

# VISION DOCUMENT

## Joint Programming Initiative Healthy and Productive Seas and Oceans

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# Executive Summary

## Healthy and productive Seas and Oceans

Europe can surely be characterized as “**blue**” with a 89,000 km coastline along two oceans and four seas: **the Atlantic and Arctic Oceans, the Baltic, the North Sea, the Mediterranean and the Black Sea**, to which we should add immense overseas territories, as well as connections with inland water ways. This fact leaves its clear mark on its activities, its citizens, its economy and its climate.

Seas and Oceans provide indeed an essential part of **our wealth and well-being**. The fast growing global population will increasingly depend from marine food sources (including sustainable mariculture). Moreover oceans and seas offer a large unexploited potential from underexplored marine biodiversity and marine renewable energy and play a crucial role in developing transport modalities and tourism activities. But oceans and seas are also under huge pressure from human activities and climate change. The **growing vulnerability** of coastal areas increasingly crowded coastal waters, the key role of the oceans in the climate system and the continuous deterioration of the marine environment all call for a stronger focus on our oceans and seas.

Europe needs an **integrated knowledge base** that enables an integrated policy to make the most of marine resources in a sustainable way, while understanding and mitigating the impact of climate change on the marine environment and coastal areas.

# 1 Vision Healthy and Productive Seas and Oceans

Seas and Oceans are the largest unexplored territory on Earth. Not only do we know little about the marine space and environment, but we also have large knowledge gaps in our understanding of the crucial interactions between oceans and climate. The deep seas, in particular, are as poorly known as remote planets.

There are compelling reasons why Europe should act collectively and decisively to conquer this new frontier.

## Opportunities

Europe can be considered as a “blue” territory, with 89 000 km of coastline along two oceans and four seas: the Atlantic and Arctic Oceans, the Baltic, the North Sea, the Mediterranean, and the Black Sea, as well as immense overseas territories.

The marine environment is a source of enormous wealth and well-being. The maritime economy accounts for as much as 5% of European economic activity. The EU’s Marine Regions, with their strong connection to the sea, account for almost 40% of its GDP. **Maritime transport**, responsible for 90% of EU’s external trade and 40% of its internal trade, is vital for its economy. **European tourism**, a substantial part of which takes place in coastal areas, accounts for 3 million jobs and 72 billion Euros of revenue per year. Fisheries, aquaculture and food processing are key sectors in **food and food security** and account for around 0.5 million jobs with a turnover of €32 billion Euros per year.



Ex. Seafood availability and security

Ex. Leisure and maritime transport



The unexploited potential of the sea is even bigger, with still largely unknown resources. It is estimated that more than 90% of the **marine biodiversity** remains unexplored. Oceans and seas offer a huge potential for discovery of new species and applications derived from **biotechnologies**, a sector foreseen to grow at a 10% annual in the coming decade. The potential for **marine energy** still needs to be realised. In order to reach the EU 2020 renewable energy objectives, an essential

contribution should come from offshore wind, and in the longer term, ocean energy at large can contribute an even bigger share to the EU zero Carbon society objective. Sea beds can strongly contribute to Europe's objectives of **Carbon capture and storage**. They also contain untapped **mineral** resources, some of which are of critical importance and could help improve Europe's security of supply of minerals.



Ex. Biodiversity



Ex. Marine renewable energy

Seas and Oceans also play a major role in the **regulation of the climate**. Not only does the sea act as a carbon sink limiting the global warming but global (thermohaline) oceans circulations such as the Gulf Stream have a large impact on the Earth climate.

### Challenges

The **Marine environment** is dramatically affected by several pressures like overfishing, oil-spills, pollution from land based industries, from maritime transport, discharge of nutrients, litter, invasive species transported with global trade together with the acidification of oceans resulting from climate change. Those pressures are not constraint by any legal boundary and are putting the marine environment at risk from uncontrollable changes above and throughout the water column to the seabed.

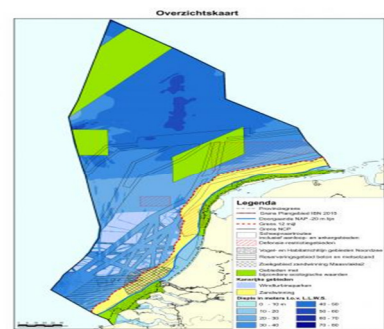
Besides human pressures, the European coasts and offshore activities are exposed to a variety of natural hazards, deriving from sub-sea-floor processes (seismic events, landslides...).



Ex. Changes in the marine environment  
Cause jellyfish innovations on our  
Popular beaches, but why?



Ex. Eutrophication, causing harmful  
and toxic algae blooms



Ex. Competing claims in coastal and  
seas areas.  
Calls for Marine Spatial Planning

Sea level rise, coastal erosion and extreme events are threatening coastal settlements, forcing policy makers and management authorities to reconsider the design of costly coastal defence. Economic damages to European coastal areas have been estimated at 12-18 billion Euro/year by 2080, a risk which could be significantly reduced to 1 billion with appropriate adaptation measures.

As the coastlines are getting ever more crowded with a growing population and with industrial activities connected to ports there is a strong drive to move coastal activities further offshore. Wind farms, off shore platforms, electrical grids, pipelines, sea motorways and mariculture, among others, are each occupying more and more marine space, as they also move further out in the seas and oceans. The increased use and competition for marine space create a real challenge for **marine spatial planning**.

Research building up knowledge relevant for integrated and ecosystem based management should therefore be emphasized and facilitated.

The different challenges related to the seas and oceans cannot be addressed in a fragmented sector by sector manner. They require an integrated approach and should be based on sound knowledge.

The knowledge gaps and technological challenges are so wide that they cannot be addressed by any one country alone and require concerted effort at European level.

As a major contribution to the EU 2020 vision, Europe must realise the potential of its seas and oceans while addressing the environmental and climate change challenges they face. It must ensure the sustainability of existing maritime activities and turn the unexploited potential of seas and oceans into sustainable growth and jobs. Member States have the obligation to reach Good Environmental Status of their seas by 2020 and owe it to future generations.

## 2 Goals - Healthy and Productive Seas and Oceans

The JPI Oceans is the only high-level strategic mechanism that exists, to provide an integrated European approach to investing in cutting-edge and innovative marine and maritime research and technology development. The JPI Oceans will be built on the principle of variable geometry. Member States will decide where to participate and which funds to contribute: This may include institutional, project-related or new funds. In cooperation with JPI Oceans, EU instruments will continue to be invaluable pillar for the support of human resources, scientific capacities and research infrastructures. This will also include developing flagship initiatives promoting the cooperation between research, education and industrial sectors. Thereby, the JPI Oceans can make a uniquely European contribution to better understanding, use and protection of our seas and oceans.

By 2020, the JPI "Healthy and Productive Seas and Oceans" will have mobilised in a coordinated way Europe's resources and capacities in the marine and maritime areas, on the basis of an integrated marine and maritime strategic research and innovation agenda, to fill critical gaps and enable this vision of Healthy and Productive Seas and Oceans.

By providing this integrated knowledge and technology base for our seas and oceans, the JPI "Healthy and Productive Seas and Oceans" will consolidate and integrate knowledge across all marine / maritime sectors and research in order to help:

- ✓ Enable the advent of a knowledge based maritime economy, maximising its value in a sustainable way;
- ✓ Ensure Good Environmental Status of the seas and optimise planning of activities in the marine space;
- ✓ Optimise the response to climate change and mitigate human impacts on the marine environment

### 3 Objectives

The field of marine and maritime research is very wide and complex, involving different sectors, areas of knowledge and disciplines including socio-economics. In order to reach our goals we should address challenges that are cross-cutting in nature and require an interdisciplinary and integrated approach.

The JPI Oceans has therefore identified broad cross thematic areas which need to be addressed as a priority and which lie at the intersections of the marine environment, climate change and human activities.

However to understand these interactions and cross-sections we need capacities in terms of human resources and research infrastructures. Because of the very nature of the marine system and climate interaction, we need sustained long-time term series as well as integrated observations bringing together physical, chemical and biological data of the different parts of the seas and oceans. Added to this is the need for geological data to understand hazards and risk, in addition to measurements of sediments for instance in river basins, to measure natural historical vs. human induced climate change. These infrastructures (*permanent, temporary and exploratory*) are expensive to build, upgrade, maintain and to operate and will benefit from the European strategic planning approach offered by the JPI Oceans mechanism.

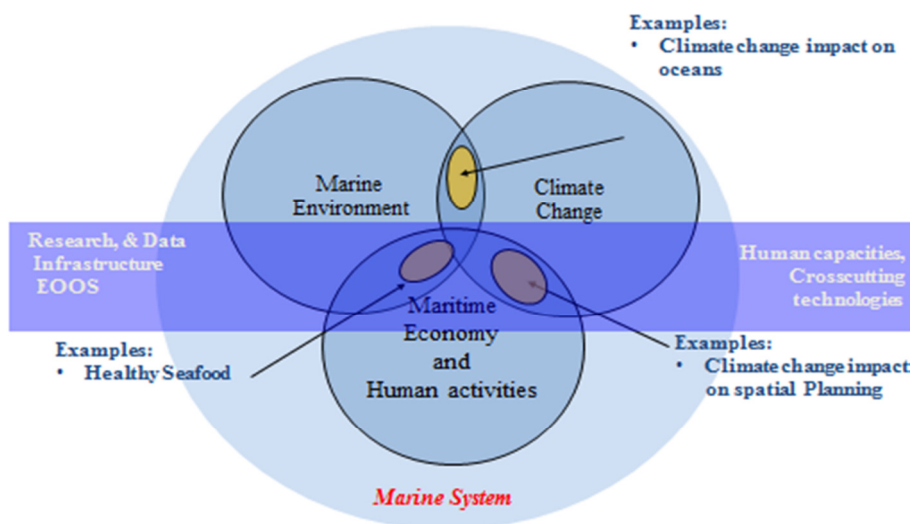


Fig. 1 - Interaction marine environment climate and human activities

The JPI “Healthy and Productive Seas and Oceans” needs to develop the best possible marine and maritime scientific knowledge for policy and decision-making. Regular two-way feedback needs to be established between marine science and maritime policy and other relevant stakeholders. Therefore a concerted dialog between the scientific community and maritime policy makers as well as management authorities as indicated in the Communication on an Integrated EU Maritime Policy should complement the partnership process.

Based on the collection of information from current European initiatives and an updated review performed during the recent months, a number of gaps have already been identified. Those will feed as input into the development of a strategic research and innovation agenda (SRIA) (see document “Gaps to feed the SRIA - Infrastructure and Human resources” and document “Mapping”).

Through the mapping exercise conducted, Europe invests more than 1,89 billion Euros, in marine and maritime research.

**Specific objectives of the JPI:**

- ✓ Foster enabling cross-cutting marine technologies across the maritime sectors
- ✓ Foster the marine bio economy in relation to new products, services and jobs
- ✓ Create the best enabling environment to maximise the development of marine renewable energies
- ✓ Develop the necessary knowledge and technologies to conquer the new deep-sea frontier
- ✓ Understand and mitigate impact of climate change and pressure from human activities on the marine environment, to reach GES (Good Environmental Status) of our seas by 2020
- ✓ Improve understanding of marine ecosystems and their processes, in particular delivery of ecosystem services and the impacts of human activities
- ✓ Understand climate change impact on coastal areas and the design of marine and maritime structures and activities, to optimise mitigation and significantly reduce costly damages
- ✓ Develop and sustain infrastructure to support an integrated data and information base enabling industrial development and supporting maritime governance
- ✓ Develop a research to policy mechanism, in particular to support of the marine strategy framework directive and marine spatial planning and management
- ✓ Foster the inter-disciplinary human capacities that are necessary to the JPI goals

## 4 Main Policy Drivers and socio-economic impact

The JPI Oceans will contribute strongly to the **EU 2020-objectives**. It will do so by helping the EU **Integrated Maritime Policy (IMP)** to maximise the value of the maritime economy and secure the good environment status of European seas through the **Marine Strategy Framework Directive (MSFD)**. The IMP and the MSFD call upon a strong science base to support their objectives, which is echoed in the **EU Marine and Maritime Research Strategy**. The JPI Oceans will help provide this knowledge base to support the implementation of the MSFD and IMP.



Ex. Resources from the deep sea



Ex. Blue biotech

In particular the JPI is relevant to the flagship initiatives of “*Innovation Union*”, “*An industrial policy for the globalization era*” and “*Resource Efficient Europe*”. It will help to unlock the potential of our maritime sectors, in particular the marine bio economy and renewable energy resources, thereby contributing to Europe’s target to increase renewable energy share in total energy consumption to 20% by 2020. It will contribute to the global security of food supplies and scarce mineral resources by tapping on deep-sea mineral potential. Finally securing European maritime clusters “born global” through the knowledge based- and eco- economy, would all be relevant to these flagship initiatives.

The following table shows a number of impacts, which respond to key policy drivers at regional, European and global scale.

Area	Political driver	Economic and Societal driver	JPI Impact	Target Group TG1 Industry TG2 Science TG3 Policy
Good Environmental Status	Marine Strategy Framework Directive (MSFD)	Legal obligation which needs long-term scientific monitoring/data related to the identified 11 indicators and the integrated approach as support to policy	High	TG3
Climate change impacts	Integrated Maritime Policy COM(2007) 575	12-18 billion Euro/year economic damages in European coastal areas by 2080, high emission scenario) Adaptation could significantly reduce the risk to around Euro 1 billion	High	TG1,TG2,TG3
Researchers	Europe 2020 Flagship Initiative Innovation Union COM (2010) 546	Need for 1 million scientists it to reach the 3% goal	High	TG2
Create synergies	ERA EU Strategy for Marine and Maritime Research, COM(2008) 534	Synergies with and between Member States, regions and marine and maritime research sectors <b>are necessary</b> to address major cross-thematic marine research challenges 2000+ marine and maritime institutes and universities ref. ECORYS studies	High	TG2, TG 3
Raw materials - Non energy minerals	Raw material initiative, COM(2008) 699 Challenges on Raw Materials, COM (2011) 25	Securing reliable and undistorted access to raw materials is increasingly becoming an important factor for the EU's competitiveness. Part of the solution could be the sustainable exploitation of the seabed. Sectors worth €1 324 billion/30 mill jobs rely  On minerals, some with 100% import dependency	High	TG1, TG3
Renewable energy	An Energy Policy for Europe, COM(2007) 1  20 20 by 2020 Europe's climate change opportunity, COM(2008) 30  Directive 2009/28/EC of the European Parliament and of the Council of 23 April 2009 on the promotion of the use of energy from renewable sources	By 2020, 20% renewable energy from sea, by 2050 Europe could get up to 50% of its electricity needs from renewable marine sources, ESF MB	Medium	TG1, TG3
Blue biotech	Europe 2020 Flagship Initiative Innovation Union, COM (2010) 546	Marine biotech was globally valued at EUR 2.2 billion by the Marine Industries Global Market Analysis in 2005. By 2009, the global market is projected to surpass EUR 2.6 billion.	Medium-High	TG1, TG2
Marine knowledge EMODNET and GMES	Marine Knowledge 2020, COM (2010) 461	Replace the present fragmented marine observation system estimates a benefit of €300 million per annum, approx. €100 million for science, €56 million for public authorities and €150 million for the private sector	Medium-High	TG1, TG2, TG3

Sustainable Tourism	Integrated Maritime Policy COM (2007) 575	EU tourism and sectors linked to it is estimated to generate 10% + of EUs GDP and 19 million jobs, SMEs, important to coastal regions, 370 million international tourists in 2008 and will increase significantly (WTO). Rising sea levels could bring changes for tourism in coastal areas.	Medium	TG3
Maritime growth	Strategic goals and recommendations for the EU's maritime transport policy until 2018, COM (2009)8  Europe 2020 Flagship Initiative, Innovation Union, COM (2010) 546	By 2018, the world fleet could count some 100,000 vessels (500 dwt and more) in operation (77,500 vessels in 2008) expected to reach a total capacity of more than 2,100 million dwt in 2018 (up from 1,156 million dwt in 2008). Europe's maritime leadership should be maintained by quality shipping	Medium	TG1, TG3
Healthy Seafood	Marine Strategy Framework Directive (MSFD)  Regulation (EC) No. 178/2002  COM( 2007) 539 Animal Health Strategy	Food safety and animal health and science based risk management	Medium	TG1, TG3
Filling the innovation skills gap	Europe 2020 Flagship Initiative Innovation Union COM (2010) 546	On the whole, professors, researchers and students have poorly developed entrepreneurial mind-sets in Europe, preferring to be employees rather than employers	Medium	TG2, TG3
MSP	Integrated Maritime Policy COM (2007) 575  MSP in the EU, COM (2010) 771	The increasing demand of the maritime space for different economic activities on Europe's seas leads to competition and conflicts between sectors. This competition for the space hampers the growth of maritime economies, as shipping, offshore energy, ports, fisheries, aquaculture and environmental concerns.	Medium	TG1, TG3
ICZM	Evaluation of ICZM in EU, COM(2007) 308  Council decision (2010/631/EU)	ICZM aims to improve the economic and social development of coastal areas through an integrated management of the activities that takes place in these areas, including the management of interface land-sea.. The deterioration of the coastal zone by human activities and the threaten posed by climate change all call for an integrated management for a sustainable development while taking appropriate adaptation measures to climate change.	Medium	TG3
Climate change	EU Emissions Trading Scheme, COM(2010) 796	International scheme for the trading of greenhouse gas emissions. Goal: Cut emissions by 21 % in comparison to 2005.	Medium	TG1, TG3

## 5 Implementation – Adding Value

### 5.1 Implementing principles

#### ***Integration and convergence***

The JPI Oceans will have at its heart the interdisciplinary nature of sea-related challenges. It will in particular focus on research areas at the intersection of marine environment, climate, maritime economy and human activities. The JPI will bring together this acquired knowledge in a coherent manner to help solve our societal challenges. In this way, it will be complementary to, and consolidate existing sector based knowledge and research activities.

For example, the JPI will foster for instance of collection, integration, sharing and multi-use of marine data, seeking to avoid duplication and maximise applications for industries and policy making. This applies to the implementation of the MSFD and spatial planning, as well as facilitating the development of the maritime industries in a coordinated manner.

#### ***Building on the existing initiatives***

The vast area of marine and maritime sciences is subject of many RTD-activities, at EU-level (FP, ERA-Nets, BONUS,...). These activities will be taken into account. Next to this, over the last years, many stakeholders have formed associations, e.g. in European Technology Platforms, business associations, research communities, and NGOs. These groups will be consulted and their inputs taken into consideration during the whole lifetime of the JPI.

Similarly initiatives have developed in the field of marine research and data infrastructure, although often in a fragmented way.

The JPI Oceans will bring added value to present pan-European initiatives by close interaction and cooperation with them. It will act as a catalyst to fill key knowledge gaps and provoke convergence between existing initiatives, with a view to produce the necessary integrated knowledge that is needed by policy makers and industries to ensure an integrated and sustainable development of sea-based activities.

The JPI “Healthy and Productive Seas and Oceans” furthermore has identified where we believe there are synergies with other JPIs (see document “JPI Healthy and Productive Seas and Oceans - Links to other JPIs”).

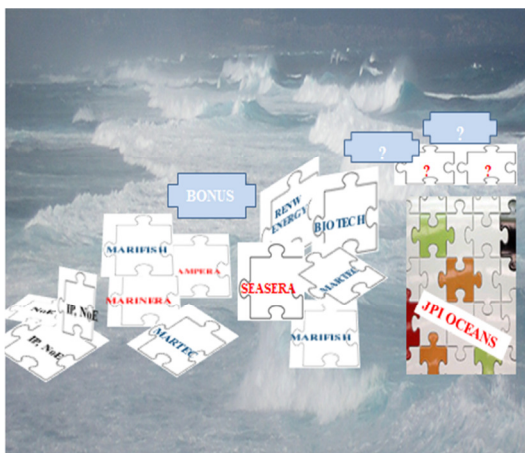
#### ***The Regional seas, European and international dimensions***

Europe’s four seas (Black, Mediterranean, Baltic and North Sea) and two oceans (Arctic and Atlantic Ocean) have common features but certainly also different characteristics echoed amongst others in the Regional Conventions (OSPAR, HELCOM, Barcelona and Bucharest). The challenges can differ considerably due to climate factors, pollution grades, ecosystem characteristics, and different stress factors, socioeconomic, cultural and political circumstances. There are also pronounced variations among the different marine areas, estuaries, ports, coast types, to be considered. However the key processes and pressures (e.g. eutrophication, overfishing, invasive species, and pollution by contaminants, litter, offshore structures and coastal constructions which destroy and change habitats and impact of noise) follow similar patterns and can be approached through similar models, infrastructure or research. Likewise the untapped potentials from blue biotech, cold vs. warm water

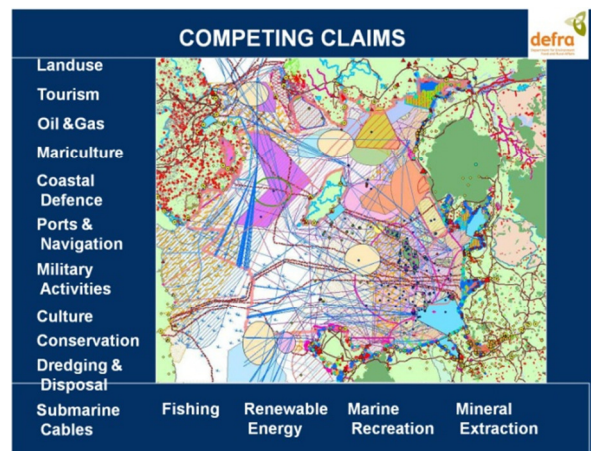
resources, different forms of renewable energy will need to take into account the regional opportunities, but can still benefit from European large scale platforms like for instance the European Marine Biological Resource Centre and enabling technology platforms.

Actions to be undertaken under the strategic research and innovation agenda will have to take into account the Pan-European and Regional seas dimensions, as well as the necessary articulation between both.

The JPI “Healthy and Productive Seas and Oceans” needs to take into account that many marine processes have a sea basin and global dimension as the marine environment has no boundaries. Thus the JPI will be developed within regional and global context. JPI Oceans will interact with neighbouring countries in the various sea basins and international partners on issues of common interest.



Ex. JPI glue in the ERA process



Ex. Competing claims in the Irish sea

## 5.2 Governing structure and stakeholder involvement

The JPI “Healthy and Productive Seas and Oceans” will be run by a high-level management board with 2 representatives from each country at a level with sufficient authority to agree on joint action plans and potential funding initiatives across Europe.

The Management Board will mandate an Executive Committee to execute the decisions taken by the Management Board and to supervise the different JPI activities.

The Management Board will put in place a Strategic Advisory Board of high-ranked scientists, technologist/industrialist and civil society. They will be tasked to develop a strategic research and innovation agenda and advice on the implementation tools needed.

The Executive Committee will be mandated to translate this agenda into a proposed implementation plan to be decided upon by the Management Board. The implementation plan will be based on the principle of variable geometry.

The European Commission will be invited to participate as a non-voting member in the Management Board. The JPI Oceans will have the following decision flow:

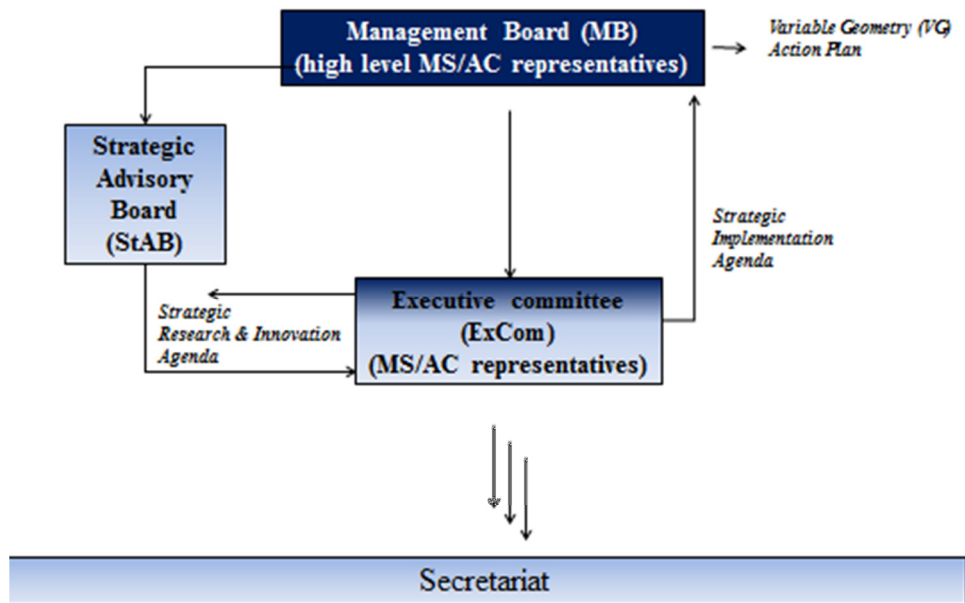


Fig. 2 - JPI Healthy and Productive Seas and Oceans decision flow

The JPI will foster a science-policy-NGO-industry P-P-P-P dialog, bringing stakeholders into the governance structure. The JPI in order to achieve its goal sees the need to take stakeholder involvement to a next step of involvement in the implementation phase.

### Stakeholder involvement



The JPI will be implemented by an interactive involvement with identified relevant stakeholders:

- ✓ Industries and Services
- ✓ Researchers and technologists
- ✓ Policy Makers, Management Authorities and Societal organisations

This will secure relevance, defining and agreeing on objectives and sharing of roles and deliverables and in particular the uptake and use of knowledge.

Over the years we have seen that many stakeholders have formed associations and platforms, business associations, research communities and NGOs. These groups will be invited to be part of the process, giving support to identify societal needs, challenges and to build the Strategic Research and Innovation Agenda.

Similarly initiatives have been developed in the field of marine research and data infrastructure, although often in a fragmented way. The expert group on marine research infrastructure appointed by the European Commission as well as the e.g. ESFRI, MARCOM+ etc. defining the infrastructure needs, will provide valuable input to filling in the existing gaps for the JPI to deliver.

### 5.3 Implementation modalities and tools

#### *The JPI as a high level decision initiative*

During the last years a great effort has been made to overcome a number of weaknesses relating to the fragmented nature of marine and maritime research activities across Europe, and stimulate transnational research. The JPI, being policy driven and at a high ranked decision making level, with a cross-cutting long-term approach, will go beyond these important ERA activities. These ERA activities will gradually be coordinated and facilitated through the JPI Oceans. This implies strong cooperation in particular with the ERA-Nets and Article 185 initiatives. Thus, where the JPI sees that we have common goals with other **ERA activities**, the JPI will see them as a source for implementation or even co-action, in particular in the short term, avoiding duplicating activities of the ERA-Nets, ensuring complementarity and optimising use of resources.

Appropriate steps will be taken to that effect, as the Strategic Research and Innovation Agenda of the JPI "Oceans" is developed.

#### *Combining a broad range of funding sources and instruments*

The JPI Oceans will be built on the principle of variable geometry. Member States will decide which actions to participate in and which contributions to provide. This may include institutional, project-related or new funds.

The JPI will seek to utilise the broadest range of funding sources and instruments available for research, infrastructure, capacity building and innovation at national, regional and European level:

- ✓ additional funds, in-kind capacities (human resources, infrastructure and institutionalised money)
- ✓ cohesion funds
- ✓ grants
- ✓ foster networking and research alliances (across the innovation chain)
- ✓ mechanisms to foster open access to knowledge, data and information

The JPI will use a portfolio of different tools to foster research and innovation. It will also bring in additional funds to fill knowledge gaps.

The JPI Oceans will foster cooperation on institutionalised money in the form of monitoring activities, human capacities and infrastructure and which are not subject to competition, which account on average for 85% of European research budgets. Coordination of institutionalised budgets (including in kind capacities and contributions) is in particular crucial for the development of marine research infrastructures (MRI) at regional and European levels. Given the importance and high costs related to MRIs (= up to 50% of marine research investments), optimising the development and use of these institutional means will be a key activity within the JPI "Oceans".

Funds including **cohesion funds** are important for different purposes of the JPI, in particular infrastructure investments including building of human capacities, but also research, precompetitive large-scale actions to promote innovation. .

### ***Complementarity with EU research funding***

In the past 20 years, EU framework programmes have played a very important role in addressing knowledge gaps in the different marine research areas and foster cooperation.

It will be indispensable that the framework program continues to fund marine and maritime research and support the continued strengthening of ERA in the marine and maritime fields.

Since the JPI will have a **long-term policy driven approach**, the framework program will be an important complementary instrument to the JPI activities. Particular attention will be paid to the good coordination of JPI and FP activities in the future. The presence of the Commission in the JPI Management Board will help secure a good complementarity between the two. To the extent that the Strategic Research and Innovation Agenda will identify areas where large initiatives are needed, the JPI is aiming to engage in common approaches with the Commission, using the appropriate instruments.

### ***Innovation***

Furthermore, over the past years, the EU has developed several instruments and frameworks to foster innovation. These include **Innovation Partnerships, Knowledge and Innovation Communities (KICs), Joint Technology Initiatives (JTIs)** and other forms of public-private partnerships. In that regard, marine and maritime technology platforms (ETPs) such as the waterborne technology platform, the European Aquaculture Technology and Innovation platform (and others in the fields of marine energy and biotechnology...) are important stakeholders with whom the JPI "Oceans" needs to interact. As needs for large technology and innovation initiatives are identified in dialogue with ETPs, the JPI will seek to address them, using or stimulating the use of most appropriate instruments (including the Risk Sharing Facility).

This is also relevant for the interactions with other JPIs (see document "Links to other JPIs").

### ***Meeting the framework Conditions for JPIs***

Prior to the implementation of the strategic research and innovation agenda, relevant implementing conditions will be developed and agreed by the Management Board in line with the framework conditions based on the volunteer guidelines approved on the 5th of November 2010 by ERAC ( ref. ERAC-GPC 1309/10). Those modalities will be applied in the different activities that will be implemented.

### ***Foresight***

**Foresight, think tank** activities will in particular be fostered to spot emerging needs and gaps. Recognised experts from public and private sectors and from different disciplines and fields (scientific, technical, societal, economic and policy) will be involved. At the moment, there is a lack of analyses of trends, developments and possible future directions of marine and maritime RTD in Europe. The foresights will provide inputs to the Management Board and feed the SRIA throughout the whole life-cycle of the JPI.

### ***Budgeting***

The JPI Oceans operational costs including the secretariat and convening the management board meetings will be facilitated by in kind resources to the secretariat and by a budget dedicated directly to the tasks. Contributions are to be made on a voluntary basis. Most participants have agreed to pay a fee of Euro 5.000 - in the preparatory phase- to bring in experts when needed.

### ***Communication***

JPI “Healthy and Productive Seas and Oceans” will develop an active stakeholder communication platform. Already major stakeholders are interlinked with the JPI Oceans website <http://www.jpi-oceans.eu/>. Consultations will be conducted, and stakeholders will continuously be updated on JPI Oceans news. The preparatory phases for a communication plan have already been taken, to be discussed and approved by the Management Board when in place. JPI Oceans will primarily use established arenas to communicate with stakeholders, for instance, three-partial agreed EU Maritime Day, EurOceans conferences, Maritime Forum and other major events.