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**European Marine Observation and Data Network  
IMPACT ASSESSMENT  
Executive Summary**

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# European Marine Observation and Data Network IMPACT ASSESSMENT - executive summary

## 1. PROBLEM DEFINITION

### 1.1. Background

Improving marine knowledge has always been a primary objective of the EU's integrated maritime policy which is itself a strategic objective of the Commission's 2005-2009 workplan<sup>1</sup>. Preparatory actions have begun in order to assess the technical options and likely cost of setting up a European Marine Observation and Data Network (EMODnet).

With input from an Expert Group, a roadmap was issued in April 2009 setting out broad principles and a timetable. Simultaneously, a public consultation on EMODnet was launched<sup>2</sup>. 300 stakeholders replied: including private companies, public authorities, international organisations and the research community.

A Regulation to fund an underpinning of the integrated maritime policy in the years 2011-2013, to be proposed by the Commission in 2010, incorporates marine knowledge objectives.

### 1.2. Why marine data is collected and how much it costs

Private companies need marine data in order to exploit resources more efficiently. National and local authorities need them to protect their coastlines or to assess compliance with environmental standards. Scientists need them to increase knowledge of ocean circulation and marine ecosystems.

Accordingly all coastal states collect and process marine data. Europe's current annual spending on sea and ocean data gathering and monitoring is upwards of €1 billion<sup>3</sup> for public bodies and about €3 billion<sup>3</sup> for private ones.

### 1.3. Difficulties in assembling data

Applications of marine data cannot rely on data from one source collected for a single purpose. Frequently data from waters of more than one coastal state are required.

Assembling a coherent picture from the large number of organisations holding and owning marine data – more than 50 in each of the major coastal states<sup>4</sup> – is hard

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<sup>1</sup> Strategic Objectives 2005 – 2009 Europe 2010: A Partnership for European Renewal Prosperity, Solidarity and Security 26.1.2005 COM(2005) 12 final

<sup>2</sup> Commission Staff Working Document Marine Data Infrastructure Outcome of Public Consultation Brussels, 22.1.2010 SEC(2010)73 final

<sup>3</sup> This figure is justified in the full impact assessment

<sup>4</sup> Legal Aspects of Marine Environmental Data Framework Service Contract, No. FISH/2006/09 – LOT2, final report, October 2008

work. From the user's point of view, there are seven major barriers: (1) discovery – not being able to find them (2) access – not having permission to access them (3) use – restrictions imposed on end-use (4) coherence – difficulty combining data (5) cost – beyond the budget of the user (6) quality – precision and accuracy unknown (7) quantity – spatial and temporal resolution not sufficient for the purpose. Nearly all stakeholders in the 2009 survey<sup>2</sup> reported that each of these seven barriers constituted an impediment to their working efficiency.

A fragmented, as opposed to an integrated, observing system adds at least 25% to the costs of those who deliver products and services<sup>5</sup>. This does not include the missed opportunities of those who, faced with an impenetrable data infrastructure, have simply not chosen to develop new services.

#### **1.4. Lack of Competition and Innovation**

A public or private body currently has difficulty delivering a product or service that is based on marine data unless it has itself collected the data or enjoys a strong relationship with the organisation that did. This reduces the number of bodies that are potentially able to deliver the product or service and reduces the scope for innovation.

#### **1.5. 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<sup>6</sup> suggests that an expenditure of €70 million on marine mapping in Irish waters would reduce uncertainty to industry and result in benefits of €15 million to the fisheries, aquaculture, biodiversity, renewable energy, energy exploration and aggregate industries. A 25% reduction in uncertainty in future sea-level-rise could reduce Europe's annual sea-protection costs by some €100 million per year. Terrestrial climate depends on ocean circulation so even terrestrial industries would gain from better marine data; not a sufficient condition for better seasonal forecasts but a necessary one.

#### **1.6. Drivers**

Even though organisations want other organisations to make their data available, they can be reluctant to open up their own because they can derive a competitive advantage through preferential access to the data when delivering products derived from these data.

#### **1.7. Efforts to resolve the situation**

Legislative measures have been adopted by the EU that oblige administrations to make their data more available. Measures such as the INSPIRE Directive<sup>7</sup>, the

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<sup>5</sup> The Business Case for Improving NOAA's Management and Integration of Ocean and Coastal Data, Zdenka Willis, Director, NOAA IOOS Program January 2009

<sup>6</sup> Price Waterhouse Cooper, INFOMAR Marine Mapping Survey Options Appraisal Report June 2008

<sup>7</sup> Directive 2007/2/EC establishing an Infrastructure for Spatial Information in the European Community.

Environmental Information Directive<sup>8</sup>, and the Public Sector Information Directive<sup>9</sup> introduce obligations for public authorities.

The EU provides financial support to the collection of fisheries data through the Data Collection Framework. The Global Monitoring for Environment and Security (GMES)<sup>10</sup> aims to provide a marine core service based on satellite data. Marine data catalogues that help facilitate discovery of data and quality procedures for measurement laboratories have been developed through successive EU research programmes. Member States are beginning to put their marine data infrastructures in order.

## **2. EU ADDED VALUE**

Assembling sea-basin pictures requires collaboration across border and across disciplines. Fewer than 3% of the 300 professionals consulted disagreed with the statement that "without sustainable support from the EU it will be extremely difficult to build up a sustainable European infrastructure."

## **3. OBJECTIVES**

We can distinguish three specific aims:

1. reduce operational costs and delays for those who use marine data and therefore:
  - (a) help private industry compete in the global economy;
  - (b) improve the quality of public decision-making at all levels and
  - (c) strengthen marine scientific research
2. increase competition and innovation amongst users of marine data by widening and accelerating access to quality-checked coherent marine data;
3. reduce uncertainty in knowledge of the oceans and the seas and so provide a sounder basis for managing inevitable future changes.

## **4. POLICY OPTIONS**

### **4.1. Future Evolution – The do-nothing option**

Current rules regarding access and use of marine data are generally complied with<sup>11</sup>. However they do not automatically apply to public bodies not enjoying a public authority such as universities. Neither do they override intellectual property rights or

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<sup>8</sup> 2003/4/EC

<sup>9</sup> 2003/98/EC

<sup>10</sup> Global Monitoring for Environment and Security (GMES): we care for a safer planet Brussels, 12.11.2008, COM(2008) 748 final

<sup>11</sup> Legal aspects of marine environmental data Framework Service Contract, No. FISH/2006/09 – LOT2, Final Report – October 2008

the obligation of some national agencies to charge cost-recovery prices. EU research or territorial cooperation projects are of a finite duration. When the projects stop, catalogues are no longer maintained and partnerships dissolve.

Without additional EU action the present infrastructure will continue to penalise users, discourage innovation and limit the EU's ability to prepare for a changing marine system.

## **4.2. Other Options**

### *4.2.1. What should the EU do?*

Processing marine data into knowledge and information requires three broad steps: (A) observation and collection (B) assembling the data to provide complete coherent, quality-checked data over marine basins (C) applying the data to provide services or indicators – for instance of coastal erosion, fish population or tsunami risk.

However it would be extremely hard to make a case for the EU to support data collection without knowing what is being collected already, where the gaps are and where the greatest user demand is. Neither would it be possible to develop indicators or added value products without assembling and processing the data that make up these indicators. Options for EU action are therefore:

1. ASSEMBLING the data to provide access to coherent, quality-checked, securely-maintained data over complete marine basins at marginal cost.
2. COLLECTION - the same as option 1 but also supporting observation systems and the collection of data – automatically through permanently moored or mobile instruments or through samples collected at sea and analysed in the laboratory.
3. APPLICATION - the same as option 1 but also applying the data to provide indicators – for instance of environmental quality, coastal erosion, fish population or tsunami risk.

The aim of EMODnet is to provide a basic infrastructure that benefits a variety of applications. Processing the data into customer-related applications products should, on the other hand, be a commercial and competitive business, where public and private bodies can obtain data from the best sources and merge and process them for specialist use. Option 3 "application" has therefore been discarded.

### *4.2.2. What is the most appropriate legal instrument?*

The most important decision to be taken in choosing a legal instrument is the sharing of the burden between the EU and national level. This can be done through a Regulation, a Directive or a Recommendation.

### *4.2.3. How should this support be managed?*

EMODnet should bind Europe's institutions together into a sustainable framework for the benefit of those who use the data. Any funding should flow to these institutions to enable them to do so. Whilst there are an almost infinite number of options for administering this, two broad options can be distinguished.

1. carry on as before in specific areas such as fisheries or space and through limited duration research projects or ad-hoc regulatory arrangements.
2. set up a secretariat – either an existing organisation or a new body - to administer the Network.

## **5. ASSESSMENT OF IMPACTS**

### **5.1. What should EU do?**

#### *5.1.1. Operational Costs*

Option 1, "assembling", would reduce the labour involved in discovering and accessing data. Where the cost of data is an issue, the adoption of marginal cost rather than cost recovery would also reduce costs. Option 2 "collection" might reduce the need for additional observations to meet the required precision.

#### *5.1.2. Competition*

Option 1, "assembling", will increase competition since those who collect data will no longer occupy such a favoured position in delivering these products. It will allow the growth of innovative new services. Option 2 "collection" will not bring any significant competition benefits.

#### *5.1.3. Uncertainty*

A better measurement infrastructure will reduce uncertainty in the future behaviour of the oceans. This will allow more certainty by business and public authority in planning for the future.

Better access to existing data will reduce uncertainties. However more data is clearly needed. Option 2 "collection" will therefore have additional benefits over and above those of option 1 "assembling". Since it is hard to adapt to an unknown future, and since the oceans control the terrestrial climate, a better marine observation system is probably the most effective contribution that the EU can make in helping Europe adapt to climate change.

#### *5.1.4. Implementation costs*

Operating a new infrastructure will incur new costs that will need to be justified by the net benefits.

Initial estimates for option 1 "assembling" indicate a cost of €20 million a year for ten years and €1 million afterwards for maintenance and upgrading. The cost may be offset by a reduction in funding from the Community's research budget for projects aiming to show the feasibility of a marine data infrastructure<sup>12</sup>.

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<sup>12</sup> SEADATANET etc



The cost of option 2, "collection", depends on the ambition. The output of monitoring programmes is often more of a longer term benefit to Europe than a solution to an immediate need for the Member State concerned. The Continuous Plankton Recorder, which has provided unrivalled observations of the ecology and biogeography of plankton in the Atlantic costs €1.8 million per year. €3 million per year would support the European component (€8 million per year) of Euro-argo - a world wide in situ global ocean observing system, based on autonomous profiling floats. Other expenditure would be more expensive. Establishing a European Multidisciplinary Seafloor Observatory would cost about €240 million with operational costs of €32 million per year. It has been estimated that developing a complete multibeam sonar mapping of EU Member States' waters would cost approximately €50 million per year for the next 20 years. Thus the additional cost of option 2 compared to option 1 would be €10 to €90 million per year.

*Table 1 Estimates of annual costs and benefits of n operational European Marine Observation and Data Network*

| <b>IMPACT</b>                  | <b>Cost or benefit</b> | <b>Option 1 support data processing and assembly (annual)</b> | <b>Option 2 support data collection (additional to option 1)</b> |
|--------------------------------|------------------------|---|--|
| Reduced operational costs      | benefit                | €300 million  |  |
| Increased competition          | benefit                | €60 million -<br>€200 million                                 |  |
| Reduced uncertainty            | benefit                |   | €220 million   |
| Increased implementation costs | Cost                   | €20 million <sup>13</sup>                                     | €10million-<br>€90million  |

Before making a final decision as to which option to pursue, more information is needed, The Commission is proposing a new financial instrument for maritime policy of which €7.5 million per annum would be earmarked for marine knowledge in the period 2011-2013. This will not only provide the basis for a more informed decision but will, in itself, contribute to the objectives of the marine knowledge initiative.

#### *5.1.5. Subsidiarity*

As indicated in section 2 the transnational nature of the issue provides a strong justification for action at an EU level. This is clearly valid for option 1 "assembly".

For option 2 "collecting data" the issue is more complex. Any EU support should not discourage Member States from fulfilling their moral or legal obligations to collect data. However there are precedents. The EU already provides some €40 million for

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<sup>13</sup> Assuming a 10 year program to construct an EMODNET with resolution 10 times finer than the present ur-EMODNET.

the collection of fisheries data and an average €44 million<sup>14</sup> per year for satellite data.

The subsidiarity case for option 2 is strongest when the additional monitoring is to take place outside Member States waters. However this is not a necessary condition. Marine observations do not only benefit the State in whose waters the observations are made.

#### 5.1.6. *Proportionality*

For both options the EU actions would add value to what Member States are doing with additional resources of between 2 and 5% of what Member States are spending already. These resources would enable the Member States to achieve their objectives more effectively and are thus commensurate. Data collected and not exploited are an opportunity lost.

### 5.2. **What is the appropriate legal instrument?**

Defining the appropriate roles for bodies of the Network will require the definition of mandatory roles. So recommendations and opinions are not appropriate. The transposition into national law required by Directives might result in greater administrative burden than for Regulations. Enabling measures defining expenditure programmes or participation by agencies at a European level require a Regulation.

### 5.3. **How should this support be managed?**

Carrying on as before would, by definition, have zero impact in solving the problems identified.

The public consultation identified a number of bodies capable of hosting a secretariat but no frontrunner. A call for tender would therefore be the most appropriate way of identifying the most appropriate solution.

## 6. **MONITORING AND EVALUATION**

Based on the principles that the indicators should be quantitative and not impose a heavy burden for collection of data, the following are proposed.

|                     |   |
|---------------------|---|
| Resource indicators | The resources used to run the Network broken down into:<br>1.cost of Commission staff<br>cost of secretariat<br>resources provided to assemble and process data |
|---------------------|---|

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<sup>14</sup> Through GMES and assuming that about 40% is for sea and ocean observation (DG ENTR private communication).

Output indicators                      number of parameters where complete picture of European observation effort is available  
number of parameters made available for downloading over complete sea-basins

Impact indicators                      (to measure improvement in operational efficiency)  
number of private companies downloading data through EMODnet  
number of public administrations downloading data from EMODnet  
number of papers on marine science published in "Nature" and "Science" led by European authors  
  
(to measure increased competition) average number of bidders for Commission service contracts requiring marine data  
  
(to measure reduction in uncertainty) range of values for sea-level rise in 50 years time used in assessment of UK and Netherlands sea-defence strategies.

The Marine Observation and Data Expert Group will continue to advise the Commission on the effectiveness of EMODnet and highlight any shortcomings that need to be addressed.