



Towards integrated European marine
research strategy and programmes

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Synthesis report on existing (sub)national (marine) science and technology strategies

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Synthesis report on existing (sub)national (marine) science and technology strategies

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Abstract

The Synthesis report on existing (sub)national (marine) science and technology strategies (SEAS-ERA Deliverable D 1.1.1) presents the results of SEAS-ERA Task 1.1 which consisted of an inventory and analysis of existing national and sub-national science and technology strategies. This report is designed to:

- Inform the development of the Sea Basin Strategic Research Agendas (SEAS-ERA Task 6.1, 7.1 and 8.1)
- Inform the development of Common Programmes (SEAS-ERA Work Package 2) and Joint Calls (SEAS-ERA Work Package 3).

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1. Introduction

1.1. The SEAS-ERA project

The **FP7 SEAS-ERA Project** (2010-2014) is a network of marine research funding organisations (an ERA-NET) consisting of 21 partners and two third parties from 18 Member and Associated Member States (Annex I) located along the European seaboard in the Atlantic, the Mediterranean and Black Sea (www.seas-era.eu) (Figure 1).



Figure 1: Geographical distribution of SEAS-ERA partners.

The principle aims of the SEAS ERA project are to:

- Improve co-ordination between nationally funded competitive marine research programmes,
- Facilitate better cooperation in addressing shared opportunities and challenges,
- Ensure better use of existing resources and capacities,
- Bridge identified gaps,
- Avoid duplication,
- Jointly fund strategic projects of mutual interest and, in so doing,
- Contribute to the sustainable development of the marine resource and progress the establishment of the marine component of the European Research Area (ERA)¹.

The SEAS ERA project builds on the experience of the previous FP6 ERA-NETs: **MarinERA** (<http://marinera.seas-era.eu/>) which involved 16 partners from 13 countries and which organised a joint € 5 M call for proposals; **AMPERA** (www.cid.csic.es/ampera/index.php) which involved 10 partners from 8 countries and organised a joint € 2.25 M call for proposals; and **MariFish** (www.marifish.net) which involved 18 partners from 16 countries and

¹http://ec.europa.eu/research/era/index_en.htm

organised a joint € 4.1 M call for proposals and common programming within five topics.

For operational and management purposes, the SEAS-ERA project is divided into three sea basin regions (the Atlantic, the Mediterranean and the Black Sea), each supported by a dedicated work package. The project supports seven further thematic work packages: Strategic Analysis; Common Programmes; Joint Calls; Infrastructures; Capacity Building; Dissemination and Co-ordination and Management (Figure 2).

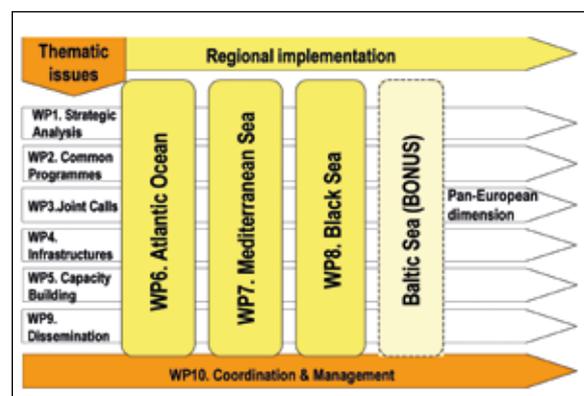


Figure 2: Structure of SEAS-ERA Project.

1.2. SEAS-ERA Task 1.1

SEAS-ERA Task 1.1 provides an inventory and an analysis of existing national and sub-national science and technology strategies with marine relevance. This task was specifically designed to:

- Inform the development of the sea basin Strategic Research Agendas (SEAS-ERA Task 6.1, 7.1 and 8.1); and
- Inform the development of Common Programmes (SEAS-ERA WP2) and Joint Calls (SEAS-ERA WP3).

1.2.1 Methodology

To collect up-to-date and accurate information on (sub)national (marine) science and technology strategies and related strategic priorities in the countries represented in the SEAS-ERA consortium, an inventory questionnaire was designed by the Marine Board-ESF (partner 18) in consultation with the SEAS-ERA partners responsible for Strategic Analysis in each of SEAS-ERA regional nodes - i.e. Marine Institute (partner 9) for the Atlantic, GSRT (partner 7) for the Mediterranean Sea, and TUBITAK (partner 15) for the Black Sea.

1. Introduction

The questionnaire included five different sections (see Annex II):

1. Responding Organisation and Representative
2. General information on the Science and Technology Strategy
3. Scientific Focus
4. Science Support Mechanisms
5. Free Text

The questionnaire was designed to accommodate responses related to different kinds of national or sub-national high-level documents:

- **Research strategies**, flexible and open;
- **Research plans**, concrete and operational;
- **Research priorities**, coherent set.

Implementing Programmes (Research, Technology, and Monitoring) were not addressed by this questionnaire; these are addressed in Task 2.1 (leader: partner 4, ANR) through a future complementary enquiry and analysis.

The questionnaire was presented to, and approved by, the SEAS-ERA Steering Committee at the project kick-off meeting (29-30 June 2010, Madrid).

The questionnaire was first circulated electronically to all SEAS-ERA partners (except Marine Board-ESF) in the summer of 2010 with a request for active contribution or support in:

- Providing the responses to the approved questionnaire directly (if appropriate); or
- Identifying the person(s) who, in a given country, could respond to the questionnaire - noting that there may be more than one relevant strategy (since both national and sub-national high-level documents are of interest).

In addition, the questionnaire was also circulated to targeted organisations in Southern Mediterranean countries, including Algeria, Bosnia, Croatia, Cyprus, Egypt, Israel, Lebanon, Montenegro, Morocco, Palestine, Syria, and Tunisia. Only six of these extra countries provided responses as displayed in Annexes IX and X. Those data are not included in the analysis which was conducted at the consortium level.

1.2.2 Response rate and scope

Representatives from 17 countries (of the 18 represented in SEAS-ERA, except Georgia) have provided full or partial responses to the questionnaire survey.

In five countries, different sets of responses were provided in order to cover:

- National or sub-national aspects (Belgium & Flanders, Portugal & North Portugal Region, Spain & Andalucía), or
- Research Funding Organisation and Research Performing Organisation perspectives (France, the Netherlands).

1.2.3 Meetings and Milestones

In order to identify gaps in data, to avoid any discrepancies, and perform an initial analysis of the questionnaires results, SEAS-ERA partners were invited to comment on a first draft of the inventory of (sub) national (marine) Science and Technology Strategies either remotely or at a series of sea basin meetings, including:

- Atlantic Basin: 07 January 2011 in Brussels
- Mediterranean Basin: 16-17 December 2010 in Athens
- Black Sea Basin: 10-11 March 2011 in Ankara
- SEAS-ERA consortium: 24 May 2011 in Brussels

2. (Sub)National (marine) Science and Technology Strategies within the SEAS-ERA consortium: an overview

2.1. A summary table

Table 1 (page 10) provides an overview of (sub)national (marine) Science and Technology Strategies in the European countries represented in the SEAS-ERA consortium. The surveyed strategies are clustered according to their relevance to marine matters (high, medium, low).

About the financial data:

The financial elements displayed in Table 1 have different sources:

- Data on “Average annual allocated budget to national R&D strategy” were collected through the survey conducted within SEAS-ERA Task 1.1;
- Data on “Average annual overall national “marine” R&D expenditure” were collected through the Joint Programming Initiative Healthy and Productive Seas and Oceans – Mapping exercise (2011)².

Those financial data are meant to be complementary and not similar for each given country:

- On the one hand, in a country with a dedicated marine science strategy, comparison between the SEAS-ERA and JPI sourced data can illustrate the extent to which the strategy allocated budget may be complemented by other sources to increase the overall national expenditures on marine research;
- On the other hand, in a country with a research strategy whose relevance to marine matters is low, comparison between the SEAS-ERA and JPI sourced data provides a rough estimate of the marine share of the overall R&D national budget;
- Comparison of “Average annual allocated budget to national R&D strategy” between countries from different “relevance to marine matters” categories is, therefore, not relevant.

Besides given the current economic context which is resulting in cuts to research budgets in many countries, many SEAS-ERA partners have indicated that the financial data provided may not reflect an actual or future level of budget allocation/expenditure dedicated to marine research.

²www.jpi-oceans.eu

2. (Sub)National (marine) Science and Technology Strategies within the SEAS-ERA consortium: an overview

Table 1: (Sub)National (marine) Science and Technology Strategies in the European countries represented in the SEAS-ERA consortium.

Relevance to marine matters	Countries	Strategy Led by	Duration	Average annual budget allocated to national R&D strategy (incl. where appropriate “marine” share) (SEAS-ERA data)	Average annual overall national “marine” R&D expenditure (JPI data) ³	Main sea basin(s) of interest	Web page
HIGH	France	Exploring the sea to understand the earth: contribution to a national research strategy for marine sciences for 2020 Ifremer	2010-2020	Strategy budget: € 250 M	€ 305.5 M	- Atlantic - Mediterranean - Pacific and Indian Oceans	http://w3z.ifremer.fr/strategie/plan_strategique
	Ireland	Sea Change: A Marine Knowledge, Research & Innovation Strategy for Ireland Marine Institute	2007-2013	Strategy budget: € 13 M ⁴	€ 36 M ⁵	- Atlantic	www.marine.ie/home/SeaChange.htm
	Italy	Italian Research for the Sea (RITMARE) Ministry of Education, University and Research	2010-2014	Strategy budget: € 90 M	€ 100 M ⁶	- Mediterranean	www.mit.gov.it/mit/mop_all.php?p_id=06442
	The Netherlands	Dutch National Programme Sea and Coastal Research Netherlands Organisation for Scientific Research (NWO), Division Earth and Life Sciences (ALW) NIOZ Science Plan Royal Netherlands Institute for Sea Research (NIOZ)	2007-2012 2008-2012	Strategy budget: € 20 M Strategy budget: € 0.024 M	€ 32.5 M	- Atlantic - Mediterranean - Wadden Sea - Polar, Southern - Indian Ocean - Indonesian Seas	www.nwo.nl/nwohome.nsf/pages/NWOA_795JFX_Eng www.nioz.nl/public/nioz_reports/scienceplan_08-12.pdf

³ Data extracted from “Joint Programming Initiative Healthy and Productive Seas and Oceans – Mapping exercise” (2011)

⁴ Figure represents annual allocations from the competitive Marine Research Sub-programme (Marine Institute) over the period 2007 to 2010 to cover the period 2007 to 2013. Pending the outcome of the National Research Prioritisation Exercise (2011), no information is available as to what the Irish national competitive marine research funding budget will be post-2011.

⁵ Figure represents annual allocations from competitive marine research (all Funding Agencies) funding programmes and Marine Institute core marine research budget over the period 2007 to 2010 to cover the period 2007 to 2013.

⁶ Italy: non-competitive funds (research infrastructures are included); competitive funds come mainly from FP funded projects and from the EU Structural Funds.

Relevance to marine matters	Countries	Strategy Led by	Duration	Average annual allocated budget to national R&D strategy (incl. where appropriate "marine" share) (SEAS-ERA data)	Average annual overall national "marine" R&D expenditure (JPI data) ³	Main sea basin(s) of interest	Web page
HIGH	Norway	HAVKYST Oceans and Coastal Areas (research programme – not a strategy) Research Council of Norway (RCN)	2006-2015	Strategy budget: € 10 M for HAVKYST (€ 78 M for all marine related RCN programmes)	€ 230 M	- Atlantic	www.forskingsradet.no/servlet/Satellite?c=Page&cid=1226994156364&p=1226994156364&pagename=havkyst%2FHovedsidemal
	Portugal	National Ocean Strategy "Estrutura de Missão para os Assuntos do Mar" (Task Force for Sea Affairs).	2006-2016	Strategy budget: <i>not available</i> ⁷	€ 6.8 M	- Atlantic	https://webgate.ec.europa.eu/maritimeforum/system/files/National_Ocean_Strategy_Portugal_en.pdf
	UK	Marine Science Strategy UK Marine Science Co-ordination Committee (MSCC)	2010-2015	Strategy budget: € 180 M	€ 188.6 M	- Atlantic - Mediterranean - Black Sea - Other (interest in all marine science everywhere)	www.defra.gov.uk/environment/marine/documents/science/mscc/mscc-strategy.pdf
MEDIUM	Italy	Piano Nazionale della Ricerca Ministry of Education, Universities and Research	2011-2013	Strategy budget: <i>not available as it is based on contributions from different authorities.</i>	(see Italy above)	- Mediterranean - Black Sea - Arctic and Antarctic	www.miur.it
	France	Prospective Ocean Atmosphere CNRS / INSU	2006-2011	Strategy budget: <i>not available</i>	(see France above)	- Atlantic - Mediterranean - Black Sea	www.insu.cnrs.fr/f1198pdf/prospective-ocean-atmosphere-2006-2011.pdf

⁷ There are no specific pre-defined budgetary allocations for the National Ocean Strategy. Nevertheless, the average annual overall national "marine" R&D expenditure was € 6.8 M.

2. (Sub)National (marine) Science and Technology Strategies within the SEAS-ERA consortium: an overview

Relevance to marine matters	Countries	Strategy Led by	Duration	Average annual allocated budget to national R&D strategy (incl. where appropriate "marine" share) (SEAS-ERA data)	Average annual overall national "marine" R&D expenditure (JPI data) ³	Main sea basin(s) of interest	Web page
MEDIUM	Germany	"Ideen. Innovation. Wachstum" Hightech-Strategie für Deutschland + And a programme: Research for Sustainable Development (FONA) BMBF	2010-2015	Strategy budget: € 333 M "Marine" share: ca. € 54 M for competitive funding of marine research and marine investments (e.g. new research vessels, large equipment, etc).	€ 300 M	- Atlantic - Baltic - Pacific - Continental margins	www.fona.de/pdf/publikationen/research_for_sustainable_development.pdf
	Iceland	Science and Technology Policy Ministry of Education, Science and Culture	2010 - 2012	Strategy budget: € 111 M (in 2011) "Marine" share: <i>not available</i>	€ 25 M	- Atlantic	www.vt.is/english
	Malta	National Strategic Plan for Research and Innovation: Building and Sustaining the R&I Enabling Framework Malta Council for Science and Technology (MCST)	2007-2010	Strategy budget: € 0.75 M "Marine" share: <i>not available</i>	n/a	- Mediterranean	www.mcst.gov.mt
	Portugal	North Portugal Regional Operational Programme (ON2) Ministerial Coordinating Committee for Mainland Regional OPJ & Northern Region Strategic Counselling body	2007 - 2013	Strategy budget: <i>not available</i> "Marine" share: €11.4 M for marine research	n/a	- Atlantic	http://www.novonorte.qren.pt/pt/menu-topo/english-version/ http://www.oceano21.org/info.asp?id=20&LN=EN

Relevance to marine matters	Countries	Strategy Led by	Duration	Average annual budget allocated to national R&D strategy (incl. where appropriate “marine” share) (SEAS-ERA data)	Average annual overall national “marine” R&D expenditure (JPI data) ³	Main sea basin(s) of interest	Web page
MEDIUM	Spain	Science and Technology National Plan Spanish Ministry of Science and Innovation (MICINN)	2007-2013	Strategy budget: € 305 M “Marine” share: € 4 M competitive funds for marine research	€ 107 M	- Atlantic - Mediterranean - Antarctic	www.micinn.es
	Spain	Andalusian Plan for Research Development and Innovation (PAIDI) Regional Minister of Innovation, Science and Enterprise	2010-2020	Strategy budget: 2% of Andalusia GNP targeted in 2013	n/a	- Atlantic - Mediterranean	http://web.ceic.junta-andalucia.es/descarga/contenidos/cice/SGT-3305910/biblioteca/PAIDI_ingles/PAIDI_version_LIBRO-ingles2.pdf
	Ukraine	Law of Ukraine “On priority directions of development of science and technique” Cabinet of Ministers of Ukraine	2010-2020	Strategy budget & “Marine” share: <i>not available</i> ⁸	n/a	- Black Sea - Antarctic	http://zakon1.rada.gov.ua/?nreg=2623-14
LOW	Belgium	Policy note of the Belgian Federal Minister of Science Policy Belgian Federal Science Policy Office (BELSPO)	2010	Strategy budget: € 600 M “Marine” share: € 5-6 M competitive funds for marine research € 8 M institutions funds (research, personnel, ship maintenance, etc.)	€ 52 M ⁹	- Atlantic - Antarctic	www.dekamer.be/FLWB/PDF/52/2225/52K225020.pdf
		Policy note of the Flemish Minister of Science Policy & Flanders in action (VIA) Department of Economy, Science and Innovation of the Flemish Government (EWI)	2009-2014	Strategy budget & “Marine” share: <i>not available</i>	n/a	- Atlantic - Antarctic	www.ewi-vlaanderen.be/sites/default/files/documents/Beleidsnota%20Wetenschap%20&%20Innovatie%202009-2014.pdf www.vlaandereninactie.be

⁸ No official and integrated figures on Ukrainian research funding are available.

⁹ Belgium: Research funded by the French-Speaking Community (FNRS) and the Walloon Region not included.

2. (Sub)National (marine) Science and Technology Strategies within the SEAS-ERA consortium: an overview

Relevance to marine matters	Countries	Strategy Led by	Duration	Average annual budget allocated to national R&D strategy (incl. where appropriate "marine" share) (SEAS-ERA data)	Average annual overall national "marine" R&D expenditure (JPI data) ³	Main sea basin(s) of interest	Web page
LOW	Bulgaria	National Strategy for Scientific research Ministry of Education, Youth and Science	2009-2019	Strategy budget & "Marine" share: <i>not available</i> ¹⁰	n/a	- Atlantic - Antarctic	www.ewi-vlaanderen.be/sites/default/files/documents/Beleidsnota%20Wetenschap%20&%20Innovatie%202009-2014.pdf www.vlaandereninactie.be
	Greece	Strategic Plan for Development of Research Technology & Innovation in the Framework of the National Strategic Reference Framework work General Secretariat for Research & Technology	2007-2013	Strategy budget: € 107 M "Marine" share: € 12.4 M competitive funds for marine research (2008-2010)	n/a	- Mediterranean	www.gsrt.gr/default.asp?V_ITEM_ID=4699
	Romania	National Research, Development and Innovation Strategy National Authority for Scientific Research (ANCS)	2007-2013	Strategy budget: € 0.5 M "Marine" share: <i>not available</i>	€ 8.9 M	Not provided	www.ancs.ro
	Turkey	Vision 2023 The Scientific and Technological Research Council of Turkey (TUBITAK)	2003-2023	Strategy budget & "Marine" share: <i>not available</i>	€ 0.3 M	Not provided	http://www.tubitak.gov.tr/sid/1005/pid/547/index.htm

¹⁰ Bulgaria: No indicative budget for this Bulgarian strategy. Targets: 1.3% of GDP for science until 2014 & 1.8% of GDP for science until 2018. Development of 3 medium-scale research complexes (one of which identified in the area of marine and maritime research) & targeted research programmes.

2.2. National R&D profiles

2.2.1. Belgium

Belgian Science & Technology Policy for the period 2010-2014 is described in different Policy documents, including the annual Policy note of the Belgian Federal Minister of Science Policy (www.dekamer.be/FLWB/PDF/52/2225/52K2225020.pdf), the Policy note of the Flemish Minister of Science Policy, and Flanders in action (VIA).

Marine Research is supported under the **SSD: Science for a Sustainable Development Programme** (www.belspo.be/SSD) managed by the **Belgian Science Policy Office** (www.belspo.be). A database of funded projects is available at www.belspo.be/belspo/fedra/pres_en.stm. A description of the North Sea (sub)programme since 1970 is available at www.belspo.be/northsea.

Other National Research Funding Programmes which have a significant marine research element include:

- Earth Observation Research Programme (STEREO)

A full comprehensive overview of science policy in Belgium at all levels (Federal, Regional and Communities) is provided in "Belgian Report on Science, Technology and Innovation 2010" http://www.belspo.be/belspo/home/publ/pub_ostc/BRISTI/Bristi_tome1_2010_en.pdf.

2.2.2. Bulgaria

Bulgarian Science & Technology Policy for the period 2009-2019 is described in the **National Strategy for Scientific Research**. The marine research component of this Policy/Strategy is not further developed.

National Research Funding Programmes which have a significant marine research element include:

- Development of Scientific Potential (<http://www.nsfb.net/>) managed by the National Science Fund (<http://www.nsfb.net/>).

2.2.3. France

French Science & Technology Policy is described in the **National Programming Law for Research** and in the **National Research Strategy (SNRI)**

The marine research component of this Policy is further the **Exploring the sea to understand the earth: contribution to a national research strategy for marine sciences for 2020** (http://w3z.ifremer.fr/strategie/plan_strategique)

Marine research is addressed through two bilateral agreements negotiated directly by the Ministry for Research with the two French Research Performing Organisations (Ifremer and CNRS). The strategy is delivered through individual contracts (four years) focused on non-competitive funds only.

The **French Research Council (ANR, www.agence-nationale-recherche.fr)** operates thematic and blue skies programmes under which marine research projects can be competitively funded. About 10% of the ANR annual budget is dedicated to marine research.

Other National Research Funding Programmes which have a significant marine research element include:

- PNEC (the National Programme for Coastal Ecology Research) managed by Ifremer - www.insu.cnrs.fr/a334,pnec.html
- LITEAU (National Programme Coastal Management) managed by Ministry for Ecology, Energy, Sustainable Development, Territory Planning (MEEDDAT) - www.developpement-durable.gouv.fr/index.php3
- LEFE (Les Enveloppes Fluides et Environnement) managed by INSU - www.insu.cnrs.fr/a1713,lefe-enveloppes-fluides-environnement.html
- EC2CO (Continental and Coastal Ecosphere) managed by CNRS - www.cnrs.fr/prg/PIR/programmes/ec2co.htm

2.2.4. Germany

German Science & Technology Policy for the period 2006-2020 is summarised in "Igniting ideas"- **The High-tech Strategy for Germany** (www.bmbf.de/pub/bmbf_hts_en_kurz.pdf) and further developed in the **National Funding Programme** (www.fz-juelich.de/ptj/national-funding).

Research funding is managed by the **Julich (PJT), Division MGS** (www.fz-juelich.de/ptj/). While there is no specific marine research funding programme, marine research can be supported under a number of thematic programmes including:

- **FONA (Research for Sustainable Development)** www.fona.de/pdf/publikationen/research_for_sustainable_development.pdf
- Germany participates in the **BONUS+ Joint Baltic Sea Research Programme**(www.bonusportal.org).

2. (Sub)National (marine) Science and Technology Strategies within the SEAS-ERA consortium: an overview

2.2.5. Greece

The **Greek Science & Technology Strategy** for the period **2007–2013** is described in the **Strategic Plan for Development of Research Technology & Innovation in the Framework of the National Strategic Reference Framework** (www.gsrt.gr/default.asp?V_ITEM_ID=4699).

The marine research component of this Policy/Strategy is not further developed. Specific topics are not identified in the Strategic plan. Similar to FP7 there is reference to marine related themes under several priority sectors (food, transport, environment, etc.). Furthermore, in some funding instruments ("excellence for research institutes", "people – research careers") the bottom-up approach is followed without specification of themes or topics.

The Strategic Plan, including research funding, is managed by the **General Secretariat for Research and Technology (GSRT)** (www.gsrt.gr).

2.2.6. Iceland

Iceland's Science & Technology Policy for the period **2010–2012** is described in Science and Technology Policy 2010-2012 (www.vt.is/english/). The marine research component of this Policy is further developed in The Ocean – Iceland's Policy (http://eng.utanrikisraduneyti.is/media/Efstabaugi/The_Ocean_Iceland's_Policy.pdf).

The National **Marine** Research Strategy is implemented through the Marine Research Institute which is managed by The Ministry of Fisheries and Agriculture. A database of funded projects will be developed.

Other National Research Funding Programmes which have a significant marine research element include:

- AVS - a Research fund for Marine and Fisheries: www.avs.is
- The Ministry of Fisheries: www.sjavarutvegsraduneyti.is

2.2.7 Ireland

Irish Science & Technology Policy for the period **2006–2013** is described in the **Strategy for Science, Technology & Innovation (2006)**. The marine research component of this Strategy is further developed and elaborated in the **Sea Change Strategy (2007): A Marine Knowledge, Research & Innovation Strategy for Ireland 2007-2013**. In 2010, the advanced technologies component of the *Sea Change* Strategy was further elaborated in a Marine Institute Report **SMART OCEAN: Harnessing Ireland's potential as a European and Global Centre for Ocean Technology**.

Over the period 2007-2010, approved competitive marine research grant-aid for the period 2007 to 2013 has included:

- € 51.9 M approved by the Marine Sub-Programme of the National Development Plan 2007-2013 and managed by the Marine Institute;
- € 67.5 M approved under other sectoral sub-programmes of the National Development Plan 2007-2013 and managed by other national research funding agencies.

A database of funded projects is available at:

<http://www.marine.ie/home/research/ProjectsDatabase/CurrentProjects/>

In October 2010, the Irish Government (Cabinet Committee on Science, Technology and Innovation) launched an initiative to **identify national research priorities** (National Research Prioritisation Exercise) to be pursued over the period **2011–2016**. The National Research Prioritisation Group will report by the end of 2011. The recommendations of the National Research Prioritisation Group will inform future national science and technology expenditure, including competitive marine research funding.

Website: <http://www.marine.ie/home/research/SeaChange/>

2.2.8. Italy

Italian Science and Technology Policy for the period **2011–2013** is described in **Piano Nazionale della Ricerca** (www.miur.it).

The marine research component of this Strategy is further developed in the Italian Research for the Sea Programme (RITMARE - www.mit.gov.it/mit/mop_all.php?p_id=06442) managed by Ministry of Education, University and Research.

Other National Research Funding Programmes which have a Marine Research element include:

- Decision Making Support System for a Sustainable Fishery in the South of Italy Programme
- The Energy Efficiency and Climate Change Programme

The Italian Oceanographic Commission (COI) is composed by representatives of the major institutions active in Earth and Ocean sciences. It is mandated to represent Italy at IOC-UNESCO, to elaborate documents reflecting the opinion of the entire Italian oceanographic community, to promote activities to be carried out in the framework of IOC and international initiatives.

2.2.9. Malta

Maltese Science & Technology Policy for the period 2007–2010 is described in the **National Strategy for Research and Innovation for 2007–2010**, entitled, **Building and Sustaining the Research and Innovation (R&I) Enabling Framework** (www.mcst.gov.mt).

The marine research component of this strategy is further developed within the strategy itself explicitly for some areas (e.g. energy) or implicitly for other areas (e.g. desalination, tourism) relevant to marine issues of high importance for an island like Malta.

The environmental/marine component of the National Research Strategy is implemented through the **National R&I Funding Programme** which is managed by the **Malta Council for Science & Technology (MCST)** (www.mcst.gov.mt). A database of funded projects is available at www.mcst.gov.mt.

2.2.10. The Netherlands

The Netherlands Science & Technology Strategy is set for the period 2008–2012.

The National Marine Research Strategy is implemented through the **National Programme for Sea and Coastal Research** (www.nwo.nl/nwohome.nsf/pages/NWOA_795JFX_Eng) managed by the **Netherlands Organisation for Scientific Research (NWO), Earth and Life Sciences Division (ALW)** (www.nwo.nl). A database of funded projects is available at http://www.nwo.nl/projecten.nsf/pages/NWOP_6KRLVE_Eng.

Other National Research Funding Programmes / Research Plans which have a significant marine research element include:

- NIOZ Science Plan (2008-2012) : http://www.nioz.nl/public/nioz_reports/scienceplan_08-12.pdf
- Applied and strategic research by IMARES Wageningen UR: www.imares.wur.nl/UK/
- Deltares Healthy Water and Subsoil systems programme: <http://kennisonline.deltares.nl/thema-s/gezonde-water-en-bodemsystemen>
- MARIN Maritime Innovation Programme : www.nedmip.nl
- Fundamental research in estuarine water and coastal seas at world class level by CEME: <http://www.nioo.knaw.nl/en/content/centre-estuarine-and-marine-ecology>

2.2.11. Norway

Norwegian Science & Technology Policy for the period 2006–2015 is summarised on the **Norwegian Ministry for Research and Education** website (www.regjeringen.no/en/dep/kd/Selected-topics/research/research-policy.html?id=443398) and includes thematic priorities in Energy and the Environment, Health, Oceans and Food. The marine research component of this Policy is further developed in the programme plan: **Ocean and Coastal Areas** (www.forskingsradet.no/havkyst).

The **Ocean and Coastal Areas Programme** (www.forskingsradet.no/havkyst) is managed by the **Research Council of Norway** (www.rcn.no). A database of funded projects is available at <http://www.forskingsradet.no/en/Project+database/1184150364215>.

Other National Research Funding Programmes which have a significant marine research element include:

- HAVBRUK - Aquaculture – An Industry in Growth: www.forskingsradet.no/havbruk
- MATPROGRAMMET - Norwegian Food from Sea and Land: www.forskingsradet.no/matprogrammet
- NORKLIMA- Climate change and impacts in Norway: www.forskingsradet.no/norklima
- MAROFF - Maritime Activities and Offshore Operations: www.forskingsradet.no/maroff
- NATUR OG NAERING - Research Programme on Nature-based Industry: www.forskingsradet.no/naturognaering

2.2.12. Portugal

The marine science & technology component is addressed in **Estratégia Nacional para o Mar (Ocean National Strategy)** mainly through three of the eight strategic actions: “*Promotion of Portugal as a European Centre of excellence in ocean sciences*”; “*Protection and restoration of marine ecosystems*” and “*Support for new forms of technology applied to maritime activities*” (<http://www.emam.com.pt/> and https://webgate.ec.europa.eu/maritimeforum/system/files/National_Ocean_Strategy_Portugal_en.pdf) (English Version).

The research funding programme at national level is managed by Fundação para a Ciência e Tecnologia (FCT) / Science and Technology Foundation (<http://www.fct.pt/index.phtml.en>) through annual *Calls for Funding of Research and Development Projects in all Scientific Domains*, including *Marine Sciences and Technologies*, following a bottom up approach. A database of funded projects in Marine Science and Technology of Call 2009 is available at: <http://www.fct.pt/apoios/projectos/consulta/areas.phtml.en?idElemConcurso=3549>

2. (Sub)National (marine) Science and Technology Strategies within the SEAS-ERA consortium: an overview

Other Research Funding Programmes which have a significant Marine Research element include:

- Azores Marine Research Specific Programme (http://www.azores.gov.pt/ext/sctr-app/formulario.asp?id_form=22&page=441), managed by Direção Regional da Ciência, Tecnologia e Comunicações.
- ON2 - North Portugal Regional Operational Programme 2007/2013 with two strategic priorities with special relevance to S&T: “*Competitiveness, Innovation and Knowledge*” and “*Economic Valorisation of Specific Resources*” (with a specific objective related with Economic development of new uses for the sea and a significant investment in marine S&T infrastructures) (<http://www.novonorte.qren.pt/pt/menu-topo/english-version/http://www.oceano21.org/info.asp?id=20&LN=EN>), managed by a political management body.

2.2.13. Romania

Romanian Science & Technology Policy for the period 2007–2013 is described in the **National Strategy for Research, Development & Innovation** (www.ancs.ro/index.php?action=view&idcat=20). This strategy is being implemented through the **National Plan for Research, Development and Innovation** co-ordinated by the **National Authority for Scientific Research (ANCS)** (www.ancs.ro/en).

The Romanian **National Plan for Research, Development and Innovation** is built on **six National Programmes (Human Resources, Capacities, Ideas, and Partnerships in priority S&T Domains, Innovation, Sustaining Institutional performance)**.

Marine Research is not a separate priority, nor does it have a separate programme. Proposals for marine research in Romania can be funded under the “**Partnerships in priority S&T Domains**” national programme. Research funding is managed by the **Executive Agency for Higher Education, Research, Development & Innovation Funding (UEFISCDI)**, (<http://uefiscdi.gov.ro/>).

2.2.14. Spain

Spanish Science & Technology Policy for the period 2007–2015 is described in the **Spanish National Strategy for Science and Technology** which is managed by the **Spanish Ministry of Science and Innovation** (www.micinn.es). The main instrument to implement this Strategy is **The National Scientific Research, Development and Technological Innovation Plan** that has a four year duration (2008–2011). Although academic research is a major target, specific actions are also included to

support technological innovation. No specific reference is made to marine science and technology, but the Plan is open to them and follows a bottom-up approach. Successful marine projects/initiatives are managed through a specific sub-programme on marine sciences.

A database of funded projects is available at www.ciencias-marinas.uvigo.es/proyectosredmar.html.

Marine research is also supported by the Secretary of State for Research through two Research Performing Organisations, CSIC and IEO, that generate more than 50% of the scientific output in the marine sciences in the country.

Other National Research Funding Programmes which have a significant marine element include:

- CONSOLIDER (www.micinn.es) for outstanding research groups (to date this programme dedicated circa € 10 M to marine and aquaculture projects).
- **Ministry of Environment and Rural and Marine Affairs** (www.marm.es), committed to comply with the international marine conventions or regulations, calling for research activities.
- **Ministry of Public Works** (www.puertos.es) in charge of the oceanographic and climate forecasting, operational oceanography and network of sensors, data management, etc.

2.2.15. Turkey

TUBITAK funds researchers following a bottom-up approach. Projects are being funded according to scientific excellence based on peer review and panel evaluation. Thus, there is not any research priority or theme-specific calls/programmes under TUBITAK.

The **Vision 2023** document is TUBITAK’s long-term science and technology vision and details the priorities, important issues to consider and possible mechanisms to address them. In this document there is not a specific section for seas and oceans, however, some topics related to environment and especially climate change are recognized as important challenges.

The Turkish Science & Technology Strategy for the period 2011–2016 is described in the National Science, Technology and Innovation Strategy (<http://www.tubitak.gov.tr/sid/1048/pid/468/index.htm>). The Strategy has fundamental strategic objectives that give support to develop cross-disciplinary and cross-sectoral research-technology and innovation which suits perfectly to marine and maritime research. The Strategy has also three priority themes; food, energy and water (not implicitly including

marine) that might have direct and indirect links to marine research and innovation.

Furthermore a National Marine Research Strategy has been drafted by the National Hydrography and Oceanography Committee, whose members include marine stakeholders. This has been in the process since 2008 and the work on this draft document is well advanced at the time of publication of this report.

2.2.16. United Kingdom

UK Science and Technology Policy for the period **2004–2014** is described in **Science and Innovation Investment Framework (2004–2014)** www.hm-treasury.gov.uk/spending_review/spend_sr04/associated_documents/spending_sr04_science.cfm.

The marine research component of this Policy/Strategy is further developed in **UK Marine Science Strategy (2010–2025)** led by the UK Marine Science Co-ordination Committee: <http://www.defra.gov.uk/environment/marine/documents/science/mscc/mscc-strategy.pdf>

The UK Marine Policy Statement was published in March 2011 and applies to all UK waters. It is the framework for preparing Marine Plans, ensuring consistency across the UK, and provides direction for new marine licensing and other authorisation systems in each UK Administration. It will set out the general environmental, social and economic considerations that need to be taken into account in marine planning. The statement can be found at: <http://archive.defra.gov.uk/environment/marine/documents/interim2/marine-policy-statement.pdf>

The first UK National Ecosystem Assessment was published in June 2011. It is the first analysis of the UK's natural environment in terms of the benefits it provides to society and continuing economic prosperity. The assessment provides values for a range of services we gain from nature to help us to fully understand the worth of the natural environment and how the benefits to individuals and society as a whole can be better protected and preserved for future generations. The report includes two specific chapters relevant to the marine environment and is available at: <http://uknea.unep-wcmc.org>

2.2.17 Ukraine

Ukraine Science and Technology Policy for the years 2010–2020 is described in the **Law of Ukraine “On priority directions of development of science and technique”** (<http://zakon1.rada.gov.ua/?nreg=2623-14>) and led by the **Cabinet of Ministers of Ukraine**.

The marine research component of this Policy/Strategy is further developed in Part 5.6 «Science & Technology

and Innovative Policy» and Part 3.1.6. «Realization of state policy in the sphere of protection and expedient exploitation of water resources».

Other National Policy Documents which have a significant Marine Research element include:

- Programme of Economic Reforms for 2010–2014
- Law of Ukraine «On priority directions of development of science and technique»
- Law of Ukraine «On scientific and technical activity»
- Law of Ukraine «On protection of natural environment»
- Law of Ukraine «On approval of Nation-wide Programme of Protection and Recovery of Natural Environment of Azov and Black Seas»
- Water Code of Ukraine
- Decree of the Cabinet of Ministers of Ukraine «On approval of Concept of State Programme of research in Antarctica for 2011–2020»

2. (Sub)National (marine) Science and Technology Strategies within the SEAS-ERA consortium: an overview

2.3. Relevance of the strategies to marine matters

Out of the 18 countries represented in the SEAS-ERA consortium:

- **Six countries** (33% of SEAS-ERA consortium) have a dedicated marine science strategy - ●, in the case of one country (Norway) it is formulated as a specific research programme on Ocean and Coastal Areas. - ○
- **Four countries** (22% of SEAS-ERA consortium) have a general science strategy which encompasses a section on marine and maritime matters - ●
- **Six countries** (33% of SEAS-ERA consortium) have a general science strategy with no explicit reference to marine and maritime matters - ●
- **one country** (Georgia) has not responded - ○

1. Half of Atlantic countries have developed a dedicated marine research strategy.
2. In two third of the Black Sea countries represented in the SEAS-ERA consortium, the national research strategies do not mention marine matters explicitly.
3. In the Mediterranean Sea Basin, the relevance of national strategies to marine matters is variable, ranging from low (two countries) via medium (two countries) to high (two countries).

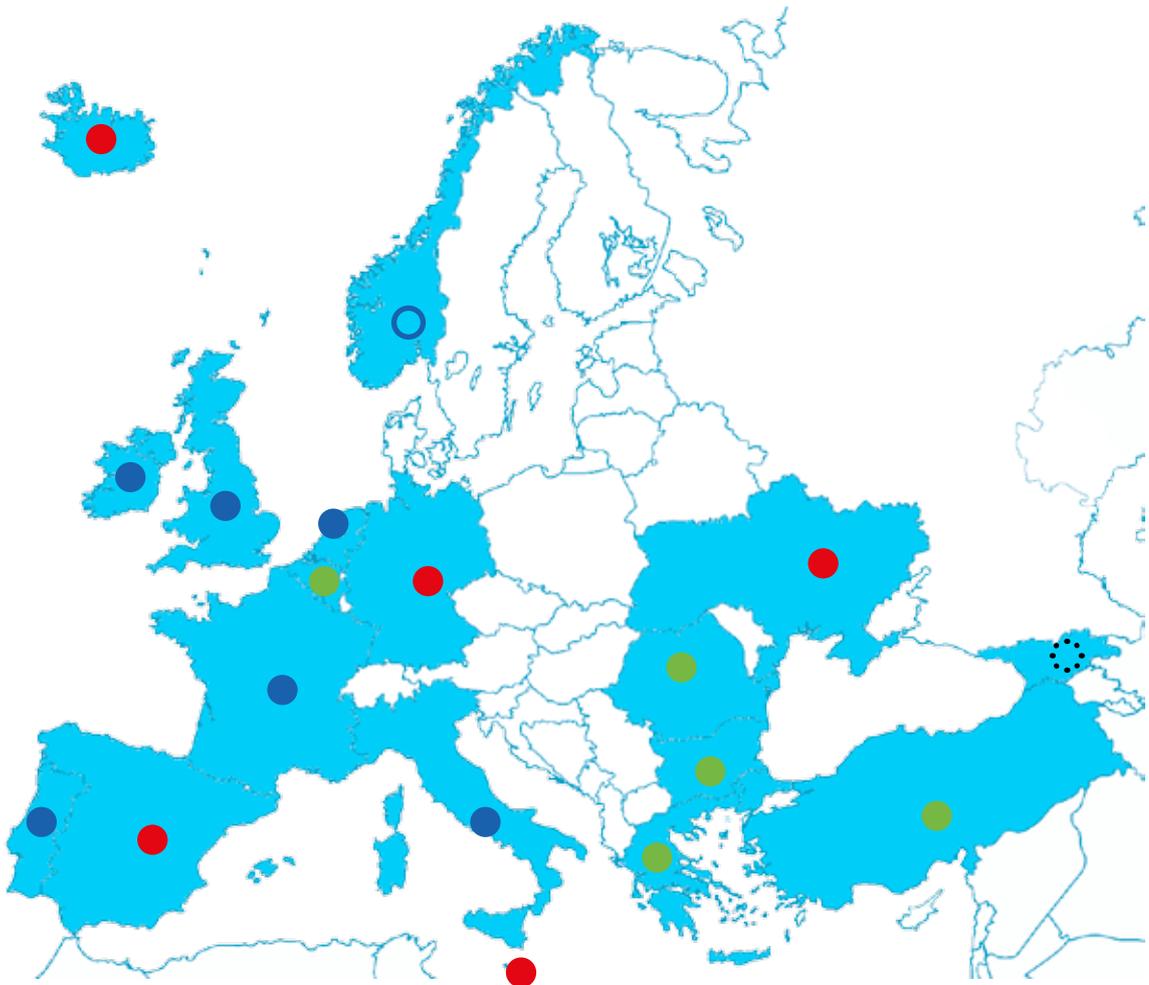


Figure 3: Relevance of the national strategies to marine matters in SEAS-ERA consortium

2.4. Geographical scope and sea basins of interest

The SEAS-ERA consortium provides a platform for Research Funding Organisations from different sea basins as shown in Table 2 and Figure 4.

Atlantic Sea Basin (10 countries)	Mediterranean Sea Basin (6 countries)	Black Sea Basin (5 countries)
<ul style="list-style-type: none"> • Belgium • France • Germany • Iceland • Ireland • Norway • The Netherlands • Portugal • Spain, and • UK 	<ul style="list-style-type: none"> • France, • Greece, • Italy, • Malta, • Spain, and • Turkey 	<ul style="list-style-type: none"> • Bulgaria, • Georgia¹¹ • Romania, • Turkey • Ukraine

Table 2: SEAS-ERA consortium geographical scope per sea basin

Note: the European Atlantic Sea Basin, as considered here, is defined in terms of processes and usage rather than geography. It includes the sea surface, the water column and seabed off the European Atlantic coastline (including the North Sea and the Irish Sea) extending westwards to include the OSPAR wider Atlantic region and Exclusive Economic Zones (EEZ) and extended Continental Shelves of the participating countries. It also includes the maritime territories surrounding the Canary Islands, the Azores and Madeira [source: "SEAS-ERA Discussion Document: A Draft Marine Research Plan for the European Atlantic sea basin" October 2011 - available at www.seas-era.eu].

As shown in Figure 4, 48% of the countries represented in SEAS-ERA have an Atlantic coastline, 28% of them have a Mediterranean coastline and 24% of them have a Black Sea coastline.

National research strategies do not necessarily limit their geographical scope of study interest to their territorial seas as illustrated by Figure 5.

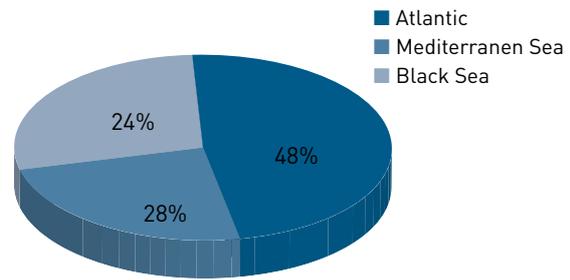
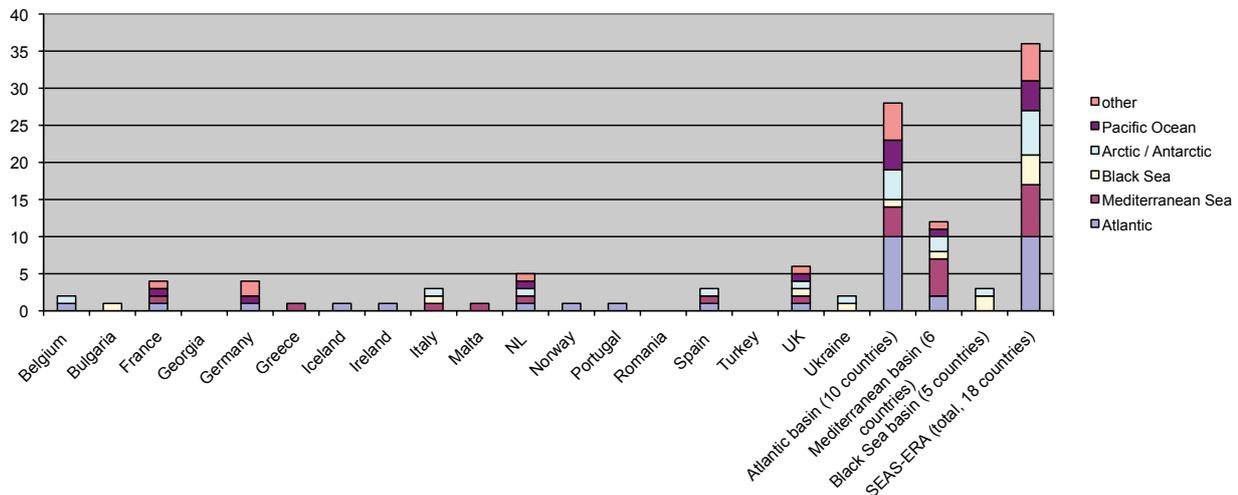


Figure 4 SEAS-ERA representativeness per sea basin

4. In the Atlantic Sea basin, the geographical scope of interest is wider than in the other two sea basins.
5. In the Mediterranean Sea basin, the main (ca. 50%) geographical area of interest is the Mediterranean Sea.
6. In the Black Sea Basin, the geographical scope of interest is almost entirely focused on the Black Sea

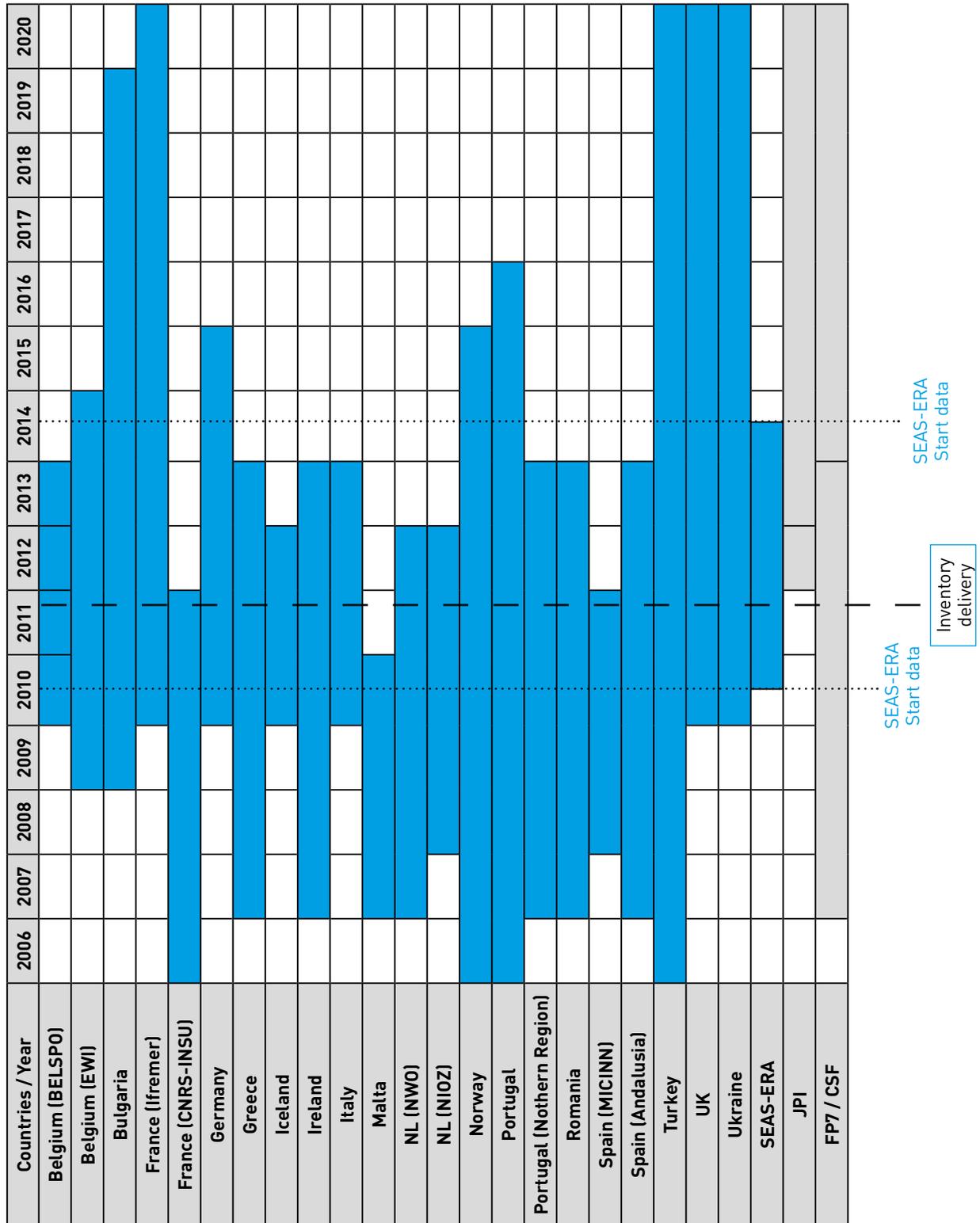
Figure 5 SEAS-ERA geographical areas of interest



¹¹Georgia was not in a position to provide responses to the SEAS-ERA T 1.1 questionnaire on existing (sub)national (marine) Science and Technology Strategies at time of report completion.

2. (Sub)National (marine) Science and Technology Strategies within the SEAS-ERA consortium: an overview

2.5. Research strategy duration



The duration of the research strategies varies from country to country, and range from:

- 21 years (Turkey)
- 16 years (UK)
- 11 year (Bulgaria, France, Portugal-Nothren Region, Ukraine)
- 10 years (Norway)
- Seven year (Greece, Ireland, Romania, Spain-Andalusia),
- Six years (Belgium - EWI, France, Germany, NL, UK),
- Five years (NL),
- Four years (Italy, Malta, Spain),
- Three years (Iceland, Italy);
- Annual basis (Belgium – BELSPO).

7. During the lifespan of SEAS-ERA, 14 of the 22 surveyed strategies will come to an end.

3. Scientific Themes

3.1. Background

A series of 11 scientific themes were used in the questionnaire:

1. Understanding the Oceans
2. Climate Change and the Marine Environment
3. Ocean Technologies
4. Energy
5. Food
6. Oceans and Health (Human)
7. Safe and Sustainable use of Marine and Coastal Spaces
8. New Frontiers
9. Maritime Transport
10. Socio-Economic and Legal Research
11. Policy Support (Governance and Regulation)

The 11 themes adapted from the work of an expert group convened in March 2010 by the Marine Board-ESF to devise a systematic approach to addressing the many cross-thematic and multi-disciplinary challenges relevant to seas and oceans in the next decade.

For each of the 11 themes, its level of importance in reference to the Science and Technology Strategy was assessed and colour-coded as follows:



As displayed in Annexes III, V and VII, specific topics further detailed each scientific theme. For each of these topics, its presence in, or absence from, the Science and Technology Strategy was indicated:



Please note: Depending on the strategic document referred to, in certain cases it was not possible for the responder to provide detailed response at the topic level. Some overlap may exist between some topics.

3.2. Overview of indicative importance of the scientific themes

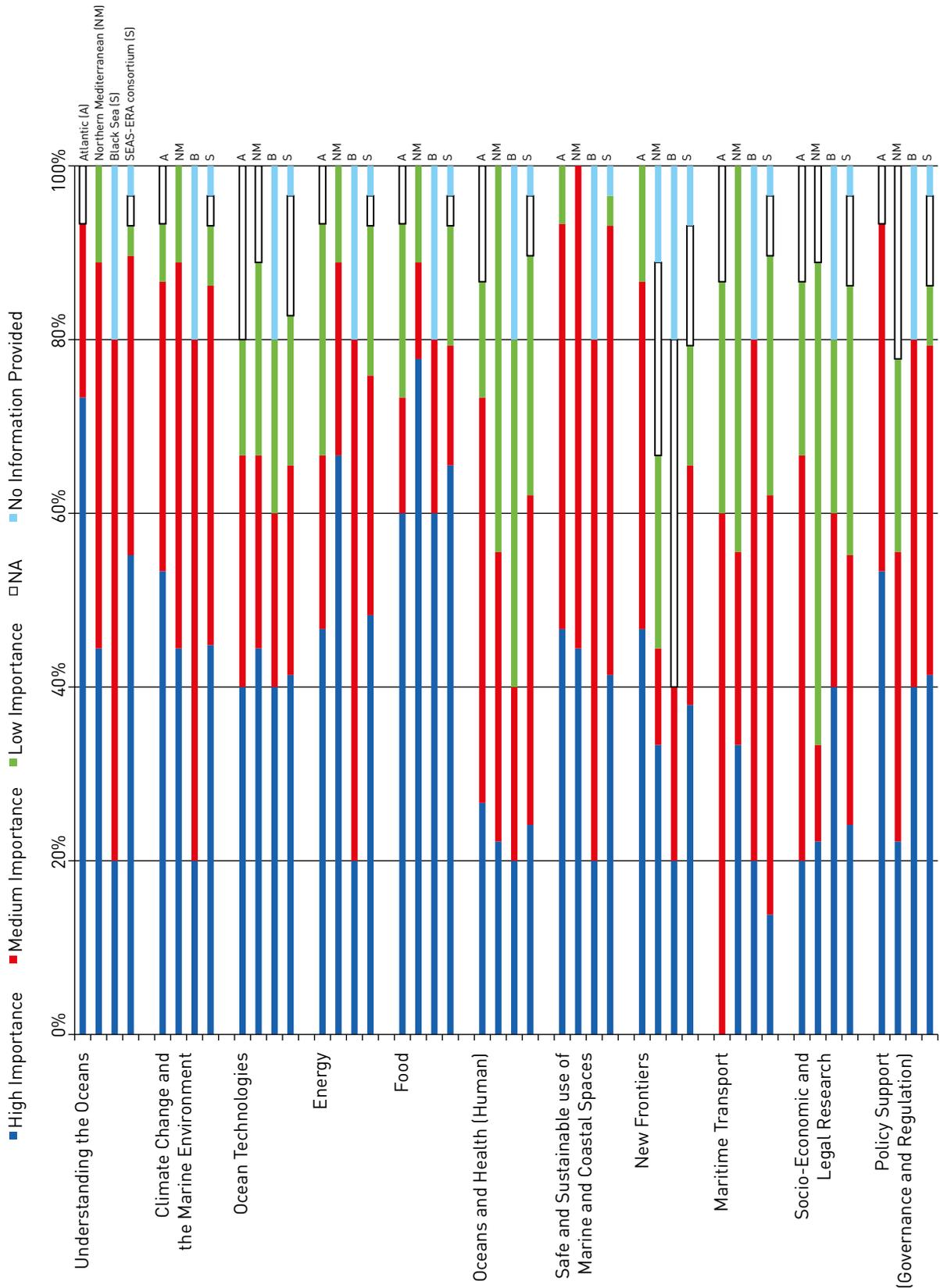


Figure 6: Overview of indicative themes' importance

3. Scientific Themes

3.3. Indicative importance of each theme per sea basin

3.3.1. Indicative importance of the themes in the Atlantic

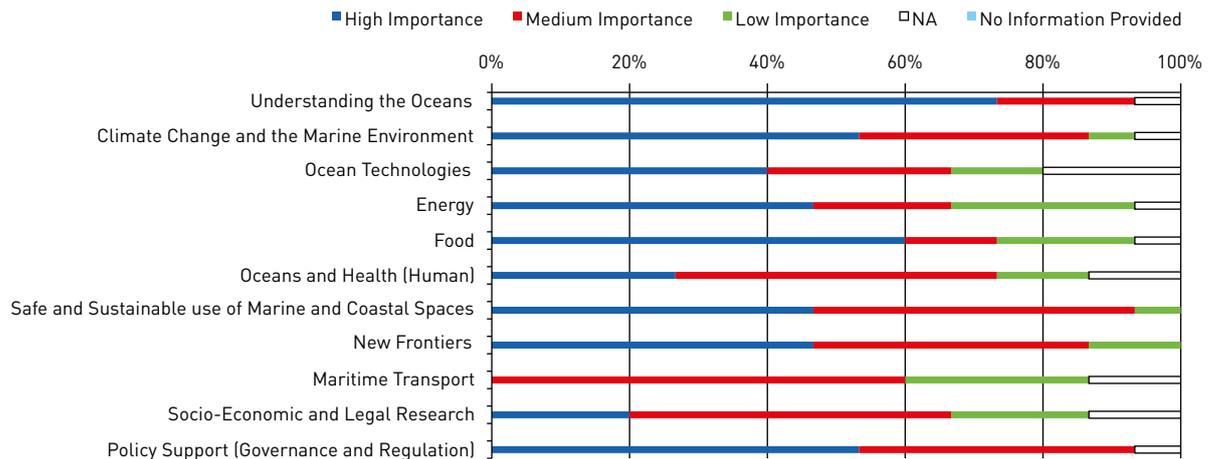


Figure 7: Indicative importance of the themes in the Atlantic

8. In the Atlantic, the theme “Understanding the Oceans” scores “high” in ca. 75% of the national research strategies.
9. In the Atlantic, the theme “Food” scores “high” in 60% of the national research strategies.
10. In the Atlantic, the theme “Maritime Transport” scores “high” in none of the national research strategies.

3.3.2. Indicative importance of the themes in the Northern Mediterranean

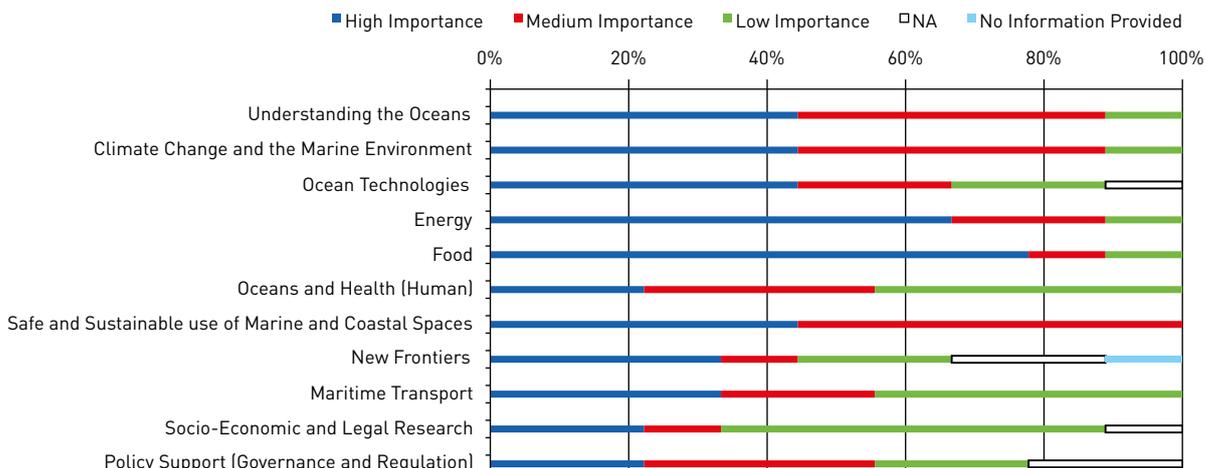


Figure 8: Indicative importance of the themes in the Northern Mediterranean

11. In the Northern Mediterranean, the theme “Food” scores “high” in ca. 80% of the national research strategies.
12. In the Northern Mediterranean, the theme “Safe and Sustainable use of Marine and Coastal Spaces” scores either “high” or “medium” in 100% of the national research strategies.
13. In the Northern Mediterranean, the theme “Socio-economic and Legal Research” scores “low” in ca. 60% of the national research strategies.

3.3.3. Indicative importance of the themes in the Black Sea

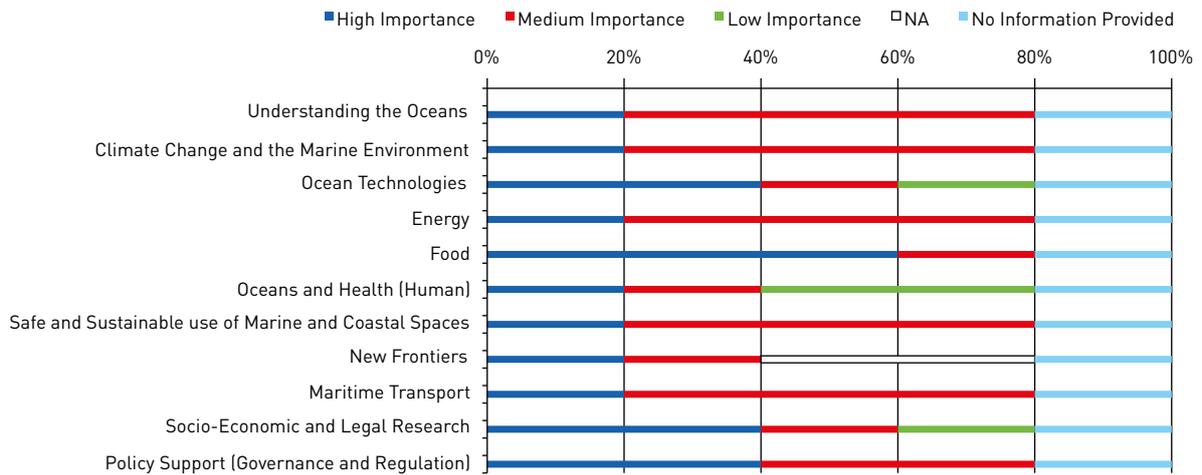


Figure 9: Indicative importance of the themes in the Black Sea

14. In the Black Sea, the theme “Food” scores “high” in 60% of the national research strategies.
15. In the Black Sea, five themes “Understanding the Oceans”, “Climate Change and the Marine Environment”, “Energy”, “Safe and Sustainable use of Marine and Coastal Spaces”, and “Maritime transport” score “medium” in 60% of national research strategies.
16. In the Black Sea, the theme “Oceans and Health (Human)” scores “low” in 40% of the national research strategies.

4. Science support mechanisms

4.1. Background

A series of six science support mechanisms was also at the core of the questionnaire:

1. Research infrastructures
2. Data
3. Careers and training
4. Education
5. Outreach, dissemination of science outputs
6. Transnational and international cooperation

For each of the six themes, its level of importance in reference to the Science and Technology Strategy was assessed and colour-coded as follows:

High	Medium	Low	n/a	Info not provided
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As displayed in Annexes IV, VI and VIII, specific topics further detailed under each scientific theme. For each of these topics, its presence in, or absence from, the Science and Technology Strategy was indicated:

Present	Absent or n/a
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Please note: Depending on the strategic document referred to, in certain cases it was not possible for the responder to provide detailed response at the topic level. Some overlap may exist between some topics.

4.2 Overview of indicative importance of the science support mechanisms

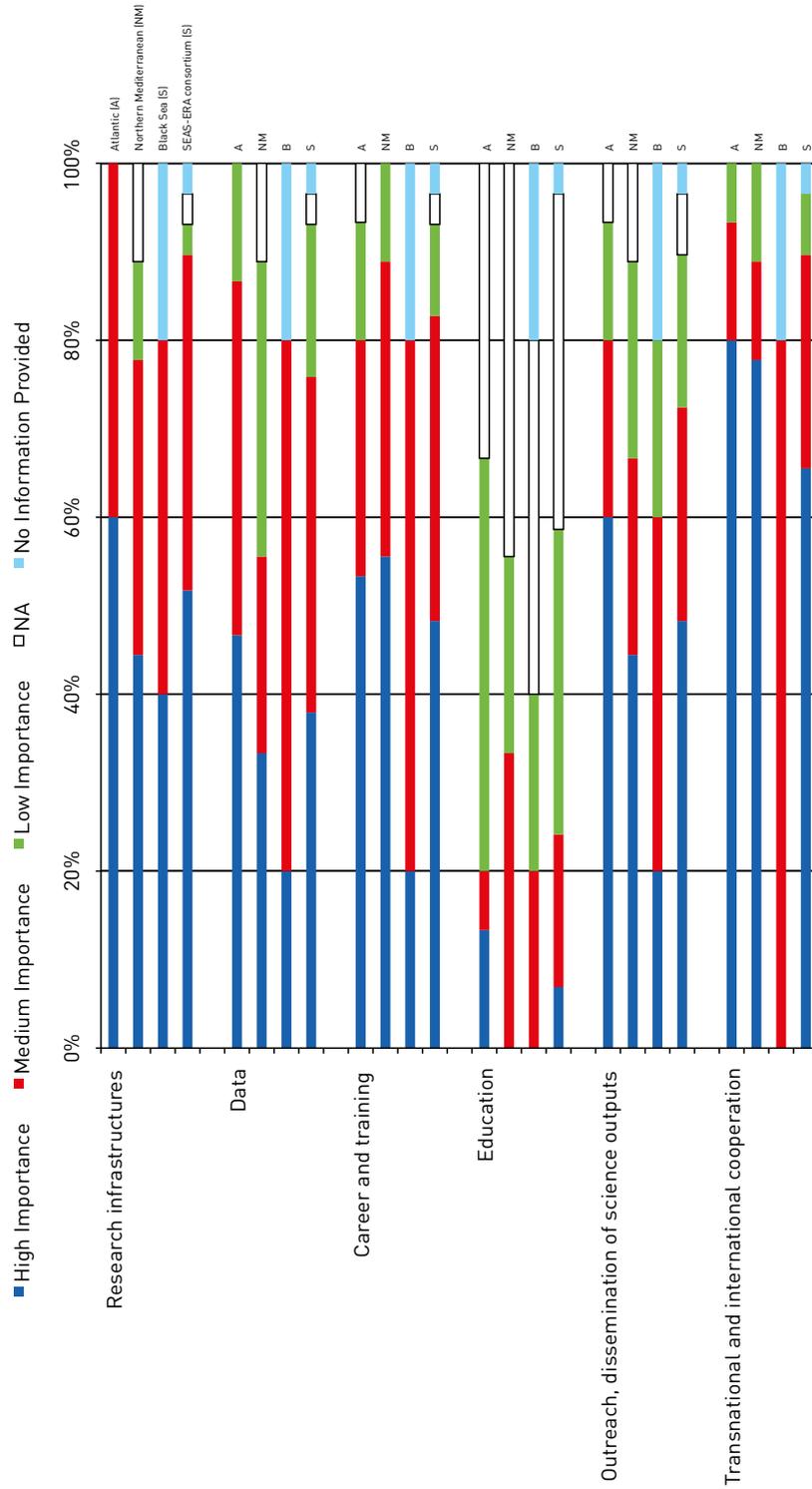


Figure 10: Overview of indicative importance of the science support mechanisms

4. Science support mechanisms

4.3. Indicative importance of each science support mechanism per sea basin

4.3.1. Indicative importance of the science support mechanisms in the Atlantic

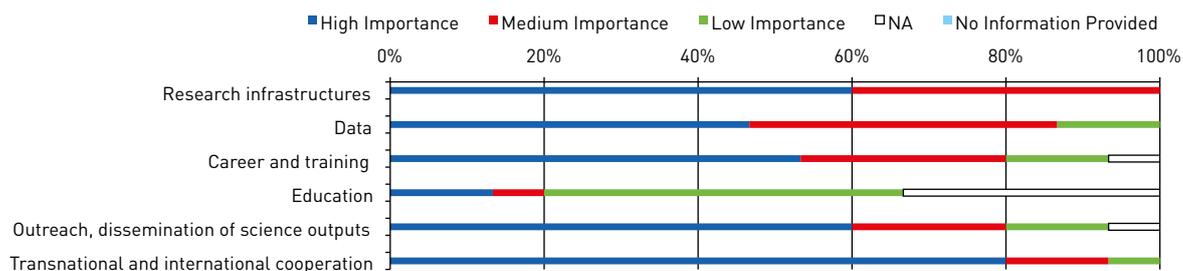


Figure 11: Indicative importance of the science support mechanisms in the Atlantic

17. In the Atlantic, the science support mechanism “Transnational and international cooperation” scores “high” in 80% of the national research strategies.
18. In the Atlantic, the science support mechanism “Education” scores “low” or “not applicable” in 80% of the national research strategies (Education including re. marine matters tend to fall under competence of other authorities, e.g. Ministries of Education)

4.3.2. Indicative importance of the science support mechanisms in the Mediterranean

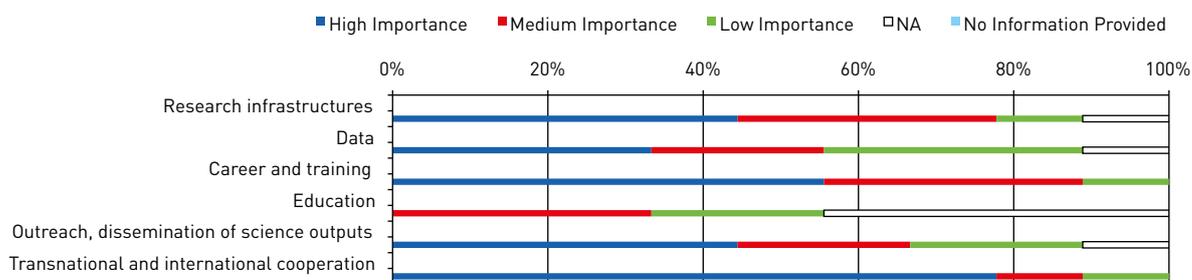


Figure 12: Indicative importance of the science support mechanisms in the Mediterranean

19. In the Northern Mediterranean, the science support mechanism “Transnational and international cooperation” scores “high” in ca. 80% of the national research strategies.
20. In the Northern Mediterranean, the science support mechanism “Education” scores “low” or “not applicable” in 65% of the national research strategies (Education including re. marine matters fall under competence of other authorities, e.g. Ministries of Education).

4.3.3. Indicative importance of the science support mechanisms in the Black Sea

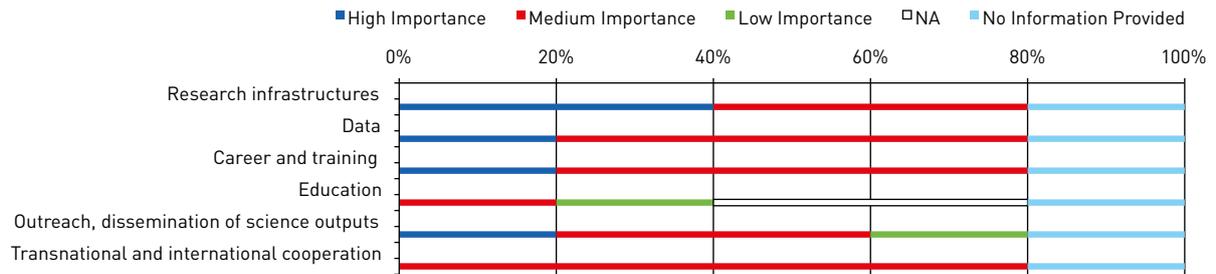


Figure 13: Indicative importance of the science support mechanisms in the Black Sea

21. In the Black Sea, the science support mechanism “Transnational and international cooperation” scores “medium” in ca. 80% of the national research strategies.
22. In the Black Sea, the science support mechanism “Education” scores “low” or “not applicable” in 80% of the national research strategies (Education including re. marine matters fall under competence of other authorities, e.g. Ministries of Education).

5. Concluding remarks

5.1. General concluding remarks

It is important to emphasize that this inventory report addresses (sub)national research and development strategies. The surveyed strategies:

- Were either entirely dedicated to marine and maritime matters; or
- Included a section on marine and maritime matters; or
- Did not refer explicitly to marine and maritime matters.

Implementing programmes are not dealt with in the present report and are instead addressed in SEAS-ERA Task 2.1 “Inventory of research, monitoring and technical programmes and identification of commonalities and gaps”.

National strategies have different drivers, objectives and lifespans as highlighted in the national profiles in section 2.2.

This inventory represents a qualitative assessment of the level of importance of the themes and science support mechanisms in the (sub)national R&D strategies. This inventory report is designed to serve as a background to SEAS-ERA partners discussion on future activities:

- Sea basin Strategic Research Agendas and the identification and prioritisation of pressing research issues, assessed against the sea basin research landscape and policy context;
- Common Programmes and for instance the juxtaposition of national programmes or merger of (elements of) national programmes (ref. SEAS-ERA Workpackage 2 “Common Programmes”);
- Joint Calls and for instance the identification of potential research clusters which could be considered for funding through a dedicated call (ref. SEAS-ERA Workpackage 3 “Joint Calls”).

Informed by the present report, SEAS-ERA future activities could progress towards:

- Improved clustering, possibly integration within a sea basin, across basins or at the pan-European level, of research projects addressing topics which already benefit from a substantial/strong form of support at the national level;
- Joint promotion, possibly funding, of research topics which are currently lacking visibility or support within a sea basin, across basins or at the pan-European level.

Beyond the SEAS-ERA consortium, this inventory could inform:

- The EU Horizon 2020 Programme (2014-2020);
- The ongoing marine or environmental ERA-NETs (i.e. BONUS, BiodivERsA 2, CIRCLE 2, MARTEC 2, MARINEBIOTECH (CSA));
- The Joint Programming Initiative “Healthy and Productive Seas and Oceans” – e.g. the present report could complement the recent report “Joint Programming Initiative Healthy and Productive Seas and Oceans – Mapping exercise” (2011)

5.2. Some specific observations

1. Half of Atlantic countries have developed a dedicated marine research strategy.
2. In two third of the Black Sea countries represented in the SEAS-ERA consortium, the national research strategies do not mention marine matters explicitly.
3. In the Mediterranean Sea Basin, the relevance of national strategies to marine matters is balanced, ranging from low (two countries) via medium (two countries) to high (two countries).
4. In the Atlantic Sea basin, the geographical scope of interest is wider than in the other two sea basins.
5. In the Mediterranean Sea basin, the main (ca. 50%) geographical area of interest is the Mediterranean Sea.
6. In the Black Sea Basin, the geographical scope of interest is almost entirely focused on the Black Sea.
7. During the lifespan of SEAS-ERA, 13 of the 20 surveyed strategies will come to an end.
8. In the Atlantic, the theme "Understanding the Oceans" scores "high" in ca. 75% of the national research strategies.
9. In the Atlantic, the theme "Food" scores "high" in 60% of the national research strategies.
10. In the Atlantic, the theme "Maritime Transport" scores "high" in none of the national research strategies.
11. In the Northern Mediterranean, the theme "Food" scores "high" in ca. 80% of the national research strategies.
12. In the Northern Mediterranean, the theme "Safe and Sustainable use of Marine and Coastal Spaces" scores either "high" or "medium" in 100% of the national research strategies.
13. In the Northern Mediterranean, the theme "Socio-economic and Legal Research" scores "low" in ca. 60% of the national research strategies.
14. In the Black Sea, the theme "Food" scores "high" in 60% of the national research strategies.
15. In the Black Sea, five themes "Understanding the Oceans", "Climate Change and the Marine Environment", "Energy", "Safe and Sustainable use of Marine and Coastal Spaces", and "Maritime Transport" score "medium" in 60% of national research strategies.
16. In the Black Sea, the theme "Oceans and Human Health" scores "low" in 40% of the national research strategies.
17. In the Atlantic, the science support mechanism "Transnational and international cooperation" scores "high" in 80% of the national research strategies.
18. In the Atlantic, the science support mechanism "Education" scores "low" or "not applicable" in 80% of the national research strategies (Education including re. marine matters fall under competence of other authorities, e.g. Ministries of Education)
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20. In the Northern Mediterranean, the science support "Education" scores "low" or "not applicable" in 65% of the national research strategies (Education including re. marine matters fall under competence of other authorities, e.g. Ministries of Education)
21. In the Black Sea, the science support mechanism "Transnational and international cooperation" scores "medium" in ca. 80% of the national research strategies.
22. In the Black Sea, the science support mechanism "Education" scores "low" or "not applicable" in 80% of the national research strategies (Education including re. marine matters fall under competence of other authorities, e.g. Ministries of Education).

Annexes

Annex I	List of SEAS-ERA partners
Annex II	Questionnaire template
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Annex I – List of SEAS-ERA partners

Partner	Organisation	Country	WP6 Atlantic	WP7 Med	WP8 Black Sea
1*	Ministry of Science and Innovation (MICINN) (Project Coordinator.)	Spain	•	•	
2*	Belgian Federal Public Planning Service Science Policy (BELSPO)	Belgium	•		
3*	Ministry of Education, Youth and Science (MEYS)	Bulgaria			•
4*	National Research Agency (ANR)	France	•	•	
5 ¹²	Danish Food Industry Agency (DFIA),	Denmark	-		
6*	Jülich Research Centre GmbH (JÜLICH)	Germany	•		
7*	General Secretariat for Research and Technology (GSRT)	Greece		•	
8*	The Icelandic Centre for Research (RANNIS)	Iceland	•		
9*	Marine Institute (MI)	Ireland	•		
10*	Ministry for Education, Universities and Research (MIUR)	Italy		•	
11*	Research Council of Norway (RCN)	Norway	•		
12*	Malta Council for Science and Technology (MCST)	Malta		•	
13*	Portuguese Foundation for Science and Technology (FCT)	Portugal	•		
14*	Netherlands Organisation for Scientific Research (NWO)	Netherlands	•		
15*	Scientific and Technological Research Council of Turkey(TUBITAK)	Turkey		•	•
16*	Natural Environment Research Council (NERC)	UK	•		
17*	The Department for Environment, Food and Rural Affairs (DEFRA)	UK	•		
18	Marine Board-ESF(MB-ESF)	France	•	•	•
19*	The Executive Agency for Higher Education, Research, Development and Innovation Funding(UEFISCDI)	Romania			•
20*	Kyiv State Center for Scientific, Technical and Economic Information (Ukraine) (KyivCSTEI)	Ukraine			•
21*	National Science Foundation of Georgia (SRNSF)	Georgia			•
22	Institut Français de Recherche pour l'Exploitation de la Mer(Ifremer)	France	•	•	
Third Parties					
*	Consiglio Nazionale delle Ricerche(CNR)	Italy		•	
	European Centre for Information on Marine Science & Technology (EurOcean)	Portugal	•	•	•

* Denotes a Marine Research Funding Organisation (RFOs).

¹²Due to national restructuring, the Danish partner (Danish Food Industry Agency, DFIA), had to withdraw from the SEAS-ERA project early 2010.

Annex II- Inventory questionnaire template

SEAS-ERA - FP7 ERA-NET Towards integrated European marine research strategy and programmes

Task 1.1 Questionnaire: “National and sub-national science and technology strategies”

The below questionnaire is divided into six different sections

1. Responding Organisation and Representative
2. General information on the Science and Technology Strategy
3. Scientific focus
4. Strategic Importance of Science Support Mechanisms
5. Free text

You are invited to respond to each of these sections. Sections 1 to 5 are built as a coherent template; if you are returning information on more than one science and technology strategy (e.g. a national S&T strategy and a specific marine/maritime S&T strategy), **please complete one template per strategy.**

This questionnaire is designed to accommodate responses related to different kinds of national or regional (sub-national) high level documents:

- **Research strategies**, flexible and open;
- **Research plans**, concrete and operational;
- **Research priorities**, coherent set of-

Note: Implementing Programmes (Research, Technology, and Monitoring) are NOT included in this questionnaire; these will addressed in depth within Task 2.1 (leader: ANR) through a separate enquiry and analysis.

Background: MarinERA Brochure N°3 “The 2008 Guide to European marine Science and Technology Policies and Research Funding Programmes” could be used as background document, see attached and at:

<http://www.marinera.net/dissemination/documents/MarinERABrochureNo.3.pdf>

Please return the completed questionnaire to the following e-mail address by 15/09/10 at the latest:
mevrard@esf.org

National and Sub-national Science and Technology Strategies TEMPLATE

1 RESPONDING ORGANISATION AND REPRESENTATIVE

Family name:

First name:

Responder's organisation:

Delegating organisation (if applicable):

Position:

Email address:

Phone number:

2. GENERAL INTRODUCTION

Please give a general description of the Science and Technology Strategy as requested below:

• **Title of the Science and Technology Strategy:**

• **Relevance to marine science and technology**

- High – strategy is entirely dedicated to marine and maritime matters
- Medium – strategy encompasses a section on marine and maritime matters
- Low – strategy does not refer explicitly to marine and maritime matters

• **Leading authority:**

• **Implementing agency(ies) (if applicable):**

• **Geographical scope:**

- National
- Sub-National

If sub-national, please specify which region(s):

• **Primary Objectives of Strategy:**

• **Indicative budget:**

• **Duration:**

- Start:
- End:
- Planned interim review:
 - Yes - when ?
 - No
- Phasing with other regional, national or European strategies or policies:
(e.g. national strategy duration aligned with EU R&D Framework Programmes)

• **Sea basin(s) of interest for the Strategy:**

- Atlantic (incl. North Sea)
- Mediterranean
- Black Sea
- Baltic
- other - please specify:
- not applicable

Link to document (url):

3 . SCIENTIFIC FOCUS

The “Scientific Focus” section is designed to accommodate responses at two different levels of detail; **please indicate:**

- **For each of the 11 themes** (below), its level of importance (i.e. circle the appropriate level: High, Medium, Low or n/a) in reference to the Science and Technology Strategy;
*It is anticipated that all responders could assess the importance of all themes for a given strategy. Please always complete the theme header. * tick where appropriate*
- **For each topic** listed under a theme, its presence (Yes) or absence (No) in the Science and Technology Strategy (tick the appropriate column).
*It is understood that depending on the strategic document referred to, in certain case it may not be possible for the responder to provide detailed response on topics. It is also understood that some overlap may exist between some topics. ** tick where appropriate*

Theme 1* Understanding the Ocean	High	Medium	Low	n/a
Topics related to theme 1**			Yes	No
Marine Ecosystem Functioning				
Marine Biodiversity (Species shifts, invasive species, systematic marine zoology/botany, hotspots, etc.)				
Physical Oceanography (Thermohaline Circulation, Air/Sea Interactions, etc.)				
Chemical Oceanography (Biogeochemical cycling, etc.)				
Geological Ocean Processes				
Other (specify)				

Theme 2* Climate Change and the Marine Environment	High	Medium	Low	n/a
Topics related to theme 2**			Yes	No
Climate change impacts on the marine environment (Study of, Adaptation to-, Mitigation of-)				
Ocean Acidification				
Natural variability against anthropogenic causes of climate change				
Modelling and improved predictive capacity Multi-scale climate evolution models, down-scaling global models to regional/local level				
Other (specify)				

Theme 3* Ocean Technologies	High	Medium	Low	n/a
Topics related to theme 3**			Yes	No
Blue Biotechnology				
New material for ocean structures				
Smart marine/aquatic systems (Sensors, monitoring, survey technology, subsea acoustics, etc.)				
Biomimetics				
Carbon Capture and Storage				
Other (specify)				

Theme 4* Energy	High	Medium	Low	n/a
Topics related to theme 4**			Yes	No
Marine Renewable Energy (General)				
Offshore Wind, Wave and Tidal energy				
Salinity Gradient, Thermal Gradient, and Marine Biomass (micro and macro organisms)				
Research associated with Oil and Gas discovery, exploitation and decommissioning activities				
Gas (methane) Hydrates				
Other (specify)				
Theme 5* Food	High	Medium	Low	n/a
Topics related to theme 5**			Yes	No
Fisheries and sustainable harvest of bioresources (incl. gear selectivity, valorisation, etc.)				
Aquaculture and sustainable production of bioresources				
Seafood – Safety and Human health benefits (Traceability, certification and labelling)				
Functional Food Research (marine based)				
Other (specify)				
Theme 6* Oceans and Health (Human)	High	Medium	Low	n/a
Topics related to theme 6**			Yes	No
Study of health hazards (Disease/pathogen transmission, Harmful Algal Blooms, etc.)				
Bioremediation				
Marine bioprospecting (new molecules, functional (non) food products)				
Other (specify)				
Theme 7*: Safe and sustainable use of marine and coastal spaces	High	Medium	Low	n/a
Topics related to theme 7**			Yes	No
Maritime Spatial Planning (e.g. sectors: fisheries and aquaculture, aggregate/mineral extraction, energy, tourism)				
Integrated management of marine environment and resources / Ecosystem Approach to Management				
Anthropogenic impact on marine environment ([Accidental] pollution, dumping, etc.)				
Survey (Seabed Mapping, Habitat Mapping)				
Integrated River Basin Management				
Other (specify)				

Theme 8* New frontiers	High	Medium	Low	n/a
Topics related to overall theme 8**			Yes	No
Deep Sea Research				
Polar Research				
Life in extreme environments				
Other (specify)				

Theme 9* Maritime Transport	High	Medium	Low	n/a
Topics related to theme 9**			Yes	No
New Ship Design (Advanced against extreme weather, greener with reduced emissions, etc.)				
Impacts of maritime activities on marine environment: surveillance and mitigation (Shipping, dredging, fouling, ballast water, noise etc.)				
port operations, traffic logistics, tracking technologies, etc.				
Safety at sea				
Other (specify)				

Theme 10* Socio-Economic and Legal Research	High	Medium	Low	n/a
Topics related to theme 10**			Yes	No
Socio-economic impacts of marine environmental change				
Economic valuation of marine environmental goods and services				
Risk Analysis				
Communities/Regions/Sectors at Risk (Coastal communities, fisheries sector, etc.)				
Law of the Sea, management of high seas				
Other (specify)				

Theme 11* Policy Support (Governance and Regulation)	High	Medium	Low	n/a
Topics related to theme 11**			Yes	No
Marine Strategy Framework Directive Indicators of Ecosystem Health / Good Environmental Status				
Marine Protected Areas and conservation measures				
Common Fisheries Policy				
Integrated Coastal Zone Management				
Water Framework Directive				
Research towards improved maritime governance, effective policy-making				
Other (specify)				

Other theme (specify)*	High	Medium	Low	n/a
	Related topics**		Yes	No

4. SCIENCE SUPPORT MECHANISMS

The “Science Support Mechanisms” section is designed to accommodate responses at two different levels of detail; **please indicate:**

- **For each of the 6 science support mechanisms** (below), its level of importance (i.e. circle the appropriate level: High, Medium, Low or n/a) in reference to the Science and Technology Strategy;
*It is anticipated that all responders could assess the importance of all science support mechanisms for a given strategy. Please always complete the science support mechanism header. * tick where appropriate*
- **For each topic** listed under a science support mechanism, its presence (Yes) or absence (No) in the Science and Technology Strategy (tick the appropriate column).
*It is understood that depending on the strategic document referred to, in certain case it may not be possible for the responder to provide detailed response on topics. It is also understood that some overlap may exist between some topics. ** tick where appropriate*

Science support mechanism 1* Research infrastructures	High	Medium	Low	n/a
Related topics**			Yes	No
New vessel(s) (design, launch, operation of-)				
Ship time (access, exchange, collaboration with other countries)				
<i>In situ</i> observation infrastructures / Data Collection				
Remote observation infrastructures / Data Collection				
Develop new Research Facilities for Marine Research (specialist laboratories, test facilities, etc.)				
Other (specify)				

Science support mechanism 2* Data	High	Medium	Low	n/a
Related topics**			Yes	No
Secure long-term monitoring / time series datasets				
Metocean (Importance for climate change, maritime transport, etc.)				
Data Access				
Data Management				
Data Sharing				
Other (specify)				

Science support mechanism 3* Careers and training	High	Medium	Low	n/a
Related topics**			Yes	No
Increased PhD output				
Develop marine graduate training programmes				
Increased researcher mobility (inward & outward)				
Improved career pathway and job security for science graduates				
Exchange of best practices and training for technicians and operators				
New/improved graduate courses to meet new sectors needs (e.g. waterborne transport, renewable energy sector, etc.)				
Other (specify)				

Science support mechanism 4* Education	High	Medium	Low	n/a
Related topics**			Yes	No
School level training in marine science (adapted curricula)				
Primary school teacher training in marine science				
Other (specify)				
Science support mechanism 5* Outreach, dissemination of science outputs	High	Medium	Low	n/a
Related topics**			Yes	No
Translation of research results to knowledge for decision makers				
Public Awareness of marine research, research results				
Ocean Literacy (what do citizen know about seas and oceans?)				
Other (specify)				
Science support mechanism 6* Transnational and international cooperation	High	Medium	Low	n/a
Related topics**			Yes	No
Bilateral/multilateral science partnership/collaboration				
Increase participation in collaborative European projects				
Increase sharing of facilities and infrastructures				
Increase international (beyond Europe) research focus and/or cooperation				
Other (specify)				
Other science support mechanism*	High	Medium	Low	n/a
Related topics**			Yes	No
(Specify)				

5. Free text

Should you wish to provide further or more detailed information, please use the free text box below:

Additional information, on e.g.:

- Context – how does the marine strategy relate to national S&T strategy?;
- Main successes to date;
- Future plans /priorities;
- Impact of recession (e.g. budgetary cuts / further prioritisation, etc.)
- Other national strategies (e.g. Environment, Energy, etc.) that may have a marine component.

Annex III Scientific themes in the Atlantic

N° Themes: **High** **Medium** **Low**
 Topics: **Present** **Absent or n/a**

Countries	BE	BE	FR	FR	FR	DE	IS	IE	NL	NL	NO	PT	PT	ES	ES	UK
	BELSP0 Nation	BE Region	Ifremer	CNRS -INSU	PTJ- MGT	RANNIS	MI	NWO	NIOZ	RCN	FCT Nation	ON2 Region	MICINN Nation	PAIDI Region	NERC- DEFRA	
1. Understanding the oceans																
• Marine Ecosystem Functioning																
• Marine Biodiversity (Species shifts, invasive species, systematic marine zoology/botany, hotspots, etc.)																
• Physical Oceanography (Thermohaline Circulation, Air/Sea Interactions, etc.)																
• Chemical Oceanography (Biogeochemical cycling, etc.)																
• Geological Ocean Processes																
2. Climate Change and the Marine Environment																
• Climate change impacts on the marine environment (Study of, Adaptation to-, Mitigation of-)																
• Ocean Acidification																
• Natural variability against anthropogenic causes of climate change																
• Modelling and improved predictive capacity Multi-scale climate evolution models, down-scaling global models to regional/local level																
• Economy of Climate Change																
• Effect on energetic supply																

Countries	BE	BE	FR	FR	FR	DE	IS	IE	NL	NL	NO	PT	PT	ES	ES	UK
Implementing organisations	BELSP0 Nation	EWI Region	ifremer	CNRS -INSU	PTJ-MGT	RANNIS	MI	NWO	NIOZ	RCN	FCT Nation	ON2 Region	MICINN Nation	PAIDI Region	NERC-DEFRA	
3. Ocean Technologies																
• Blue Biotechnology																
• New material for ocean structures																
• Smart marine/aquatic systems (Sensors, monitoring, survey technology, subsea acoustics, etc.)																
• Biomimetics																
• Carbon Capture and Storage																
4. Energy																
• Marine Renewable Energy (General)																
• Offshore Wind, Wave and Tidal energy																
• Salinity Gradient, Thermal Gradient, and Marine Biomass (micro and macro organisms)																
• Research associated with Oil and Gas discovery, exploitation and decommissioning activities																
• Gas (methane) Hydrates																
• Use of onboard produced waste for energy production																

Countries	BE	BE	FR	FR	FR	DE	IS	IE	NL	NL	NO	PT	PT	ES	ES	UK
Implementing organisations	BELSP0 Nation	EWI Region	Ifremer	CNRS -INSU	PTJ-MGT	RANNIS	MI	NWO	NIOZ	RCN	FCT Nation	ON2 Region	MICINN Nation	PAIDI Region	NERC-DEFRA	
5. Food					N/A											
• Fisheries and sustainable harvest of bioresources (incl. gear selectivity, valorisation)																
• Aquaculture and sustainable production of bioresources																
• Seafood – Safety and Human health benefits (Traceability, certification and labelling)																
• Functional Food Research (marine based)																
6. Oceans and Health (Human)																
• Study of health hazards (Disease/pathogen transmission, Harmful Algal Blooms, etc.)																
• Bioremediation																
• Marine bioprospecting (new molecules, functional (non) food)																
7. Safe and sustainable use of marine and coastal spaces																
• Maritime Spatial Planning (e.g. sectors: fisheries/aquaculture, aggregate/mineral extraction, energy, tourism)																
• Integrated management of marine environment and resources / EAM																
• Anthropogenic impact on marine environment ([Accidental] pollution, dumping, etc.)																
• Survey (Seabed Mapping, Habitat Mapping)																

Countries	BE	BE	FR	FR	FR	DE	IS	IE	NL	NL	NO	PT	PT	ES	ES	UK
Implementing organisations	BELSP0 Nation	EWI Region	Ifremer	CNRS -INSU	PTJ- MGT	RANNIS	MI	NWO	NIOZ	RCN	FCT Nation	ON2 Region	MICINN Nation	PAIDI Region	NERC- DEFRA	
8. New frontiers																
Deep Sea Research																
Polar Research																
Life in extreme environments																
9. Maritime transport																
• New Ship Design (Advanced against extreme weather, greener with reduced emissions, etc.)																
• Impacts of maritime activities on marine environment: surveillance and mitigation (Shipping, dredging, fouling, ballast water, noise etc.)																
• Port operations, traffic logistics, tracking technologies, etc.																
• Safety at sea																
10. Socio-Economic and Legal Research																
• Socio-economic impacts of marine environmental change																
• Economic valuation of marine environmental goods and services																
• Risk Analysis																
• Communities/Regions/Sectors at Risk (Coastal communities, fisheries, etc.)																
• Law of the Sea, management of high seas																
• Logistics, Shipping markets, management, HES																
• Inter-regional collaboration																

Countries	BE	BE	FR	FR	FR	DE	IS	IE	NL	NL	NO	PT	PT	ES	ES	UK
Implementing organisations	BELSP0 Nation	BE EWI Region	Ifremer	CNRS -INSU	PTJ- MGT	RANNIS	MI	NWO	NIOZ	RCN	FCT Nation	ON2 Region	MICINN Nation	PAIDI Region	NERC- DEFRA	
11. Policy Support (Governance and Regulation)																
• Marine Strategy Framework Directive Indicators of Ecosystem Health / Good Environmental Status																
• Marine Protected Areas and conserva- tion measures																
• Common Fisheries Policy																
• Integrated Coastal Zone Management																
• Water Framework Directive																
• Research towards improved maritime governance, effective policy-making																

Annex IV Science support mechanisms in the Atlantic

N° Themes: **High** **Medium** **Low**
 Topics: **Present** **Absent or n/a**

Countries	BE	BE	FR	FR	FR	DE	IS	IE	NL	NL	NO	PT	PT	ES	ES	UK
Implementing organisations	BELSP0 Nation	EWI Region	Ifremer	CNRS -INSU	PTJ-MGT	RANNIS	MI	NWO	NIOZ	RCN	FCT Nation	ON2 Region	MICINN Nation	PAIDI Region	NERC-DEFRA	
1. Research infrastructures	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High
• New vessel(s) (design, launch, operation of-)	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High
• Ship time (access, exchange, collaboration with other countries)	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High
• <i>In situ</i> observation infrastructures / Data Collection	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High
• Remote observation infrastructures / Data Collection	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High
• Develop new Research Facilities for Marine Research (specialist lab, test facilities, etc.)	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High
• Towing tank for ships, Ocean basin for ships and Offshore structures	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High
• Support for the existing marine infrastructure (vessels)	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High
2. Data	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High
• Secure long-term monitoring / time series datasets	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High
• Metocean (Importance for climate change, maritime transport, etc.)	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High
• Data Access	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High
• Data Management	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High
• Data Sharing	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High	High

Countries	BE	BE	FR	FR	FR	DE	IS	IE	NL	NL	NL	NO	PT	PT	ES	ES	UK
Implementing organisations	BELSP0 Nation	EWI Region	Ifremer	CNRS -INSU	PTJ- MGT	RANNIS	MI	NWO	NIOZ	RCN	FCT Nation	ON2 Region	MICINN Nation	PAIDI Region	NERC- DEFRA		
3. Career and training						N/A											
• Increased PhD output																	
• Develop marine graduate training programmes																	
• Increased researcher mobility (inward & outward)																	
• Improved career pathway and job security for science graduates																	
• Exchange of best practices and training for technicians and operators																	
• New/improved graduate courses to meet new sectors needs																	
• Ocean engineering																	
4. Education																	
• School level training in marine science (adapted curricula)																	
• Primary school teacher training in marine science																	
• e-learning																	
5. Outreach, dissemination of science outputs																	
• Translation of research results to knowledge for decision makers																	
• Public Awareness of marine research, research results																	
• Ocean Literacy (what do citizen know about seas and oceans?)																	
• History of science																	

Countries	BE	BE	FR	FR	FR	DE	IS	IE	NL	NL	NO	PT	ES	ES	UK
Implementing organisations	BELSP0 Nation	EWI Region	Ifremer	CNRS -INSU	PTJ- MGT	RANNIS	MI	NWO	NIOZ	RCN	FCT Nation	ON2 Region	MICINN Nation	PAIDI Region	NERC- DEFRA
6. Transnational and international cooperation															
• Bilateral/multilateral science partnership/collaboration															
• Increase participation in collaborative European projects															
• Increase sharing of facilities and infra-structures															
• Increase international (beyond Europe) research focus and/or cooperation															
• International cooperation re. Education															

Annex V Scientific themes in the Northern Mediterranean

Key: N° Themes: High Present Medium Absent or n/a Low

Countries	FR	FR	FR	EL	IT	IT	IT	MT	ES	ES	ES	TR
Implementing organisations	Ifremer	CNRS-INSU	GSRT	CNR	COI	MCST	MICINN	Andalucía	TUBITAK			
1. Understanding the oceans												
• Marine Ecosystem Functioning												
• Marine Biodiversity (Species shifts, invasive species, systematic marine zoology/botany, hotspots, etc.)												
• Physical Oceanography (Thermohaline Circulation, Air/Sea Interactions, etc.)												
• Chemical Oceanography (Biogeochemical cycling, etc.)												
• Geological Ocean Processes												
2. Climate Change and the Marine Environment												
• Climate change impacts on the marine environment (Study of, Adaptation to-, Mitigation of-)												
• Ocean Acidification												
• Natural variability against anthropogenic causes of climate change												
• Modelling and improved predictive capacity												
• Multi-scale climate evolution models, down-scaling global models to regional/local level												
• Economy of Climate Change												
• Effect on energetic supply												

Countries	FR	FR	FR	EL	IT	IT	IT	MT	ES	ES	ES	TR
Implementing organisations	Ifremer	CNRS-INSU	GSRT	CNR	COI	MCST	MICINN	Andalucía	TUBITAK			
3. Ocean Technologies												
• Blue Biotechnology												
• New material for ocean structures												
• Smart marine/aquatic systems (Sensors, monitoring, survey technology, subsea acoustics, etc.)												
• Biomimetics												
• Carbon Capture and Storage												
4. Energy												
• Marine Renewable Energy (General)												
• Offshore Wind, Wave and Tidal energy												
• Salinity Gradient, Thermal Gradient, and Marine Biomass (micro and macro organisms)												
• Research associated with Oil and Gas discovery, exploitation and decommissioning activities												
• Gas (methane) Hydrates												
• Use of onboard produced waste for energy production												
5. Food												
• Fisheries and sustainable harvest of bioresources (incl. gear selectivity, valorisation)												
• Aquaculture and sustainable production of bioresources												
• Seafood – Safety and Human health benefits (Traceability, certification and labelling)												
• Functional Food Research (marine based)												

Countries	FR	FR	FR	EL	IT	IT	IT	MT	ES	ES	TR
Implementing organisations	Ifremer	CNRS-INSU	GSRT	CNR	COI	MCST	MICINN	Andalucía	TUBITAK		
6. Oceans and Health (Human)											
• Study of health hazards (Disease/pathogen transmission, Harmful Algal Blooms, etc.)											
• Bioremediation											
• Marine bioprospecting (new molecules, functional (non) food)											
7. Safe and sustainable use of marine and coastal spaces											
• Maritime Spatial Planning (e.g. sectors: fisheries and aquaculture, aggregate/mineral extraction, energy, tourism)											
• Integrated management of marine environment and resources / EAM											
• Anthropogenic impact on marine environment ([Accidental] pollution, dumping, etc.)											
• Survey (Seabed Mapping, Habitat Mapping)											
• Integrated River Basin Management											
8. New frontiers											
• Deep Sea Research											
• Polar Research											
• Life in extreme environments											
9. Maritime transport											
• New Ship Design (Advanced against extreme weather, greener with reduced emissions, etc.)											
• Impacts of maritime activities on marine environment: surveillance and mitigation (Shipping, dredging, fouling, ballast water, noise etc.)											
• Port operations, traffic logistics, tracking technologies, etc.											
• Safety at sea											

Annex VI Science support mechanisms in the Northern Mediterranean

N° Themes: **High** **Medium** **Low**
 Topics: **Present** **Absent or n/a**

Countries	FR	FR	EL	IT	IT	MT	ES	ES	ES	TR
Implementing organisations	Ifremer	CNRS-INSU	GSRT	CNR	COI	MCST	MICINN	Andalucía		TUBITAK
1. Research infrastructures										
• New vessel(s) (design, launch, etc.)										
• Ship time (access, exchange, collaboration with other countries)										
• <i>In situ</i> observation infrastructures / Data Collection										
• Remote observation infrastructures / Data Collection										
• Develop new Research Facilities for Marine Research (test facilities, etc.)										
• Towing tank for ships, Ocean basin for ships and Offshore structures										
• Support for the existing marine infrastructure (vessels)										
2. Data										
• Secure long-term monitoring / time series datasets										
• Metocean (Importance for climate change, maritime transport, etc.)										
• Data Access										
• Data Management										
• Data Sharing										

Countries	FR	FR	FR	EL	IT	IT	IT	MT	ES	ES	ES	TR
Implementing organisations	Ifremer	CNRS-INSU	GSRT	CNR	COI	MCST	MICINN	Andalucía	TUBITAK			
3. Career and training												
• Increased PhD output												
• Develop marine graduate training												
• Increased researcher mobility												
• Improved career pathway and job security for science graduates												
• Exchange of best practices and training for technicians and operators												
• New/improved graduate courses to meet new sectors needs												
• Ocean engineering												
4. Education												
• School level training in marine science (adapted curricula)												
• Primary school teacher training in marine science												
• e-learning												
5. Outreach, dissemination of science outputs												
• Translation of research results to knowledge for decision makers												
• Public Awareness of marine research, research results												
• Ocean Literacy												
• History of science												
6. Transnational and international cooperation												
• Bilateral/multilateral science partnership/collaboration												
• Increase participation in collaborative European projects												
• Increase sharing of facilities and infra-structures												
• Increase international (beyond Europe) research focus and/or cooperation												
• International cooperation re. Education												

Annex VII Scientific themes in the Black Sea

N° Themes: Topics:	High	Medium	Low
	Present	Absent or n/a	

Countries	BG	GE	RO	TR	UA
Implementing organisations	MON		UEFISCDI	TUBITAK	KyivCSTEI
1. Understanding the oceans					
• Marine Ecosystem Functioning					
• Marine Biodiversity (Species shifts, invasive species, systematic marine zoology/botany, hotspots, etc.)					
• Physical Oceanography (Thermohaline Circulation, Air/Sea Interactions, etc.)					
• Chemical Oceanography (Biogeochemical cycling, etc.)					
Geological Ocean Processes					
2. Climate Change and the Marine Environment					
• Climate change impacts on the marine environment (Study of, Adaptation to-, Mitigation of-)					
• Ocean Acidification					
• Natural variability against anthropogenic causes of climate change					
• Modelling and improved predictive capacity Multi-scale climate evolution models, down-scaling global models to regional/local level					
• Economy of Climate Change					
• Effect on energetic supply					
3. Ocean Technologies					
• Blue Biotechnology					
• New material for ocean structures					
• Smart marine/aquatic systems (Sensors, monitoring, survey technology, subsea acoustics, etc.)					
• Biomimetics					
• Carbon Capture and Storage					

Countries	BG	GE	RO	TR	UA
Implementing organisations	MON		UEFISCDI	TUBITAK	KyivCSTEI
4. Energy					
• Marine Renewable Energy (General)					
• Offshore Wind, Wave and Tidal energy					
• Salinity Gradient, Thermal Gradient, and Marine Biomass (micro and macro organisms)					
• Research associated with Oil and Gas discovery, exploitation and decommissioning activities					
• Gas (methane) Hydrates					
• Renewable energy sensu lato					
• Use of onboard produced waste for energy production					
5. Food					
• Fisheries and sustainable harvest of bioresources (incl. gear selectivity, valorisation)					
• Aquaculture and sustainable production of bioresources					
• Seafood – Safety and Human health benefits (Traceability, certification and labelling)					
• Functional Food Research (marine based)					
6. Oceans and Health (Human)					
• Study of health hazards (Disease/pathogen transmission, Harmful Algal Blooms, etc.)					
• Bioremediation					
• Marine bioprospecting (new molecules, functional (non) food)					
7. Safe and sustainable use of marine and coastal spaces					
• Maritime Spatial Planning (e.g. sectors: fisheries and aquaculture, aggregate/mineral extraction, energy, tourism)					
• Integrated management of marine environment and resources / EAM					
• Anthropogenic impact on marine environment ([Accidental] pollution, dumping, etc.)					
• Survey (Seabed Mapping, Habitat Mapping)					
• Integrated River Basin Management					
8. New frontiers	N/A			N/A	
• Deep Sea Research					
• Polar Research					
• Life in extreme environments					

Countries	BG	GE	RO	TR	UA
Implementing organisations	MON		UEFISCDI	TUBITAK	KyivCSTEI
9. Maritime transport					
• New Ship Design (Advanced against extreme weather, greener with reduced emissions, etc.)					
• Impacts of maritime activities on marine environment: surveillance and mitigation (Shipping, dredging, fouling, ballast water, noise etc.)					
• Port operations, traffic logistics, tracking technologies, etc.					
• Safety at sea					
10. Socio-Economic and Legal Research					
• Socio-economic impacts of marine environmental change					
• Economic valuation of marine environmental goods and services					
• Risk Analysis					
• Communities/Regions/Sectors at Risk (Coastal communities, fisheries sector, etc.)					
• Law of the Sea, management of high seas					
• Logistics, Shipping markets, management, HES					
• Inter-regional collaboration					
11. Policy Support (Governance and Regulation)					
• Marine Strategy Framework Directive Indicators of Ecosystem Health / Good Environmental Status					
• Marine Protected Areas and conservation measures					
• Common Fisheries Policy					
• Integrated Coastal Zone Management					
• Water Framework Directive					
• Research towards improved maritime governance, effective policy-making					

Annex VIII Science support mechanisms in the Black Sea

N° Themes:

High	Medium	Low
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Key: Topics:

Present	Absent or n/a
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Countries	BG	GE	RO	TR	UA
Implementing organisations	MON		UEFISCDI	TUBITAK	KyivCSTEI
1. Research infrastructures					
• New vessel(s) (design, launch, operation of-)					
• Ship time (access, exchange, collaboration with other countries)					
• <i>In situ</i> observation infrastructures / Data Collection					
• Remote observation infrastructures / Data Collection					
• Develop new Research Facilities for Marine Research (specialist laboratories, test facilities, etc.)					
• Towing tank for ships, offshore structures					
• Support for the existing marine infrastructure (vessels)					
2. Data					
• Secure long-term monitoring / time series datasets					
• Metocean (Importance for climate change, maritime transport, etc.)					
• Data Access					
• Data Management					
• Data Sharing					
3. Career and training					
• Increased PhD output					
• Develop marine graduate training programmes					
• Increased researcher mobility (inward & outward)					
• Improved career pathway and job security for science graduates					
• Exchange of best practices & training for technicians					
• New/improved graduate courses to meet new sectors needs (e.g. waterborne transport, renewable energy sector, etc.)					
• Ocean engineering					

Countries	BG	GE	RO	TR	UA
Implementing organisations	MON		UEFISCDI	TUBITAK	KyivCSTEI
4. Education			N/A	N/A	
• School level training in marine science (adapted curricula)					
• Primary school teacher training in marine science					
• e-learning					
5. Outreach, dissemination of science outputs					
• Translation of research results to knowledge for decision makers					
• Public Awareness of marine research, research results					
• Ocean Literacy (what do citizen know about seas and oceans?)					
• History of science					
6. Transnational and international cooperation					
• Bilateral/multilateral science partnership/collaboration					
• Increase participation in collaborative European projects					
• Increase sharing of facilities and infrastructures					
• Increase international (beyond Europe) research focus and/or cooperation					
• international cooperation re. Education					

Annex IX Scientific themes in the Southern Mediterranean

N° Themes: High Medium Low
 Key: Topics: Present Absent or n/a

Countries	DZ	HR	EG	IL	PS	SY
Implementing organisations	RASMER		NIOF	IOLR	MoEHE	Nat S&T
1. Understanding the oceans		N/A			N/A	
• Marine Ecosystem Functioning						
• Marine Biodiversity (Species shifts, invasive species, systematic marine zoology/botany, hotspots, etc.)						
• Physical Oceanography (Thermohaline Circulation, Air/Sea Interactions, etc.)						
• Chemical Oceanography (Biogeochemical cycling, etc.)						
• Geological Ocean Processes						
2. Climate Change and the Marine Environment		N/A				
• Climate change impacts on the marine environment (Study of, Adaptation to-, Mitigation of-)						
• Ocean Acidification						
• Natural variability against anthropogenic causes of climate change						
• Modelling and improved predictive capacity Multi-scale climate evolution models, down-scaling global models to regional/local level						
• Economy of Climate Change						
• Effect on energetic supply						
3. Ocean Technologies		N/A				
• Blue Biotechnology						
• New material for ocean structures						
• Smart marine/aquatic systems (Sensors, monitoring, survey technology, subsea acoustics, etc.)						
• Biomimetics						
• Carbon Capture and Storage						

Countries	DZ	HR	EG	IL	PS	SY
Implementing organisations	RASMER		NIOF	IOLR	MoEHE	Nat S&T
4. Energy		N/A				
• Marine Renewable Energy (General)						
• Offshore Wind, Wave and Tidal energy						
• Salinity Gradient, Thermal Gradient, and Marine Biomass (micro and macro organisms)						
• Research associated with Oil and Gas discovery, exploitation and decommissioning activities						
• Gas (methane) Hydrates						
• Renewable energy sensu lato						
• Use of onboard produced waste for energy production						
5. Food		N/A				
• Fisheries and sustainable harvest of bioresources (incl. gear selectivity, valorisation)						
• Aquaculture and sustainable production of bioresources						
• Seafood – Safety and Human health benefits (Traceability, certification and labelling)						
• Functional Food Research (marine based)						
6. Oceans and Health (Human)		N/A				
• Study of health hazards (Disease/pathogen transmission, Harmful Algal Blooms, etc.)						
• Bioremediation						
• Marine bioprospecting (new molecules, functional (non) food)						
7. Safe and sustainable use of marine and coastal spaces		N/A			N/A	
• Maritime Spatial Planning (e.g. sectors: fisheries and aquaculture, aggregate/mineral extraction, energy, tourism)						
• Integrated management of marine environment and resources / EAM						
• Anthropogenic impact on marine environment ([Accidental] pollution, dumping, etc.)						
• Survey (Seabed Mapping, Habitat Mapping)						
• Integrated River Basin Management						
8. New frontiers	N/A	N/A			N/A	
• Deep Sea Research						
• Polar Research						
• Life in extreme environments						

Countries	DZ	HR	EG	IL	PS	SY
Implementing organisations	RASMER		NIOF	IOLR	MoEHE	Nat S&T
9. Maritime transport		N/A			N/A	
• New Ship Design (Advanced against extreme weather, greener with reduced emissions, etc.)						
• Impacts of maritime activities on marine environment: surveillance and mitigation (Shipping, dredging, fouling, ballast water, noise etc.)						
• Port operations, traffic logistics, tracking technologies, etc.						
• Safety at sea						
10. Socio-Economic and Legal Research		N/A			N/A	
• Socio-economic impacts of marine environmental change						
• Economic valuation of marine environmental goods and services						
• Risk Analysis						
• Communities/Regions/Sectors at Risk (Coastal communities, fisheries sector, etc.)						
• Law of the Sea, management of high seas						
• Logistics, Shipping markets, management, HES						
• Inter-regional collaboration						
11. Policy Support (Governance and Regulation)		N/A			N/A	
• Marine Strategy Framework Directive Indicators of Ecosystem Health / Good Environmental Status						
• Marine Protected Areas and conservation measures						
• Common Fisheries Policy						
• Integrated Coastal Zone Management						
• Water Framework Directive						
• Research towards improved maritime governance, effective policy-making						

Annex X Science support mechanisms in the Southern Mediterranean

N° Themes: **High** **Medium** **Low**
 Key: Topics: **Present** **Absent or n/a**

Countries	DZ	HR	EG	IL	PS	SY
Implementing organisations	RASMER		NIOF	IOLR	MoEHE	Nat S&T
1. Research infrastructures		N/A			N/A	
• New vessel(s) (design, launch, operation of-)						
• Ship time (access, exchange, collaboration with other countries)						
• <i>In situ</i> observation infrastructures / Data Collection						
• Remote observation infrastructures / Data Collection						
• Develop new Research Facilities for Marine Research (specialist laboratories, test facilities, etc.)						
• Towing tank for ships, Ocean basin for ships and Offshore structures						
• Support for the existing marine infrastructure (vessels)						
2. Data		N/A			N/A	
• Secure long-term monitoring / time series datasets						
• Metocean (Importance for climate change, maritime transport, etc.)						
• Data Access						
• Data Management						
• Data Sharing						
3. Career and training		N/A				
• Increased PhD output						
• Develop marine graduate training programmes						
• Increased researcher mobility (inward & outward)						
• Improved career pathway and job security for science graduates						
• Exchange of best practices and training for technicians and operators						
• New/improved graduate courses to meet new sectors needs (e.g. waterborne transport, renewable energy sector, etc.)						
• Ocean engineering						

Countries	DZ	HR	EG	IL	PS	SY
Implementing organisations	RASMER		NIOF	IOLR	MoEHE	Nat S&T
4. Education	N/A	N/A				
School level training in marine science (adapted curricula)						
Primary school teacher training in marine science						
e-learning						
5. Outreach, dissemination of science outputs						
Translation of research results to knowledge for decision makers						
Public Awareness of marine research, research results						
Ocean Literacy (what do citizen know about seas and oceans?)						
History of science						
6. Transnational and international cooperation						
Bilateral/multilateral science partnership/collaboration						
Increase participation in collaborative European projects						
Increase sharing of facilities and infrastructures						
Increase international (beyond Europe) research focus and/or cooperation						
International cooperation re. Education						



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