | | | | |
| **Marine Mammal data such as**<br>Abundance of different species in the area<br>Routes and movements in/around or through the site<br>Relative importance of the site to each species<br>Specific uses of the site including temporal and spatial use. For example: haul out and pupping areas for seals and feeding and breeding grounds for seals and cetaceans | | | | | |
| **Other data needed: please specify** | | | | | |
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Question 4 - Planned off shore wind farms up to 2020

Aim: mapping the number of wind farms planned from 2012 until 2020. This covers wind farms at the planning stage hence farms where operation has not yet started.

Request: please list the wind farms planned until 2020. Please fill in Table 4 below.

**Table 4. Planned wind farms until 2020**

| **No. of wind farms planned** | Geography (country and region) | Stage of planning Scoping/licensing/design/building | Expected number of wind mills | Capacity MHz | Expected year of operation |
|---|---|---|---|---|---|
| | | | | | |
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Question 5

If marine data were more accessible, interoperable, affordable, and/or more abundant, what opportunities would there be in encouraging innovation in the offshore wind sector?

Request: Please indicate in the following table possible areas of innovation from improved access to marine data.
For each opportunity please provide:

- A description of the opportunity
- The types of marine data that would specifically promote the innovation opportunity
- The estimated impacts (in terms of economic, environmental, social benefits)
- Any assumptions used to determine impacts

| Potential areas for innovation | Types of marine data | Estimated impacts | Assumptions |
|---|---|---|---|
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Question 6

If there were better marine knowledge regarding the behaviour of the sea and the state of the seabed and marine life (thereby reducing uncertainty), what could be some examples of potential economic benefits to the offshore wind industry?
For each example of economic benefits, please provide:

- A description of the economic benefit
- The impact (in economic terms) of the **existing** degree of uncertainty
- The types of data/information that would assist in **reducing** this degree of uncertainty
- Any assumptions made in determining the economic benefits

| Description of economic benefit | Impact of existing uncertainty | Types of data required | Assumptions |
|---|---|---|---|
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