

***Summary Statement from the Marine Board in
response to the European Commission's Green Paper
on a future European Maritime Policy***

Marine Board Contact details:

Dr Niamh Connolly

Head of Unit

ESF Marine Board

European Science Foundation

1 quai Lezay Marnésia

67080 Strasbourg cedex

France

Direct line: +33 3 88 76 71 44

Fax: +33 3 88 25 19 54

www.esf.org/marineboard

21 May 2007

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Foreword

The Marine Board (representing 28 European Marine Research Institutes and Funding Agencies from 20 countries – see Annex 1) welcomes the European Commission's proposal to develop an integrated European Maritime Policy and wishes to thank the European Commission for the opportunity to comment on the Green Paper.

The Marine Board recognises that a European Maritime Policy will be a very powerful mechanism for promoting and sustaining marine science and technology in support of European economic development. It particularly acknowledges the collaboration and consensus achieved by the Commission Services' DGs in the development of the Maritime Policy. Given the statement that the Maritime Policy should be supported by excellence in marine scientific research, and its need to be open and transparent, it is evident that collective action is now required from the marine research community. This should be developed in parallel with appropriate cross-cutting mechanisms to coordinate marine research across the themes and programmes in the seventh Framework Programme (FP7).

In addressing the marine science and technology challenges posed by the Green Paper, the Marine Board has consulted its Member Organisations, some of whom have submitted their own responses. The following is a synthesis of responses received and the discussions deliberated upon at Marine Board level, in addition to the research perspectives already summarised in the Marine Board's November 2006 publication: *Navigating the Future III*.

The Marine Board emphasises the need for a European Marine Research Strategy to support an integrated European Maritime Policy. Such a research strategy would identify priority challenges and opportunities for marine research, offer guidance on technology transfer to industry, promote the sustainable management of marine resources and coastal and ocean areas (both regionally and globally), enhance cooperation and partnership between Community and Member State R&D programmes, and advise on specialist marine scientific infrastructure needs. The strategy should be founded on science to shape knowledge and ideas necessary to answer the challenges of the future. The Marine Board confirms its broad support for the research concepts outlined in the Commission's Background Paper: *Marine Related Research and the Future European Maritime Policy* (Background Paper No.8, November 2006).

In its response to the Green Paper, the Marine Board addresses the questions of relevance to its mandate and activities, focusing on marine research matters. The following is a summary of the Marine Board's position. It outlines 16 priority perspectives: 9 strategic (4 for immediate action), 7 thematic (2 for immediate action). A more detailed response is available, on request.

Lars Horn
Chairman Marine Board
May 21 2007
(nc/21/05/07)

Marine Research and the future European Maritime Policy

The Marine Board welcomes the intention that the future European Maritime Policy will be, as declared by Commissioner Borg:

- all embracing, aimed at developing a dynamic maritime economy;
- based on the principles of sustainable development advocated in the Gothenburg Agenda (i.e. “*in harmony with the marine environment*”);
- based on sound marine scientific research and technology, thus supporting evidence-based policy making and furthering the knowledge-economy (Lisbon Agenda).
- taking account of the human communities that derive their livelihood and quality of life from proximity to and use of marine resources.

The marine science and technology community is poised to play a significant active role in achieving the vision for Europe as outlined in the Green Paper and in supporting the various existing policy initiatives agreed by EU Member States (e.g. Lisbon Agenda, Barcelona Convention, Gothenburg Agenda, Marine Thematic Strategy etc.).

European Research Area - ERA

The European Research Area (ERA), combining the internal market for researchers, effective European-level partnerships in national and regional activities, programmes and policies, and initiatives implemented at the European level, is a key reference point for research policy in Europe; the marine science and technology sector is a major contributor to the effective establishment and operation of the European Research Area (ERA). In this context, the importance of the parallel development of a pan-European marine research strategy to support the Maritime Policy must be emphasised. **The Marine Board supports the placing of science and technology at the core of the Maritime Policy, developing a knowledge-based approach in traditional and emerging sectors.** Securing effective leadership in marine science and technology which would engage in regular dialogue with Member State and EU level policy makers is crucial to the development of the marine component of the ERA. Furthermore, effective links have to be made with research initiatives funded through the European Research Council (ERC), and with the proposed “knowledge innovation communities” to be created by the European Institute of Technology (EIT).

The Marine Board recognises that the marine research community must rise to the challenge to build a viable European marine research area, which would be properly embedded within the overall European Research Area. Effective delivery of this objective will require enhanced partnerships of various configurations: partnerships between the Commission and the Member States at both the strategic and funding levels; partnerships between academia, public research institutes and the private sector; and partnerships between existing pan-European organisations (e.g. CIESM, EFARO, EuroGOOS, ICES, Marine Board, Waterborne TP etc).

In developing the marine science and technology component of an integrated European Maritime Policy, the Marine Board makes the following recommendations, categorised as (i) Policy and Management Initiatives (green) or (ii) Research Priorities (blue):

Policy and Management Initiatives

1. Elaboration of a European Marine Research Strategy*

The Maritime Policy will require an associated European Marine Research Strategy, to inform the development of knowledge in support of the Maritime Policy, the Marine (Environment) Thematic Strategy and the ERA. **The Marine Board supports the development of a long-term marine vision and research strategy (for up to 20 years; with periodic review, e.g. quinquennial).**

The Research Strategy should be initiated in partnership between the Commission Services and the Member States. It should be developed through consultation with the research community, relevant pan-European organisations, and intergovernmental organisations, to identify priorities (e.g. climate change, renewable ocean energy, blue-biotechnology, etc.) beyond the seven year horizon of the current Framework Programme, and beyond national and sectoral priorities. The Marine Research Strategy would necessarily include a balance of economic, social and environmental objectives. It would also address the adequate availability and continued supply of competent researchers, recognising the need for a high level of mobility between disciplines and countries.

The recently published *Navigating the Future-III* (Marine Board Position Paper 8, November 2006) summarises European marine research priorities and provides a foundation from which to elaborate the future marine research strategy.

The Marine Board recommends that it is timely to revisit the Galway Declaration¹, and to develop a cohesive vision resulting in the adoption of a new declaration on marine science and technology - endorsed by the research community - in support of economic development, and that it is necessary to create support mechanisms to implement the declaration's objectives.

2. Widening the International Dimension of the Maritime Policy

The international dimension of the Maritime Policy is particularly relevant at the regional level, with reference to collaboration with non-EU countries bordering European Seas (many of which are developing countries, e.g. those bordering the Mediterranean and Black Seas). In its commitment to addressing global challenges, **the EU must engage these countries in the process of the Maritime Policy as early as possible, to ensure their partnership in the implementation process. Transfer of experience at the level of regional seas for example from the Baltic and Atlantic to the Mediterranean and Black Seas and vice-versa should be a priority.**

3. Enhancing Partnerships and Synergies: between existing organisations of marine stakeholders

Willing and constructive interactions are extant between existing nodes of expertise involved in research, monitoring, infrastructure management, and policy development, whether through pan-European inter-agency networks (e.g. EFARO, EuroGOOS, Marine Board etc.) or inter-governmental organisations (e.g. ICES, CIESM). The challenge for these organisations is to expand the scale of their activities to ensure

¹ The Galway Declaration 2004 (developed at the EurOceans 2004 Conference) emphasised the importance of marine science and technology in supporting sustainable economic, social and environmental development.

* denotes for immediate action.

sustained and long-term action in support of the Maritime Policy. They have a collective responsibility to work together, combining the resources, facilities and expertise of their Member Organisations, towards informing strategy and shaping evidenced-based policy for future generations.

The inherent complementary nature of these organisations should be further harnessed to provide Europe with knowledge-based inter-disciplinary advice. **Building the marine component of the ERA should be elaborated on the basis of strengthening and making more effective the partnerships between existing organisations, rather than necessarily creating new ones.** Providing a flexible and reactive platform for enhanced partnerships would promote the timely delivery of consolidated strategic advice to the Commission Services, reducing fragmentation and duplication, resulting in added value, while supporting subsidiarity and avoiding risks associated with centralisation. **Mechanisms to increase dialogue between the Commission Services and external nodes of advice should be elaborated.**

Developing a platform for enhanced partnership may require adaptation of institutional structures and methods of collaboration, for example through the establishment of a common point of interaction for secretariats of pan-European organisations. In this context it is noteworthy that the Secretariats of the Marine Board and EFARO will co-locate at new offices, in Ostend, from autumn 2007.

Such a partnership platform should also activate key events, such as an annual conference on marine science and technology, including maritime affairs, to identify the emerging research needs of the Maritime Policy, and support interdisciplinary interaction between the research community, industry and policy makers. The resultant enhanced partnership between industry and public funding agencies should ensure elaboration of research efforts beyond the traditional academic focus, as well as enhanced synergy between the development of Member States' research programmes and Community funding. The platform would also facilitate interactions with the Commission Services and other organs of the EU, national governments, industry etc.

The proposed knowledge and innovation communities of the European Institute of Technology (EIT) will also offer a framework within which to create such partnerships, and must be engaged with.

4. Research Links: with policy makers and industry - securing uptake and impact
Outputs from the marine research community should be more readily available for use by policy makers. An effective channel for focussed dialogue and knowledge-sharing between scientists and policy makers (turning data into information and knowledge), is necessary to ensure impact, uptake and enhanced use of scientific results, thus accelerating exploitation of research towards development of new products and services, and advancing knowledge for improved governance and societal benefit.

Increased interactions between the public research community and industrial research are necessary, both with maritime industries and with technology industries, in support of science and innovation. Private companies should be mobilised to access instruments / schemes in FP7 (e.g. European Technology Platforms). The establishment of knowledge transfer networks, to facilitate two-way flow (knowledge and expectations) between academia, industry and government agencies may be once such mechanism.

5. Cross-cutting Interactions in FP7 - The Way Forward*

The coordination of marine related research within the Commission Services, (between the different units within DG RTD and between the relevant DGs, including RTD, FMA, ENV, TREN, and ENTR) is of paramount importance. The development of the Maritime Policy in tandem with FP7, and the fact that the new funding period of the structural funds covers the FP7 period (2007-2013), should be used to promote enhanced synergy between all three. **Mechanisms should be developed to maintain the inter-DG collaboration involved in developing Maritime Policy Green Paper.**

The Marine Board emphasises that the cross-cutting prioritisation secured for marine science and technology throughout the themes in FP7 will require development of effective operational mechanisms for implementation. Cross-cutting initiatives will rely heavily on external advice to ensure that topics addressed are relevant and targeted at improved capacity building, emphasising the importance of partnerships between nodes of external advice. **Mechanisms such as those discussed at the Seminar on Marine Sciences and Technologies in FP7 (Brussels, 16th January 2007), to improve dialogue between the Commission Services, FP7 Expert Advisory Groups and the Member State representatives on the FP7 Programme Committees should be actively pursued.** It will be necessary to monitor the effectiveness of cross-cutting initiatives, through regular review assessments and annual audits of marine research across all FP7 Themes (10) and Specific Programmes (4) (as well as JRC), and adapt future calls, where necessary.

6. Enhanced Interaction and Partnerships between Member State programmes and Community funding

In recognition of the needs and expectations of the Maritime Policy, and working towards coherence between national and regional programmes and research priorities of European relevance, it is increasingly important to develop a partnership approach to programmes funded by FP7 and those funded nationally². To this end, the use of ERA-NETs, Technology Platforms and Article 169 is pertinent. It is incumbent on Member State and Community research policy makers to work towards reduced fragmentation (while retaining diversity) and enhanced coherence between initiatives.

Enhanced use of ERA-NETs and European Technology Platforms (schemes):

- **Mechanisms towards enhancing the dialogue and collaboration between marine-related ERA-NETs are necessary and should be facilitated by the Commission Services,** towards ensuring that strategies are targeted directly, and improved cohesion between national scheduling of budgets and projects.
- **Increased dialogue with the European Technology Platforms and stakeholder groups to facilitate greater awareness of industry needs,** beyond the academic focus of priority setting and delivery of research output.
- Both schemes should work together in contributing to the proposed research strategy. **Mechanisms should be elaborated to ensure cohesion between research strategies and programmes elaborated by ERA-NETs and European Technology Platforms, and those elaborated by FP7.**

² 83% of Europeans consider that there should be more coordination of research activities between Member States of the European Union. Eurobarometer: Europeans, Science and Technology, June 2005.

* denotes for immediate action.

7. Research Infrastructures: developing capacity and partnership

Research infrastructures are estimated to account for approximately 50% of total research and development expenditure in marine science. Research vessels, fundamental to furthering marine research, represent very expensive assets with high development and implementation costs; continued investment is vital to increase Europe's research capacity (the Marine Board report on research vessels estimated that the cohort of Regional Class vessels will decline by 60% in 10 years if investment for new vessels is not secured).³

Strategic leadership and an integrated approach to investments and use of large facilities are essential to allow Europe to continue to deliver world-class facilities which are integrated, networked and accessible to research teams from across Europe. Major infrastructures could be developed and used in the form of joint European ventures. Despite the current lack of legal structures to implement pan-European partnerships, collaborative initiatives on the use of national infrastructures on a trans-national basis have been elaborated by groups such as OFEG⁴. **A coherent pan-European approach to infrastructure policy - with enhanced partnership in investment, development and use - is required in Europe to deliver solutions to meet the diverse needs of organisations active in marine research⁵.**

In this context, it will be essential to:

- **Optimise the planning and use of infrastructures; cooperation and partnerships between countries must be supported, a process initiated by ESFRI; (e.g. through the marine projects detailed in the ESFRI roadmap).**
- **Support the development and management of the European research fleet and associated heavy equipment (e.g. ROVs/AUVs).**
- **Facilitate optimal use, and inter-operability, for existing equipment.**

8. European Marine Observation and Data Network*

The Marine Board supports the establishment of a European Marine Observation and Data Network (EMODN) as elaborated in Background Document 4a. The EMODN should build on existing networks for oceanographic data (mainly national initiatives under the coordination of GOOS, GEOSS), on the data integration mechanisms being developed by the SeaDataNet initiative, on the marine core services aspect of GMES and projects and initiatives such as MERCATOR, MERSEA and EuroGOOS. It should focus on integrating existing marine observation facilities, improving operability and access to data. It should be a source of primary and processed data for public institutions, and commercial providers. Member States should take the responsibility to maintain these systems in the long term, while the EU should provide support to fill gaps and provide coordination mechanisms. Data standards in marine research are also necessary. Mechanisms to ensure long term, secure financing of all relevant marine data collection should be established.

In the context of developing the tools to manage our seas and oceans, and establishing EMODN, the Marine Board also supports as necessary the development of:

- **A European Multidisciplinary Seafloor Observatory (EMSO).**

³ See Marine Board Position Paper 10 "European Ocean Research Fleets: Towards a Common Strategy and Enhanced Use"

⁴ OFEG: Ocean Fleets Exchange Group: France, Germany, Netherlands, Norway, Spain, UK

⁵ See Marine Board Position Paper 10 "European Ocean Research Fleets: Towards a Common Strategy and Enhanced Use"

* denotes for immediate action.

- **EURO-ARGO.**
- **A European Atlas of the Seas as a flagship project, to include marine science and technology expertise in seabed surveying, mapping, classification, information technologies and 3-D visualisation.**

9. Quantifying Marine Resources*

Little comparable data is available to ascertain the actual benefit of the maritime economy to individual Member States, or to measure trends over time; this is a major gap to address when developing a European Maritime Policy. **The Commission, working with Member States, should compile detailed annual socio-economic statistics and trends on the value of marine resources, including annual investment in marine research and technology development.**

Research Priorities⁶

10. Climate Change*

Climate change acts as a global driver on ecosystem dynamics, the understanding of which will be crucial to our management of the oceans' biotic resources (e.g. ecosystem approach to fisheries). Reducing the risks of climate change and evaluating its impact on marine ecosystems is a most pertinent and pressing example of the provision of responses to issues of a common global concern requiring collective action for local implementation. **It is vital to develop models for forecasting climate change at the regional level** (see Marine Board publication: *Impacts of Climate Change*⁷). **Research on the impacts of climate change on the marine environment is essential** (to address sea level rise, erosion, acidification, biodiversity and ecosystem functioning), and the associated impacts of increased storminess and storm surges, on Europe's coastal communities (given that over 40% of Europe's population live on the coast) and resources is of primary importance.

11. Renewable Energy*

Offshore wind energy, ocean currents, thermal energy, waves and tidal movements represent a source of renewable and clean energy, the potential of which is yet to be adequately quantified and realised. **The development of renewable energy requires active partnership with industry, and support for the development of innovative technologies.** Research efforts are required to develop innovative technologies, processes and practices to harness renewable energy sources and to develop energy solutions, for example, to demonstrate the possibility of offshore wind energy installations. A European renewable energy policy must be developed.

12. Ecosystem Approach to resource management

The science and technology needed to support the challenges of the Common Fisheries Policy include development of common indicators and indices of multi-stock assessment, ecological health and functioning of habitat types, etc. **Promoting the adoption of an ecosystem-based approach to fisheries management, notably through the use of area-based management tools, is a priority.** The Ecosystem Approach is also crucial in implementing the Marine Thematic Strategy. Key issues

⁶ See Marine Board Position Paper 8 "Navigating the Future III"

⁷ See Marine Board Position Paper 9 2007 "Impacts of Climate Change on the European marine and Coastal Environment – Ecosystems Approach"

* denotes for immediate action.

include enhancement of links with socio-economic issues, and evaluating the impact of Marine Protection Areas and the need to protect marine biodiversity, and sustainable management of deep-sea resources.

13. Biodiversity; Blue-biotechnology

Support towards describing ocean biodiversity should continue within the frame of the Census of Marine Life initiative. There should be increased effort to apply the most recent gene sequencing technologies to differentiate the range and inter-relationships of marine species. Links should be developed between numerical taxonomy, expert systems and genomic techniques.

Europe should actively support networks and partnerships between marine biotechnology R&D groups and the industrial biotechnology sector, to identify and pursue opportunities such as high-throughput techniques for the development and assessment of new biomaterials and pharmaceuticals, development of core capabilities in marine taxonomy, marine genomics and post-genomics, natural products chemistry, chemo-genomics and bioinformatics.

14. Ocean Observing, Monitoring and Forecasting; Critical Technologies

The improvement of ocean forecasting and modelling capabilities and the development of useable operational services is key to improving safety at sea. **Multi-decadal funding is required for the development and implementation of multipurpose systems (e.g. early warning systems for natural hazards) and for operational oceanography. Techniques and services to detect and monitor oil spills and predict drift patterns of lost containers have to be implemented.**

Research on marine technology should be supported to: further assess, convert and apply novel miniature sensors arising from developments in physics, bioanalytics, and nanotechnology; transfer new developments from advanced material science to marine technologies; develop long-lived, easy to use and cost-effective *in situ* instruments, including novel sampling devices such as micro-sampling devices.

15. Deep-Sea Frontiers

The deep-sea floor represents a complex inter-linkage of physical, geological, chemical, biological and microbial processes. Further insights into the coupling of the deep-sea bio-geosphere and submarine bedforms are necessary. **An integrated approach to research on European ocean margins and their ecosystems, including research on: sediment transport and fluxes, climatic control and feed backs in the deep-sea, development and conservation of deep sea ecosystems, observation and monitoring, needs to be developed.** Such a cohesive research approach would benefit from common use of infrastructures used in international, national and European initiatives.

16. Marine Spatial Planning (MSP); Integrated Coastal Zone Management (ICZM)

MSP methodologies should be developed to evaluate the economic impacts of: (i) implementing new policies; (ii) effects of ecosystem changes on resource characteristics; and (iii) the socio-economic drivers of fisheries and aquaculture activities. Interdisciplinary research is required to address the challenge of implementing Integrated Coastal Zone Management (ICZM) and marine spatial planning. There is a need for an EU-wide mechanism for comparative analysis and exchange of best practice in ICZM.

Annex 1: Marine Board Member Organisations

Belgium

Fonds National de la Recherche Scientifique (FNRS)

National Fund for Scientific Research

Fonds voor Wetenschappelijk Onderzoek – Vlaanderen (FWO)

Fund for Scientific Research – Flanders

Denmark

Statens Naturvidenskabelige Forskningsråd

Danish Natural Science Research Council

Finland

Suomen Akatemia / Finlands Akademi

Academy of Finland

France

Centre National de la Recherche Scientifique (CNRS)

National Centre for Scientific Research

Institut Français de Recherche pour l'Exploitation de la Mer (IFREMER)

French Sea Research Institute

Germany

Deutsche Forschungsgemeinschaft (DFG)

German Research Society

Hermann-von-Helmholtz-Gemeinschaft Deutscher Forschungszentren (HGF)

Association of National Research Centres

Greece

Hellenic Centre for Marine Research (HCMR)

Ireland

Marine Institute

Italy

Consiglio Nazionale delle Ricerche (CNR)

National Research Council

Istituto Nazionale di Oceanografia e di Geofisica Sperimentale (OGS)

National Institute of Oceanography and Experimental Geophysics

The Netherlands

Koninklijke Nederlandse Akademie van Wetenschappen (KNAW)

Royal Netherlands Academy of Arts and Sciences

Nederlandse Organisatie voor Wetenschappelijk Onderzoek (NWO)

Netherlands Organisation for Scientific Research

Norway

Havforskningsinstituttet

Institute of Marine Research

Norges Forskningsråd

The Research Council of Norway

Poland

Polska Akademia Nauk (PAN)

Polish Academy of Sciences

Portugal

Fundação para a Ciência e a Tecnologia (FCT)

Science and Technology Foundation

Spain

Consejo Superior de Investigaciones Científicas (CSIC)

Council for Scientific Research

Instituto Español de Oceanografía (IEO)

Spanish Institute of Oceanography

Sweden

Vetenskapsrådet

Swedish Research Council

Turkey

Türkiye Bilimsel ve Teknik Arastırma Kurumu (TÜBİTAK)

The Scientific and Technical Research Council of Turkey

United Kingdom

Natural Environment Research Council (NERC)

National Oceanography Centre, Southampton (NOCS)

Associated Members (in 2007)

Cyprus

Cyprus Oceanography Center

Estonia

Eesti Teaduste Akadeemia (Estonian Academy of Sciences)

Malta

IOI - Malta Operational Centre

University of Malta

Romania

National University Research Council

(CNCSIS)