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**Recent European/regional marine
and maritime RDI strategies and
update on MS development**

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1. SUMMARY

This document reports on the screening of recent European/regional marine and maritime RDI strategies and intends to reflect how member countries are updating their national strategies and RDI funding. In doing so the document is building upon deliverables from the former FP7 CSA Oceans project, a summary of international RDI strategies provided through the COLUMBUS project and further desk-top research. This document is seeking to provide a baseline in order to identify opportunities for alignments at policy level, further chances for collaboration, for example cost efficient planning and running of research infrastructures and new ways of working jointly, and thus identifying potentials for harmonisation. Recent developments and decisions on the G7 level are taken into account.

Within the recent years numerous intergovernmental and international strategies with relevance to the marine and maritime sector have been published. Each of the overarching (intergovernmental, international and EU-level) strategies screened follows a different format and focusses on different issues, e.g. tackling specific challenges, bottlenecks and needs. Nevertheless, the following key messages across most strategies could be identified:

- **Sharing existing data, knowledge and research infrastructure** has been identified as one of the major issues for ocean sciences. Besides accessibility this includes the harmonization of formats, standards and operating procedures and utilising common support provided for infrastructures and systems, like the European Marine Observation and Data Network (EMODnet) or the Global Ocean Observing System (GOOS) or the coordinated cruise planning and shared use of research vessels like through the Ocean Facilities Exchange Group (OFEG).
- **Innovative technologies** (sensors, research platforms, networks,...) are required to improve data density, especially for the deep ocean.
- **The Blue Economy** is believed to have a great economic potential. However, a targeted management of the marine environment is regarded as a pre-requisite for sustainable growth.
- **The ecosystems of our seas and oceans are vulnerable to human impact and thus have to be preserved.** Besides conservation, research and deeper knowledge on biodiversity, climate change, pollution, invasive species, exploitation of resources and the complexity of marine systems is essential for knowledge based policy regulations and coastal management.
- **Transdisciplinarity and participation of key stakeholders** of all marine and maritime sectors are key elements for success.

While most national marine and maritime strategies, to the extent to which they are existent, of European coastal member states are more or less mirroring the above mentioned overarching principles and goals with specific national details, there is a substantial lack in and thus opportunity to improve trans-national collaboration. This mainly refers to costly research infrastructures, standardisation and accessibility of data in numerous, still not harmonised data repositories.

2. FINDINGS

The main European marine and maritime policies and strategies are e.g. the **Marine Strategy Framework Directive (MSFD)**, the **Common Fisheries Policy (CFP)**, the **EC Blue Growth Strategy**, the **JPI Oceans Strategic Research and Innovation Agenda** and several strategies on sea basin level, for the Atlantic Ocean, the Baltic Sea Region, the Adriatic and Ionian Sea, the Black Sea, the Mediterranean and the Arctic region. However, in a number of cases RDI funding is not their main focus but all strategy papers more or less are touching the issue of knowledge gaps and research needs in certain areas.

Among those, about 10 strategies could be labelled as international with major impact on RDI funding, more or less dealing with marine and maritime issues globally. Additionally we identified a dozen key strategies with a quite specific sea basin focus. Given the pan-European scope of CSA Oceans this report is focussing on the recent intergovernmental and international strategies in the marine and maritime sector (see table in Annex 1).

While several international and regional RDI strategies are partially thematically overlapping or citing each other, we are generally facing a quite fragmented picture on the national level. Only some member states do happen to have a national marine/maritime strategy reflecting generic RDI priorities and needs (see also D4.1 CSA Oceans, 2014). Therefore, the probably best marine/maritime RDI strategy mirroring common national interests of Member States in Europe so far is the JPI Oceans Strategic Research and Innovation Agenda (2015) as well as the list of prioritised joint actions confirmed by the Management Board.

Comparison the JPIO SRIA structure (based on ongoing actions) and focus with the five bullet points of the summary.

	Sharing data/ infrastructures	Innovative technologies	Blue economy	Ecosystem knowledge	Trans- disciplinarity
SRIA 1 deep seas (mining pilot)	Y	Y	Y	Y	Y
SRIA 2 Technologies (MarTERA)	Y	Y	Y	Y	Y
SRIA 3 MSP (knowledge hub)			Y	Y	
SRIA 4 OHH				Y	Y
SRIA 5 GES (various actions)	Y	Y		Y	Y

SRIA 6 Obs and models	Y	Y	Y	Y	Y
SRIA 7/8 oceans and climate	Y	Y		Y	Y
SRIA /10 Blue Bioeconomy/biotech	Y	Y	Y	Y	Y
CC1 Science/policy			Y	Y	Y
CC2 Infrastructures	Y	Y		Y	
CC3 Human capacity					Y

As the generic challenges of and mainly human-induced pressures on our seas and oceans are affecting all coastal countries around the world, strategies and countermeasures to tackle these issues are very similar all over the place. However, there are substantial differences how and to what extent the above mentioned strategies are implemented regionally and on the national level. Furthermore, there is a substantial lack in and thus opportunity to improve trans-national collaboration. While e.g. joint calls for transnational RDI funding had been tested since more than decade through several instruments (Era-Nets, Article 185, JPIs, the Belmont model,...) and best-practices/schemes have been developed, we are in need of optimising transnational collaboration in other fields of cooperation. Particularly, this refers to costly research infrastructures, standardisation of technology and analytical methodologies or accessibility of data in numerous, still not harmonised and stand-alone data repositories.

Since the 1990s there had been several attempts by member states to optimise the use of costly research infrastructures, especially research vessels, through EC-funded projects or portals like <http://www.rvinfobase.eurocean.org/> from EUROCEAN. However, in terms of sharing ship-time and thus optimising the use of operating costs the Ocean Facilities Exchange Group (OFEG) <http://www.ofeg.org> among 6 member states can show to have achieved their goal to some extent. The group works through swapping/distributing nationally approved and funded proposals on the best research vessels in a particular region/ocean to reduce transit-time between different areas of operation. The group also exchanges costly instrumentation/equipment like AUVs, ROVs or research submarines. The beauty of the concept is that no money flow is involved but the respective gear or platform is evaluated by so-called barter points. The secretariat accounts for the exchange of barter points which levels out in a long run.

Automation in operational oceanography especially for physical and biogeochemical variables leads to a slight but constant decrease in proposals for ship-time. This lead to that some RVs experienced

lay days in harbours. Member states are responding to this development and e.g. Germany is replacing 4 ocean going vessels by 3. In respect to jointly use or even built and own RVs transnationally and thus also respond to above mentioned development all attempts the authors know of ended in talk. This seems to be a quite complex issue which entails several aspects of sharing building and operational costs as well as the future share in making use of the ship. Also the flag flown by the shared vessel, which obviously can't be shared, seems to be an issue.

OTHER MEANS OF COLLABORATION

JPI Oceans seeks to make use of the broadest range of investments, funding opportunities and other instruments available for research, human capacity, infrastructure and innovation at regional, national and European level such as:

- national research programme funds, institutionalised investments, in-kind
- capacities and contributions (human resources, infrastructure);
- structural funds;
- grants and projects;
- fostering networking and research alliances (across the innovation chain);
- Mechanisms to foster open access to knowledge, data and information.
- Pilot Actions test experimental novel tools, methods and multifaceted processes to add value to the ERA landscape.

To facilitate this, JPI Oceans has proposed and delivered a toolkit of proposed procedures. Building on the mapping and gap analysis and consultation process, the JPI Oceans Management Board has highlighted new research needs which the European Commission could consider for the Horizon 2020 work programmes. Additionally, the use of existing EC instruments such as public – public partnerships (ERA-NETs, ERA-NET Plus, ERA-NET COFUNDS or Article 185), infrastructures, mobility and training grants will enhance the ability of participants to work together in the implementation of the JPI Oceans Strategic Research and Innovation Agenda.

SEA BASIN STRATEGIES

The major strategic documents cover different levels of development for the following sea basins bordering the EU: Atlantic Ocean, Baltic Sea Region, Mediterranean, Adriatic and Ionian Seas, Black Sea and Arctic Region.

The strategies related to sea basins have a far more regional and even local focus; however, the recommendations outlined below can be also interpreted on a broader level:

- Administrative and institutional issues: capacity-building at national, regional and local level to meet upcoming cross-border challenges with respect to cross-policy coordination
- Enhanced collaboration between local communities, regions, Member States and the European Commission
- Capacity building in marine spatial planning and management
- Business “incubators” to foster innovations in the marine and maritime sectors
- Safeguarding the environment: concrete mitigation and protection actions in the coastal areas; preventing and removal of marine litter on shores; development of sustainable tourism schemes
- Improving accessibility to research and other infrastructure
- In general: transdisciplinary, interdisciplinary and sustainable regional development

As well as the sectoral approach seen in maritime industries (transport, aquaculture, fisheries, maritime tourism, shipbuilding etc.), the territorial approach is also of great importance for leading the knowledge transfer process to a practical implementation in a more specific context. The sea basin strategies play a key role for the economic development of a respective region and on member state levels. As mentioned above, all European sea basins do have specific strategies, however, with major differences between their implementation statuses. Special concern for coastal regions and their economic development unifies them all. The sea basins are connecting regions and countries, which implies that challenges are centred around transnational and trans-boundary cooperation covering broader challenges such as: governmental and structural issues (e.g. administrative concerns, Integrated Coastal Zone Management (ICZM), Information and Communication Technologies (ICT) and transport accessibility), environmental problems (eutrophication, waste management, impacts on marine organisms), marine ecosystem services (provisional, regulatory, cultural, recreational) and specific economic challenges (fishing quota, offshore platforms, maritime and coastal tourism, shipbuilding) or capacity building and marine literacy.

Within the last few years, all European regions have prepared strategies within the Smart Specialization Strategy (S3)¹. These strategies serve as a precondition to adopt the structural funds for the respective regions for the period 2014-2020. At its best, there is some link with the sea basin strategies. The different structural funds (European Social Fund (ESF), European regional Development Fund (ERDF) or European Maritime and Fisheries Fund (EMFF)) are a major hub to foster the economic developments in the regions.

¹ More information on S3: <https://ec.europa.eu/jrc/en/research-topic/smart-specialisation>

CONCLUSIONS/ REFLECTIONS

Generally the major issues raised in both, the overarching and the regional strategic documents are mirrored in the JPI Oceans SRIA, the JPIO actions and even in national competitive RDI funding programmes. In 2010/2011 JPI Oceans conducted a mapping exercise to assess the competitive marine and maritime RDI funding in Europe. In total 16 Member States responded to the questionnaire while the funding figures (16 MS and EC) added up to 2 billion€/year with the FP7 representing roughly 10% of this figure. In contrast to the obvious funding pyramid, the overarching strategies from the intergovernmental or EC level, for example, are the most influential as regional bodies and governments are building their RDI strategies upon these roadmaps by detailing the regionally important challenges and issues.

If these overarching strategies are indeed the most influential then an appropriate range of tools and instruments that operate at these scales is also needed. JPI Oceans should not be judged solely on the number of calls for proposal for the new funding it levers. Its influence comes also from taking actions at a European and international level whose wider impacts relate to effective knowledge sharing and its uptake for growth and for policy development as well as the distinctive contributions it is making towards the achievements of the many and complex strategies and visions set out at national, European and international levels.

ANNEX 1: LIST OF RELEVANT MARINE STRATEGIES RELATED TO RDI

Intergovernmental/international marine & maritime RDI strategies

Name	Publ.	link
Sustainable Development Goals (SDGs) of the Agenda 2030 – especially SDG 14	2016	http://www.un.org/sustainabledevelopment/sustainable-development-goals/
Marine Knowledge 2020 (Green paper): From seabed mapping to ocean forecasting	2012	http://ec.europa.eu/maritimeaffairs/documentation/publications/documents/marine-knowledge-2020-green-paper_en.pdf
Progress of the EU's Integrated Maritime Policy	2012	http://ec.europa.eu/maritimeaffairs/documentation/publications/documents/imp-progress-report_en.pdf
Blue Growth Strategy	2012	http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012DC0494&from=EN
Rome Declaration (EurOCEAN conference 2014)	2014	http://www.euroceanconferences.eu/sites/euroceanconferences.eu/files/public/images/stories/EC-EMB_EurOCEAN_2014_Report.pdf
Intergovernmental Oceanographic Commission (IOC): Medium-term Strategy	2014	http://www.ioc-unesco.org/index.php?option=com_content&view=article&id=29&Itemid=81
JPI-Oceans: SRIA 2015-2020	2015	http://www.jpi-oceans.eu/library?refid=246303
International ocean governance: an agenda for the future of our oceans	2016	http://ec.europa.eu/maritimeaffairs/policy/ocean-governance_en
Linking Oceans & Human Health: A Strategic Research priority for Europe (EMB)	2013	http://www.marineboard.eu/science-strategy-publications
Green Economy in a Blue World (UNEP)	2012	http://www.unep.org/pdf/green_economy_blue.pdf
A European strategy for Marine and Maritime Research	2008	http://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:ri0008
MSFD	2008	http://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32008L0056&from=EN

Regional/ sea basin RDI strategies

Name	Publ.	link
Developing a maritime Strategy for the Atlantic Ocean Area	2011	http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52011DC0782&from=EN
The North-East Atlantic Environment Strategy (OSPAR)	2010	http://www.ospar.org/html_documents/ospar/html/10-03e_nea_environment_strategy.pdf
A sustainable Blue Growth for the Baltic Sea Region	2014	http://ec.europa.eu/newsroom/mare/itemdetail.cfm?subweb=342&lang=en&item_id=16493
EU strategy for the BSR – Action Plan	2015	http://www.balticsea-region-strategy.eu/communication/news/590704-updated-eusbsr-action-plan
BONUS - strategic research agenda 2011-2017, update 2014	2014	http://www.bonusportal.org/files/2981/Publication_No._14_update.pdf
Joint Staff working document Black Sea Synergy review of regional cooperation initiative	2015	http://eeas.europa.eu/blacksea/doc/swd_2015_6_f1_joint_staff_working_paper_en.pdf
Towards an Integrated maritime Policy for better governance in the Mediterranean	2009	http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52009DC0466&from=EN
Atlantic Action Plan	2014 - 2020	http://ec.europa.eu/maritimeaffairs/policy/sea_basins/atlantic_ocean/index_en.htm
Developing a European Union Policy towards the Arctic Region: progress since 2008 and next steps	2012	http://ec.europa.eu/maritimeaffairs/policy/sea_basins/arctic_ocean/documents/join_2012_19_en.pdf
A Maritime Strategy for the Adriatic and the Ionian Seas	2012	http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52012DC0713&from=EN

Recent national strategies/updates JPI Oceans member countries (since SRIA published in 2015)

Name and Country	Year	Link
The Norwegian Government's Ocean Strategy, Norway	May 2017	https://www.regjeringen.no/en/dokumenter/the-norwegian-governments-ocean-strategy/id2552610/
Biodiversity Strategy 2020, Belgium	2015	http://www.biodiv.be/implementation/docs/stratactplan/biodiversity-strategy-2020
Programme of measures of the Finnish marine strategy 2016–2021 Finland	2015	http://ec.europa.eu/environment/marine/public-consultation/pdf/FIN%20PoM%20of%20marine%20strategy%202016_2021.pdf
National Marine Research & Innovation Strategy 2017–2021, Ireland	June 2017	https://www.ouroceanwealth.ie/sites/default/files/sites/default/files/Publications/2017/NationalMarineResearchInnovationStrategy2021.pdf
Sustainable Development Goals in the Netherlands Building blocks for environmental policy for 2030, NL	2016	http://www.pbl.nl/sites/default/files/cms/publicaties/pbl-2016-sustainable-development-in-the-Netherlands_1966.pdf
A Swedish maritime strategy – for people, jobs and the environment. Sweden	Dec 2015	http://www.government.se/information-material/2015/12/a-swedish-maritime-strategy/



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