

# BLUEMED PRELIMINARY IMPLEMENTATION PLAN

Horizon 2020 - BG-13-2016 Grant Agreement 727453

## ANNEX 1 BLUEMED FICHES FOR THE 13 PRIORITIES

June 2020



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#### FICHE 1

### UNDERSTANDING POLLUTION IMPACTS, MITIGATION AND REMEDIATION IN THE MEDITERRANEAN SEA

#### CO-CHAMPION COUNTRIES: ITALY & TUNISIA

#### Background

Detect and understand pollution impact is the basic for the set-up of a strong research plan to support the proper management and improvement of the marine environment and connected activities. However, development and implementation of strategies for prevention, mitigation and remediation of environmental pollutants is becoming a major challenge for the Mediterranean countries. In this context, innovative technologies for sustainable remediation is a potentially important priority.

Either from land or marine activities, the priority actually addresses an acute issue in the Med, where coastal population is constantly growing: unless adequately studied and innovatively tackled, the ecological and social impacts of marine pollution will affect economic development adversely across the Basin.

Understanding the effect of pollution and the way to combat the various forms it takes (including plastics, emerging chemical pollutants and noise) remains a challenge.

Deploying available knowledge to fill gaps in understanding how the Mediterranean Sea peculiar ecosystems function to better know the fate of pollutants can rapidly enable to take tailored measurements to protect it, develop new technologies and enhance the economy of the region.

This calls for focused research initiatives as highlighted by actions A2.1, A2.5 and A2.6 of the SRIA while linking with monitoring/ mitigation technology actions. This should also bring concrete impact in terms of economic development, jobs, well-being of citizens, being clearly related to maritime activities (tourism, seafood quality...).

While responding to the growing attention devoted to macro and microplastics, and supporting the BLUEMED Pilot on plasticfree, healthy Mediterranean Sea, the priority can add value in relation to policy frameworks developed at the EU level (e.g. the MSFD, the EU Plastic Strategy) and international level (UNEP/MAP, the UN-Decade for Ocean Science and the G7&G20 Groups).

#### Mapping and discussing implementation options and potentials of this priority

Recent and ongoing relevant projects

PROJECT	DESCRIPTI	ON	OBJETIVES
AQUA-LIT Preventive Measures for Averting the Discarding of Litter in the Marine Environment from the Aquaculture Industry	<b>Call:</b> EASME/EMFF/2017/1.2.1.12 – Sustainable Blue Economy	EU Contribution: 469.800,00€	<ul> <li>Prevent marine littering from aquaculture activities.</li> <li>Have better monitoring schemes in place.</li> </ul>
	Duration: 01/01/2019 - 31/12/2020	<b>Website:</b> https://aqua-lit. eu/	• Remove and recycle litter from the aquaculture facilities both before litter enters the sea and for litter already existing at sea.
SRIA Action: D2.4			
PLASTIC BUSTERS MPA <sub>s</sub>	Call: Interreg MED Programme	EU Contribution:	• Contribute to maintaining
preserving biodiversity from plastics in Mediterranean Marine Protected Areas"	2014-2020	5 Mil	biodiversity and preservir natural ecosystems in pelag and coastal MPAs by definir
	Duration:01/02/2018-31/01/2022	Website:	and implementing a harmonized approach against ML.
		https:// plasticbustersmpas. interreg-med.eu/	

CLAIM Cleaning litter by developing & applying innovative methods in European seas	Call: HORIZON 2020 - Blue green innovation for clean coasts and seas Duration: 01/11/2017 - 31/10/2021	EU Contribution: 5.654.786 € Website: http://www.claim- h2020project.eu/	<ul> <li>Develop innovative technologies able to reduce the amount and impact of plastic pollution on the ecosystembased services of the Mediterranean and Baltic Seas.</li> <li>Set the basis for operational forecasting of the impacts of marine plastic litter pollution on ecosystem services.</li> <li>Develop new business model to enhance the economic feasibility for upscaling the innovative cleaning technologies.</li> <li>Change policy and public perceptions and provide advice for management decisionmaking.</li> </ul>
EPHEMARE Ecotoxicological effects of microplastics in marine ecosystems	Call: 2014 JPI Oceans Pilot Duration: 31/12/2015 - 31/12/2018	EU Contribution: 3.154.000 € Website: http://www.jpi-oceans. eu/ephemare	<ul> <li>Investigate the uptake, tissue distribution and final fate of microplastics in organisms' representative of pelagic and benthic ecosystems.</li> <li>Investigate the toxic effects of microplastics on marine organisms and the potential role of microplastics as vectors of marine pollutants and their trophic transfer in marine food webs.</li> <li>Investigate detrimental effects at molecular, cellular, physiological and organism levels.</li> <li>Assist public and private stakeholders with the scientific basis for the development and compliance with general environmental regulations concerning chemicals used in plastic production (WFD, MSFD, environmental quality standards, REACH, Directive 2002/72/ECEU and subsequent amendments, Regulation No 10/2011).</li> </ul>
SMS Sensing toxicants in Marine waters makes Sense using biosensors	Call: FP7-OCEAN-2013 Duration: 01/12/2013-31/08/2017	EU Contribution: 4.144.263 € Website: http://www. project-sms.eu/	Deliver a novel automated networked system that will enable real-time in situ monitoring of marine water chemical and ecological status in coastal areas by the detection of a series of contaminants regulated by the MSFD.

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SEA CHANGE	<b>Call:</b> H2O2O-BG-2014-1	EU Contribution:	• Compile an in-depth review
Our ocean/Our health	<b>Duration:</b> 01/03/2015 – 28/02/2018	3.494.876 €	of the links between Seas and Ocean and Human health based on latest research knowledge
		Website: https://www. seachangeproject.eu/	<ul> <li>Help to design and implement successful mobilization activities focused on education, community, governance actors and directly targeted at citizens.</li> <li>Ensure Knowledge exchange with transatlantic partners to bring about a global approach to protecting the planet's shared seas and ocean.</li> </ul>
VECTORS	Call: FP7-OCEAN-2010	EU Contribution:	• Elucidate the drivers, pressures
VECTORS of Change in European Marine Ecosystems and their	Duration: 01/02/2011-31/01/2015	12. 484. 835 €	in marine life and their impacts on ecosystem structures
Environmental and Socio- Economic Impacts		Website: https://www. marine-vectors.eu/	<ul> <li>and functioning, and on the economics of associated marine sectors and society.</li> <li>Provide solutions and tools for relevant stakeholders and policymakers.</li> </ul>
	Call: ERC-2016-STG	EU Contribution:	• Creating a novel comprehensive
TOPIOS		1. 484. 760 €	tracks plastic movement
Tracking Of Plastic In Our Seas	Duration: 01/04/2017- 31/03/2022	Website: http://topios. org/	<ul> <li>through the ocean, simulating fragmentation, sinking, beaching, wave-mixing and ingestion by biota.</li> <li>Inform policymakers, the public and engineers on where and how to best invest resources in mitigating the problem of plastic in our ocean.</li> </ul>
EMBLAS-PLUS	Call: European Union	EU Contribution:	• Improve protection of the Black
"improving environmental monitoring in the black sea: selected measures"	Duration: 2019-2020	1.55 mil € Website: http:// emblasproject.org	<ul> <li>Improve availability and sharing of marine environmental data from the national and joint regional monitoring programmes aligned with the MSFD and WFD principles and the Black Sea Integrated monitoring and Assessment Programme (BSIMAP);</li> <li>Support joint actions to reduce river and marine litter.</li> </ul>

COMMON SENSE cost-effective sensors, interoperable with international existing ocean observing systems, to meet eu policies requirements	<b>Call:</b> FP7-OCEAN-2013 <b>Duration:</b> 01/11/2013 – 28/02/2017	EU Contribution: 4. 664. 072 € Website: www. commonsenseproject.eu/ media/sensor-profiles	<ul> <li>Developing innovative sensors in order to increasing the availability of standardised data on: eutrophication; concentrations of heavy metals; micro plastic fraction within marine litter; underwater noise; and other parameters such as temperature, pH, pCO2 and pressure.</li> <li>Provide key tool for EU Member States in meeting their MSFD requirements and achieving Good Environmental Status (GES) of their marine territories.</li> </ul>
IMPRESSIVE Integrated Marine Pollution Risk assessment and Emergency management Support Service In ports and coastal enVironments	Call: H2O2O-SPACE-2018 Duration: 01/12/2018 – 31/05/2021	EU Contribution: 1.913. 701,25 € Website: http://impressive-project. eu/about-impressive/	Developing of remotely operated sophisticated tools integrated with very high resolution models and EO products (satellite, ASV, UAV) for pollution control in harbors and coastal areas; a graduated system of alert that will help to cope with and as quickly as possible.
MERCES Marine Ecosystem Restoration in Changing European Seas	Call: H2020-SC5-2015-two- stage Duration: 01/06/2016 - 31/05/2020	EU Contribution: 6. 651. 118,20 € Website: http://www.merces- project.eu/	<ul> <li>Restoration of different degraded marine habitats, with the aim of:</li> <li>1) Assessing the potential of different technologies and approaches.</li> <li>2) Quantifying the returns in terms of ecosystems services and their socio-economic impacts.</li> <li>3) Defining the legal-policy and governance frameworks needed to optimize the effectiveness of the different restoration approaches.</li> </ul>
<b>EFFACE</b> European Union Action to Fight Environmental Crime	<b>Call:</b> FP7-SSH-2012-2 <b>Duration:</b> 01/12/2012 – 31/03/2016	EU Contribution: 2. 318. 624,70 € Website: https://efface. eu/	Assessing the impacts of environmental crime as well as effective and feasible policy options for combating it from an interdisciplinary perspective, with a focus on the EU.
GREENER	<b>Call:</b> H2O2O-NMBP-BIO- CN-2018 <b>Duration:</b> March 2019 – Feb 2023	EU Contribution: 4 964 168,25€ Website: https://cordis. europa.eu/project/ rcn/221215/factsheet/en	GREENER proposes the development of innovative, efficient and low-cost hybrid solutions that integrate bioremediation technologies with bio-electrochemical systems (BES). The project will investigate the synergetic effect of different bioremediation strategies and demonstrate effective pollutants removal in water and soil/ sediments, while generating side products of interest, such as bioelectricity.

ECLAIRE	<b>Call:</b> FP7-ENV-2011	EU Contribution:	• Investigates the ways in
Effects of Climate Change on Air Pollution Impacts and Response Strategies for European Ecosystems	Duration: 01/10/2011 – 30/09/2015	6. 997. 001 € Website: http://www. eclaire-fp7.eu/	<ul> <li>which climate change alters the threat of air pollution on European land ecosystems including soils.</li> <li>Establish new flux, concentration and dose- response relationships, as a basis to inform future European policies.</li> </ul>

Programmes and initiatives of relevance, including research and data infrastructures

#### INTERNATIONAL STRATEGIES AND PROGRAMMES

- JERICO Research Infrastructure: http://www.jerico-ri.eu/
- EMODnet for National, Regional or Local Government Agencies.
- IUCN Mediterranean Programme 2017-2020: <u>https://www.iucn.org/sites/dev/files/content/documents/iucn\_mediterranean\_programme\_2017-2020.pdf</u>
- UICN Marine Mediterranean Programme: <a href="https://www.iucn.org/regions/mediterranean/our-work/mediterranean-marine-programme">https://www.iucn.org/regions/mediterranean/our-work/mediterranean-marine-programme</a>
- Mediterranean Action Plan (MAP) (http://web.unep.org/unepmap/who-we-are/mediterranean-action-plan)
- Barcelona Convention System https://web.unep.org/unepmap/who-we-are/legal-framework
- Medcop Climat : http://medcopclimat.com/
- UfM Ministerial Declaration on Blue Economy (2015; a new one upcoming in 2021) https://ufmsecretariat.org/wp-content/uploads/2015/11/2015-11-17-declaration-on-blue-economy\_en.pdf
- UfM Ministerial Declaration on Environment and Climate Change" (2014; a new one upcoming in 2020) https://ufmsecretariat.org//wp-content/uploads/2014/05/20140515\_UfM\_declaration\_FINAL\_compromiseeditorialchanges.pdf
- UfM Working Group on Blue Economy https://ufmsecretariat.org/ufm-working-group-blue-economy/
- Any other relevant UfM Ministerial (transport, energy, sustainable urban development, etc.), related strategies, programmes and projects https://ufmsecretariat.org/what-we-do/water-environment/

#### INTERNATIONAL PROTOCOLS AND INITIATIVES

Seven Protocols addressing specific aspects of Mediterranean environmental conservation complete the MAP legal framework:

- <u>Dumping Protocol</u>: The Protocol for the Prevention of Pollution in the Mediterranean Sea by Dumping from Ships and Aircraft (adopted in 1976, amended in 1995 amendments not yet in force).
- <u>LBS Protocol (including Regional plans under art. 15 of LBS) entered into force in 2011</u>: The Protocol for the Protection of the Mediterranean Sea against Pollution from Land-Based Sources and Activities (adopted in 1980, amended in 1996), amendment entered into force in 2008.
- <u>SPA & Biodiversity Protocol</u>: The Protocol Concerning Specially Protected Areas and Biological Diversity in the Mediterranean (adopted in 1995, replacing the related protocol of 1982) and Annexes (adopted in 1996, amended in 2009, 2012 and 2013), entered into force in 1999.
- <u>Prevention and Emergency Protocol</u>: The Protocol Concerning Cooperation in Preventing Pollution from Ships and, in Cases of Emergency, Combating Pollution of the Mediterranean Sea (adopted 2002, replacing the related Protocol of 1976), entered into force in 2004.
- <u>Offshore Protocol</u>: The Protocol for the Protection of the Mediterranean Sea against Pollution Resulting from Exploration and Exploitation of the Continental Shelf and the Seabed and its Subsoil (adopted in 1994), entered into force in 2011.
- <u>Hazardous Wastes Protocol</u>: The Protocol on the Prevention of Pollution of the Mediterranean Sea by Transboundary Movements of Hazardous Wastes and their Disposal (adopted in 1996), entered into force in 2008.
- <u>ICZM Protocol</u>: The Protocol on Integrated Coastal Zone Management in the Mediterranean (adopted in 2008), entered into force in 2011.
- Implementation of the Prevention and Emergency Protocol: REMPEC UNEP (Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea) http://www.rempec.org/
- <u>Sustainable Development Goals Agenda (UN, 2015)</u>: and in particular SDC14 ("Life below water") (https:// sustainabledevelopment.un.org/sdg14
- International Legally Binding Instrument under the <u>UN Convention on the Law of the Sea</u> (UNCLOS) on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ) (https://enb.iisd.org/ oceans/bbnj/igc3/

#### EUROPEAN STRATEGIES AND PROGRAMMES

- Marine Strategy Framework Directive: <u>https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX:32008L0056</u>
- Water Framework Directive: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32000L0060
- Maritime Spatial Planning Directive: <u>https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A32014L0089</u>
- A European Strategy for Plastics in a Circular Economy https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1516265440535&uri=COM:2018:28:FIN

#### RELEVANT INDIRECT MEASURES

- <u>Sustainable Bioeconomy for Europe</u>: strengthening the connection between economy, society and the environment, Updated Bioeconomy Strategy (doi:10.2777/792130): https://ec.europa.eu/research/bioeconomy/pdf/ec\_bioeconomy\_strategy\_2018.pdf#view=fit&pagemode=none
- Closing the loop An EU action plan for the Circular Economy: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52015DC0614
- Revised legislative framework on waste Official Journal of the European Union, L 150, 14 June 2018.

#### Target sectors and groups

A number of specific sectors represent natural assets of collaboration at pan-Mediterranean scale in the field of this key topic. In particular:

- Aquaculture and potential impact on pollution and the health of the marine ecosystem.
- Coastal tourism and effects on pollution at small to large-scale.
- Shipping and pollution impacts on all the environmental matrices.
- Ports and effects on pollution at small to large-scale.
- Seabed mining (sand borrowing sites on continental shelves, and deep see mining for nodules and ore deposits) and impact on seawater and sediments in terms of widespread impact of pollutants and transfer to the food web.
- Health of the ecosystem.
- Stakeholder's engagement for assessment of contamination impact and searching/applying mitigation/remediation solutions.
- Re-suspension of polluted sediments (in response to major meteorological or geological events) and their transport to areas originally not impacted by pollution.
- Coastal landfills that may become exposed and leak pollutants into the coastal seas.
- Water column pollution events and their possible impact on mussel cultivations and other aquaculture sites.
- Oil spills from offshore platforms, pipelines and tankers.
- Plastic with particular reference to single use plastic ending up in the ocean.

- Need to improve our collective ability to measure substances that are in some cases very difficult (and expensive) to detect; develop a network of labs (in an inter-calibrated and comparable way).
- Analysis of chemicals leaked from munitions deployed at sea and coordinated approaches to mitigation and remediation.
- Investigation of effects of shipwrecks abandoned at the sea bottom (and, specifically, effects of chemical leakage and/ or release) and analysis of their effects on the surrounding marine ecosystem.
- Emerging contaminants (pharmaceuticals, hormones, etc.) and effects on the ecosystem and fishery compartment. Analytical intercalibration of laboratory hubs and approaches to chemical dynamics of metabolite.
- Effects of mixtures of contaminants and role played by antagonistic and synergistic effects on the ecosystem and trophic web.
- Noise.
- Light pollution (from traffic and also from coastal urban areas).
- Coastal Urban development:
  - Wastewater treatment;
  - Efficiency of waste management;
  - Circular economy in cities.
- Impact of rivers on pollution at sea; development of good practices from prevention and control of land based activities; good practices examples are the Rivers Contract (Italy, Ministry of Environment) and the Contrat de rivière (France).

Technology platforms (European, national):

#### **Maritime Clusters**

- European Network of Maritime Clusters (ENMC) (https://enmc.eu/about-us/).
- Pole Mer Mediterranee (https://www.polemermediterranee.com/).

#### Intergovernmental bodies:

- Union for Mediterranean (UfM) (<u>https://ufmsecretariat.org/</u>).
- EC-DG Mare (https://ec.europa.eu/maritimeaffairs/home\_en).
- UNEP/MAP (http://web.unep.org/unepmap/) and its Regional Centers.
- IOC-UNESCO (http://msp.ioc-unesco.org/).
- Union for Mediterranean (UfM) (https://ufmsecretariat.org/).
- Organisation for Economic Co-operation and Development (OECD) (http://www.oecd.org/science/).

#### Research bodies, businesses and local authorities

- European Environmental Agency (https://www.eea.europa.eu/).
- Institute for Advanced Sustainability Studies (<u>https://www.iass-potsdam.de/en</u>).
- Organization for Economic Co-operation and Development (OECD) (http://www.oecd.org/science/).
- The European Fisheries Areas Network (FARNET) (https://ec.europa.eu/fisheries/cfp/eff/farnet\_en).
- Mediterranean Advisory Council (<u>http://en.med-ac.eu/index.php</u>).

#### Thematic platform:

- European Circular Economy Stakeholder Platform, Platform to exchange and interact, and make circular economy happen faster (<u>https://circulareconomy.europa.eu/platform/</u>).
- Blue Bioeconomy Platform (https://webgate.ec.europa.eu/maritimeforum/en/frontpage/1349).

#### Associations:

WWF, GREENPEACES, OCEANA, FEMISE, etc.

Funding options and agencies

#### **European funding:**

- Horizon 2020 (in particular SC2-BG) (https://ec.europa.eu/programmes/horizon2020/en).
- European Maritime and Fisheries Fund (EMFF) (in particular the calls/tenders on Blue Economy) (https://ec.europa.eu/fisheries/cfp/emff\_en; https://ec.europa.eu/fisheries/sites/fisheries/files/docs/c-2018-8384-annex\_en.pdf).
- Interreg MED 2014–2020 (in particular Axes 3 "Natural and cultural resources") (https://interreg-med.eu/).
- Sustainable Blue Economy Call (https://ec.europa.eu/easme/en/section/european-maritime-and-fisheries-fund/ sustainable-blue-economy).
- Blue Technology transfer of innovative solutions to sea basin economies (<u>https://ec.europa.eu/easme/en/call\_proposals\_blue\_technology\_transfer\_innovative\_solutions\_sea\_basin\_economies</u>).
- Blue Labs innovative solutions for maritime challenges (https://ec.europa.eu/easme/en/call-proposals-blue-labsinnovative-solutions-maritime-challenges).
- Interreg Mediterranean Programme (https://interreg-med.eu/).
- Bio-based Industries Joint Undertaking (https://www.bbi-europe.eu).
- JERICO (http://www.jerico-ri.eu/).
- LIFE programme (https://ec.europa.eu/easme/en/life).
- JPI-O action: Science4GES "Science for Good Environmental Status".
- European Regional Development Fund (ERDF).
- Cohesion Fund (CF).

#### International funding:

- Green Climate Fund (https://www.greenclimate.fund).
- Adaptation fund (https://www.adaptation-fund.org).
- Global Environment Fund (GEF) (www.globalenvironmentfund.com).

Ac	tivities to promote the SRIA Implementati	on			
Examples of activities	Content and objective	How and timeframe			
[Champion countries must choose those activities that suit best the priority addressed]	e [Champion countries describe in more detail the content and specific objective of a given activity]		[Champion countries explain how the activity can be carried out and timeframe within the IP (2020-2023)]		
Networking and engagement of economic sectors and national Blue	Participation in the Maritime     Clusters.		Thematic workshops for stakeholders.		
Growth communities	<ul> <li>Participation in the Research organizations (e.g. JERICO).</li> </ul>	When:	At least one per year.		
Alignment and coordination	• GSO BLUEMED Working Group.	How:	Meetings.		
	<ul> <li>Alignment and coordination with coherent EUSAIR initiatives.</li> <li>Alignment and coordination with coherent UNESCO/IOC Initiatives.</li> <li>Alignment and coordination with UNEP/MAP initiative dedicated to ecotoxicology and marine pollution.</li> </ul>	When:	At least one each 6 months.		
Promotion and possibly implementation of actions coordinated and jointly undertaken by different countries, with a "variable geometry"	Research organizations	How:	Development of strategies and plans for pollution monitoring data exchange, mitigation and remediation of impacts.		
approach		When:	To be assessed.		
Identifies priorities for prevention and	• Addressing key GAPs and	How:	Working groups.		
remediation action plan	developing a framework that looks also at land-sea interaction. Focus on policy aspects.	When:	At least one each 6 months.		
Start-Up actions	• Blue Labs	How:	Calls.		
	<ul><li>EU funding calls</li><li>Research organizations</li></ul>	When:	Each year.		
Assessment and promotion of the capitalisation and valorisation under the BLUEMED umbrella of ongoing and future projects	<ul><li>GSO BLUEMED Working Group</li><li>EU Advisory Groups</li><li>Research organizations</li></ul>	How:	To be defined. One ongoing action is the BLUEMED Pilot: <i>Towards Plastic-free, Healthy</i> <i>Mediterranean Sea</i> .		
		When:	To be assessed.		
Lobbying actions		How:			
		When:			
Training and capacity building initiatives	Research organizations	How:	Courses, training days, workshops.		
		When:			
Implementation Working Groups (IWG)	GSO BLUEMED Working Group	How:			
on specific sectors	<ul><li>EU Advisory Groups</li><li>Research organizations</li></ul>	When:			

#### FICHE 2

#### SUPPORT SOLUTIONS FOR SUSTAINABLE PRODUCTION AND CONSUMPTION OF FOOD FROM THE SEA CO-CHAMPION COUNTRIES: SPAIN & EGYPT

#### Background

This priority, together with the related goals, fully supports the economic driver "Food" being at the same time one of the shared Mediterranean cultural root. It also promotes some improvements in the fisheries and aquaculture sectors with the aim to make these economic activities more environmentally and economically sustainable.

Overfishing represents a threat for marine ecosystem biodiversity, and present food provision levels cannot be considered sustainable. Pragmatic actions are thus needed to preserve marine living resources while guaranteeing employment opportunities and even fostering new jobs creation.

This can be achieved by developing innovative aquaculture strategies, technologies and practices, and by supporting and managing the transition from industrial overexploitation of marine resources to the adoption of sustainable fishing strategies.

Securing high quality and safe food supplies is an obvious key goal for all nations, particularly taking into account the way climate-induced extreme weather events, pollution and other natural and anthropogenic phenomena, are already affecting food production in the Mediterranean region.

The importance of the concept of Sustainable Food Consumption nowadays related to the increase of the demands of food, e.g. tourism, and the increase of food waste, implies a new perspective to be consider due to new practices to be applied, considering the application of better society behaviors or the establishment of better consumer practices.

It is crucial to invest in research and innovation in order to safely exploit marine resources for long-term, resilient and secure food production. It is a priority to work at Mediterranean level because fish stocks and aquaculture species/practices are mostly specific of the Med. In alignment with the GFCM and EATiP agendas, the goal supports the implementation of the CFP, the Food Strategy 2030, and relevant UN-SDG.

#### Mapping and discussing implementation options and potentials of this priority

Recent and ongoing relevant projects

PROJECT	DESCRIPTION		OBJETIVES		
AQUA-LIT Preventive Measures for Averting the Discarding of Litter in the Marine Environment from the Aquaculture Industry	<b>Call:</b> EASME/ EMFF/2017/1.2.1.12 - Sustainable Blue Economy <b>Duration:</b> 01/01/2019 - 31/12/2020	EU Contribution: 469.800,00€ Website: https://aqua-lit. eu/	<ul> <li>Prevent marine littering from aquaculture activities;</li> <li>Have better monitoring schemes in place;</li> <li>Remove and recycle litter from the aquaculture facilities both before litter enters the sea and for litter already existing at sea.</li> </ul>		
SRIA Action: D2.4					
PLASTIC BUSTERS MPAS	https://plasticbustersmpas.interreg-med.eu/		Contribute to maintaining biodiversity and preserving natural ecosystems in pelagic and coastal MPAs, by defining and implementing a harmonized approach against ML.		
PANACEA	https://biodiversity-protection.interreg-med.eu/ biodiversity-protection-community/panacea- partnership/				

AQUAEXCEL <sup>2020</sup> AQUAculture infrastructures for EXCELlence in European fish research towards 2020 SRIA Action: D2.4	Call: H2020- INFRAIA-2014-2015 – Research and innovation action Duration: 01/10/2015- 30/09/2020	EU Contribution: 9.708.867€ Website: http://www. aquaexcel2020.eu/	The project integrates a large group of leading European aquaculture research facilities and aims to advance aquaculture research and innovation in Europe. One of its key aspects will be to provide subsidised access to top- class aquaculture facilities, as well as numerous highly pertinent services for researchers from academia and industry.
CONFISH	Call: INTERREG	EU Contribution:	The project aims to design a
Network of fish stock recovery areas	Duration: 18 months	560.000€ Website:	Mediterranean-based network that relies on robust social framework and innovative evolutionary science for future implementation of bottom up approach into fishery management.
		med.eu/	The overarching goal is to promote knowledge transfer between evolutionary scientists and local fishery stakeholders towards sustainable fisheries management.
<b>FishMPABlue2</b> Fishing governance in MPAs: potentialities for Blue Economy 2	<b>Call:</b> INTERREG Programme MED 2014– 2020	EU Contribution: 2.975.000,00€ Website: https://	The FishMPABlue 2 project addresses and proposes solutions to existing and potential conflicts. It involves key actors in the planning of conservation measures and fishery regulation
SRIA Action: D2.2 / D2.3	<b>Duration:</b> 01 November 2016 – 31 October 2019	fishmpablue-2.interreg- med.eu/	processes in a context of sustainable governance involved in Blue Economy.
TAPAS	Call: H2020-SFS-2015-2	EU Contribution:	TAPAS aims to consolidate the
Tools for Assessment and Planning of Aquaculture Sustainability	<b>Duration:</b> 01 March 2016 – 29 February 2020	6.918.512,50€ Website: http:// tapas-h2020.eu/about/	environmental sustainability of European aquaculture by developing tools, approaches and frameworks to support EU Member States in establishing a coherent and efficient
SRIA Action: D2.4			regulatory framework, implementing the Strategic Guidelines for the sustainable development of European aquaculture and delivering a technology and decision framework for sustainable growth.
MedAID	Call: H2020-SFS-2016-2	<b>EU Contribution:</b> 6.999.	MedAID aims to increase the overall
Mediterranean Aquaculture Integrated		550,250	the Mediterranean marine fish farming
Development	Ouration: 01 May 2017 – 30 April	Website: http://www. medaid-h2020.eu/	whole value chain. Its objectives will be achieved:
SRIA Action: D2.4			<ul> <li>To identify the main technical, environmental, economic and social challenges,</li> <li>By addressing those technical, environmental, economic and social challenges that the sector currently faces,</li> <li>By developing innovative knowledge and tools to improve the performance of the production systems.</li> </ul>

ParaFishControl	Call: H2020-SFS-2014-2	EU Contribution:	The overarching goal of ParaFishControl
Advanced Tools and Research Strategies for Parasite Control in European farmed fish <b>SRIA Action:</b> D2.4	<b>Duration:</b> 01 April 2015 – 31 March 2020	7.800.000€ Website: http://www. parafishcontrol.eu/	is to increase the sustainability and competitiveness of the European aquaculture industry by improving our understanding of fish-parasite interactions and by developing innovative solutions and tools for the prevention, control and mitigation of the most harmful parasitic species affecting the main European farmed fish species.
STREAMLINE	Call: H2O2O-BBI-	EU Contribution:	The objective of the STREAMLINE
Optimal utilization of seafood side-streams through the design of new holistic process lines SRIA Action: D2.1 / D2.4	JTI-2018 <b>Duration:</b> 01 May 2019 – 30 April 2023	3.197.397€ Website: https://cordis. europa.eu/project/ rcn/222679/factsheet/en	project is to solve challenges that prevent more sound exploitation of the aquatic resources. This will be obtained by developing, sorting technologies, storage solutions and decision tools that will secure an efficient, sustainable supply system for by-catches, as well as for solid and liquid side-streams from aquaculture, fisheries and the aquatic processing industries to biorefining operations.
AqualMPACT	Call: H2O2O-BG-2018-1	EU Contribution:	AqualMPACT is a major effort to
Genomic and nutritional innovations for genetically superior farmed fish to improve efficiency in European aquaculture SRIA Action: D2.1 / D2.4	<b>Duration:</b> 01 January 2019 – 31 December 2022	6.149.963,14€ Website: https://cordis. europa.eu/project/ rcn/218338/factsheet/en	integrate the fields of fish breeding and nutrition to increase the competiveness of EU's aquaculture of Atlantic salmon, rainbow trout, gilthead seabream and European seabass, to ensure food and nutrition security and to satisfy consumer demands for high-quality seafood with limited environmental impact.
PerformFISH	Call: H2020-SFS-2016-2	EU Contribution:	The overarching objective of
Consumer driven Production: Integrating Innovative Approaches for Competitive and Sustainable Performance across the Mediterranean Aquaculture Value Chain	Duration: 01 Mayo 2017 – 30 April 2022	6.997.060,74€ <b>Website:</b> http://performfish.eu/	PerformFISH is to increase the competitiveness of Mediterranean aquaculture by overcoming biological, technical and operational issues with innovative, cost-effective, integrated solutions, while addressing social and environmental responsibility and contributing to "Blue Growth".
SMARTEISH	<b>Call:</b> H2020_SES_2017_1	FU Contribution:	The objective of SMARTEISH is to
Smart fisheries technologies for an efficient, compliant and environmentally friendly fishing sector SRIA Action: D2.2 / D2.3	Duration: 01 January 2018 – 31 December 2021	5.976.764,51€ Website: https://cordis.europa. eu/project/rcn/212401/ factsheet/en	develop, test and promote a suite of high-tech systems for the EU fishing sector, to optimize resource efficiency, to improve automatic data collection for fish stock assessment, to provide evidence of compliance with fishery regulations and to reduce ecological impact.

IFASA 2 Insects for a sustainable aquaculture 2 SRIA Action: D2.1 / D2.4	<b>Call:</b> H2O2O- SMEInst-2018-2020-2 <b>Duration:</b> 01 August 2018 – 31 July 2020	EU Contribution: 1.750.000€ Website: https://cordis.europa. eu/project/rcn/217408/ factsheet/en	Fish feed manufacturers and fish farmers are seeking innovative ways to increase the nutritional value of their products while reducing the environmental impact of their supply chain. Insect protein stands out as one of the best solution to address this need and drive the development of sustainable aquaculture.
PANDORA Paradigm for Novel Dynamic Oceanic Resource Assessments SRIA Action: D2.2 / D2.3 / D2.4	<b>Call:</b> H2O2O-SFS-2017-2 <b>Duration:</b> 01 May 2018 – 30 April 2022	EU Contribution: 5.598.388,75€ Website: https://cordis.europa. eu/project/rcn/214744/ factsheet/en	Create more realistic assessments and projections of changes in fisheries resources by utilizing new biological knowledge. Advice on how to secure long-term sustainability of EU fish stocks. Provide recommendations on how to stabilize the long-term profitability of European fisheries. Develop a public, internet-based resource tool box.
EASY FEED: Eco- aquaponics systems – 100% sustainable and profitable EU fish- farming SRIA Action: D2.1 / D2.4	Call: EASME/ EMFF/2017/1.2.1.12 - Sustainable Blue Economy Duration: 01 January 2019 – 01 December 2021	EU Contribution: 438.563,00€ Website: https://easyfeed-project. eu/#	EASY FEED will validate the use of an innovative aquaculture organic feed formula, based on locally grown quinoa and spirulina, to reduce the aquaculture sector's dependence on marine resources.
DEMO- BLUESMARTFEED: Demonstration project of a smart technology for monitoring the delivery of feed for a sustainable aquaculture SRIA Action: D2.4	Call: EASME/ EMFF/2017/1.2.1.12 - Sustainable Blue Economy Duration: 01 January 2019 – 01 December 2021	EU Contribution: 740.615,00€ Website: http://bluesmartfeed.eu/	DEMO-BLUESMARTFEED will validate the SICA technology (Smart System for Feeding Control) to monitor and optimise aquaculture feed supply, hence reducing feed waste. The aim of this proposal is to validate the SICA technology (Smart System for Feeding Control) in two real environments (offshore cages) in Spain and Greece.
ALTERNFEED: Substitution of fish flour and fish oil by sustainable products and alternative by-products SRIA Action: D2.1 / D2.4	<b>Call:</b> Fundación Biodiversidad, Convocatoria Pleamar 2018 <b>Duration:</b> 2019 –2020	EU Contribution: 59.203,76 € Website: https://www. programapleamar.es/ proyectos/sustitucion- de-harina-y-aceite- de-pescado-por- productos-sostenibles-y- subproductos	ALTERNFEED arises from the need to evaluate sustainable alternatives to the use of flour and fish oil or krill in the manufacture of fish feed by evaluating several alternative ingredients such insects meal, as a quality protein source, and a compound of microalgae, as an important source of protein or lipids depending on the parameters.

ALGADIET: Development and optimisation of new functional feeds based on the substitution of fish flours by micro and macroalgae for turbot fattening. SRIA Action: D2.1 / D2.4	Call: Fundación Biodiversidad, Convocatoria Pleamar 2018 Duration: 2018 –2020	EU Contribution: 177.056,89€ Website: https://www. programapleamar.es/ proyectos/titulo-del- proyecto-desarrollo-y- optimizacion-de-nuevos- piensos-funcionales- basados-en-la	The general objective of this project is the development and optimisation of new functional feeds based on the partial substitution of fish flours by meal from micro and macroalgae biomasses for use in the growth of turbot ( <i>Scophthalmus maximus</i> ), based on the principles of sustainability and environmental protection in aquaculture.	
SEAFOOD <sup>TOMORROW</sup> : Nutritious, Safe and Sustainable Seafood for Consumers of Tomorrow SRIA Action: D2.1 / D2.4	<b>Call:</b> H2020-BG-2017-1 <b>Duration:</b> 01 November 2017 – 31 October 2020	EU Contribution: 6.996.032,25€ Website: https://seafoodtomorrow. eu/	SEAFOOD <sup>TOMORROW</sup> aims to validate and optimize commercial solutions for improving the socioeconomic and environmental sustainability of the seafood production and processing industry, while contributing to product quality and safety. Activities will focus on the sustainable production and processing of nutritious and safe seafood products through the demonstration and first application in the market of eco-innovative, sustainable solutions of marine and aquaculture-derived food products and nutrients.	
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#### EUROPEAN STRATEGIES AND PROGRAMMES

- Strategic Guidelines for the sustainable development of EU aquaculture: <u>https://eur-lex.europa.eu/legal-content/</u> EN/TXT/PDF/?uri=CELEX:52013DC0229&from=EN
- The Common Fisheries Policy (CFP): https://ec.europa.eu/fisheries/cfp/
- Establishing a common organization of the EU markets in fishery and aquaculture products: <a href="https://ec.europa.eu/fisheries/files/docs/body/guidance-document-on-implementation-of-professional-organisations\_en.pdf">https://ec.europa.eu/fisheries/files/docs/body/guidance-document-on-implementation-of-professional-organisations\_en.pdf</a>

#### Target sectors and groups

#### Technology platforms (European, national, regional):

- European Aquaculture Technology and Innovation Platform: http://eatip.eu/
- European Fisheries Technology Platform: <u>http://eftp.eu/</u>

#### **Maritime Clusters**

• European Network of Maritime Clusters (ENMC): https://enmc.eu/about-us/

#### Intergovernmental bodies:

- Union for Mediterranean (UfM): <u>https://ufmsecretariat.org/</u>
- FAO Aquaculture: http://www.fao.org/aquaculture/en/
- FAO Fishing: http://www.fao.org/fisheries/en/
- FAO Sustainable Food: http://www.fao.org/sustainability/en/
- General Fisheries Commission for the Mediterranean (GFCM FAO): <u>http://www.fao.org/gfcm/es/</u>
- Worldwide Responsible Accredited Production: http://www.wrapcompliance.org/sp

#### Research bodies, businesses and local authorities

- Sustainable Fish: https://www.sustainablefish.org/
- European Environmental Agency: https://www.eea.europa.eu/
- European Topic Center on Inland, Coastal and Marine Waters: https://www.eionet.europa.eu/etcs/etc-icm
- Slow food international: <u>https://www.slowfood.com/</u>
- Institute for Advanced Sustainability Studies: <u>https://www.iass-potsdam.de/en</u>
- Organisation for Economic Co-operation and Development (OECD): <u>http://www.oecd.org/science/</u>
- The European Fisheries Areas Network (FARNET): <u>https://ec.europa.eu/fisheries/cfp/eff/farnet\_en</u>
- Aquaculture Advisory Council: <u>https://www.aac-europe.org/en/</u>
- Mediterranean Advisory Council: <a href="http://en.med-ac.eu/index.php">http://en.med-ac.eu/index.php</a>
- Market Advisory Council: <u>http://en.med-ac.eu/index.php</u>
- EU Market Observatory for Fisheries and Aquaculture products (EUMOFA): <u>http://www.eumofa.eu/</u>
- Scientific, Technical and Economic Committee for Fisheries (STECF): https://stecf.jrc.ec.europa.eu/
- National Aquaculture links: <u>https://ec.europa.eu/fisheries/cfp/aquaculture/links\_en</u>

#### Funding options and agencies

#### European funding:

- European Maritime and Fisheries Fund (EMFF): https://ec.europa.eu/fisheries/cfp/emff\_en
- Sustainable Blue Economy Call: <u>https://ec.europa.eu/easme/en/section/european-maritime-and-fisheries-fund/</u> sustainable-blue-economy
- Blue Technology transfer of innovative solutions to sea basin economies: <u>https://ec.europa.eu/easme/en/call-proposals-blue-technology-transfer-innovative-solutions-sea-basin-economies</u>
- Blue Labs innovative solutions for maritime challenges: <a href="https://ec.europa.eu/easme/en/call-proposals-blue-labs-innovative-solutions-maritime-challenges">https://ec.europa.eu/easme/en/call-proposals-blue-labs-innovative-solutions-maritime-challenges</a>
- Interreg Mediterranean Programme: https://interreg-med.eu/
- H2020 Programme: <u>https://ec.europa.eu/programmes/horizon2020/en</u>
- JERICO: http://www.jerico-ri.eu/
- LIFE programme: https://ec.europa.eu/easme/en/life

#### International funding:

• General Fisheries Commission for the Mediterranean (GFCM- FAO) http://www.fao.org/gfcm/es/

	Activities to promote the SRIA Implementation		
Examples of activities	Content and objective	How and timeframe	
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]	[Champion countries explain how the activity can be carried out and timeframe within the IP (2020- 2023)]	
Networking and engagement of economic sectors and•Maritime Clusters.•Research organizations (e.g. JERICO).		How:	Workshops for detailed stakeholders.
communities	European Commission.	When:	At least one per year.
Alignment and coordination	GSO BLUEMED Working Group.	How:	Meetings.
	<ul> <li>Alignment and coordination with other initiatives as WESTMED or EUSAIR.</li> <li>Alignment and coordination with other associations or organizations (GFCM- FAO; WRAP; UfM; etc.).</li> <li>Alignment and coordination with EU organizations (FARNET; EATIP; EFTP; EUMOFA, etc.).</li> <li>Coordination for eco-label aquaculture and fishing products (Marine Stewardship Council (MSC); Friends of the Sea (FoS); Aquaculture Stewardship Council (ASC)</li> </ul>	When:	At least one each 6 months.
Promotion and possibly implementation of actions coordinated and jointly undertaken by different countries, with a "variable geometry" approach	<ul> <li>Implemented by the Advisory Groups: Aquaculture Advisory Council; Mediterranean Advisory Council or GFCM- FAO.</li> <li>Research organizations: collaborate in the development of Strategies or Plans of future Horizon Europe.</li> <li>Replicate or promote Italian-Tunisian collaboration on harmonisation of methods for seafood guality</li> </ul>		Development of the Strategies and Plans designed for sustainable fishing, aquaculture and seafood.
Start Un actions	control.		Calla
Start-Up actions	<ul> <li>EU funding calls.</li> </ul>		Calls.
<ul> <li>Research organizations.</li> <li>Fishing and aquaculture eco-label products.</li> <li>Call for research on multi-modal platforms, offshore wind farms and aquaculture.</li> </ul>		vvnen:	Lach year.

Examples of activities	Content and objective	How	<i>i</i> and timeframe
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity] [Champion countries explain the activity can be carried of timeframe within the IP (2023)]		countries explain how can be carried out and within the IP (2020- 2023)]
Assessment and promotion	GSO BLUEMED Working Group participating in	How:	
of the capitalisation and valorisation under the BLUEMED umbrella of ongoing and future projects	<ul> <li>different meetings in relationship with food.</li> <li>EU Advisory Groups (Aquaculture, Fishing, Seafood) which includes BLUEMED initiative in the agendas.</li> <li>Research organizations.</li> <li>BLUEMED participation in calls about food production (future Horizon Europe, Interreg, etc.).</li> </ul>	When:	
Lobbying actions	<ul> <li>Actions to highlight the role of food production into BLUEMED</li> </ul>	How:	
	Into bloemed.	When:	
Training and capacity building initiatives	<ul><li>Intergovernmental bodies.</li><li>Research organizations</li></ul>	How:	Courses, training days, workshops.
	<ul> <li>Training/workshop for the exchange of best practices between Mediterranean countries on ideas to reduce food waste.</li> <li>Capacity building activity on artisanal fisheries (to be elaborated with Slovenian colleagues).</li> <li>Exchange of best practices between countries on fishing waste management on board (Malta seeking for how other countries deal with it).</li> </ul>	When:	At least one per year.
Implementation Working Groups (IWG) on specific sectors	<ul> <li>GSO BLUEMED Working Group.</li> <li>EU Advisory Groups (Aquaculture, Fishing, Seafood).</li> <li>Research organizations.</li> </ul>	How:	Meetings.
		When:	At least one each 6 months.
Communication and engagement	<ul> <li>GSO BLUEMED Working Group.</li> <li>EU Advisory Groups (Aquaculture, Fishing, Seafood).</li> <li>Research organizations.</li> <li>Dissemination of good food practices to society.</li> </ul>	How:	News, social networks (Twitter, Facebook, Instagram).
<ul> <li>Dissemination and science communication ide on collaborating with renowned Chefs to explain the nutrition potential of the seas – Med Network of Universities (Italy to give further details).</li> </ul>		When:	Social networks need to provide continually information.

#### FICHE 3

#### PREPARING TO CLIMATE CHANGE AND DEFINE ADAPTATION/MITIGATION MEASURES CO-CHAMPION COUNTRIES: GREECE & MOROCCO

#### Background

The Mediterranean has been characterised as a climate change vulnerability "hotspot" by the IPCC. Most countries are already experiencing, high temperatures and increased humidity or drought coupled with increasing water scarcity, forest fires and the possibility of desertification. Climatic changes are expecting to have major impacts on the ecosystems and the provision of ecosystem services but also on human safety as well as global and national economies. For example, vulnerability of ecosystems as well as agricultural systems would critically rise by increased water-scarcity, and this would affect food production. On the other hand, the ocean is by far the largest water reservoir on the Earth but the marine water is salty. In addition, <u>numerical models predicting the water vapour transport form the ocean on land could be considered as part of research activities in the framework of Blue Growth.</u>

Furthermore, the Mediterranean accepts approximately one third of the global international tourists, and the number is expected to increase in the forthcoming years, but <u>climate change is expected to have an effect in tourists' needs and expectations</u>, which may result in the diminishing competitiveness of certain destinations, affecting local, regional and national economies.

There are still gaps in research and innovation with regard to <u>understanding climate phenomena</u>, hence developing the appropriate mitigation and adaptation strategies. However, it is evident that the economic and social cost of inaction will clearly be far higher than the cost of action. <u>Climate change adaptation is a major crosscutting issue</u>. It requires increased knowledge, technological and social innovation and policy shifts and the Mediterranean, as a region needs to tackle this in a unified way, as there are important adaptation gaps, behavioural and economic barriers that hinder the effectiveness of measures.

The ability to cope and adapt differs across populations, economic sectors and regions within Mediterranean and the most vulnerable are the ones facing the most difficulty in adopting the necessary measures. The pledges made in the framework of the Paris Agreement need to be upheld.

At a national level, stakeholders need to urgently develop and implement strategies to conserve and safeguard marine ecosystems, without which there can be no blue growth in the long term. Actions can be taken in accordance with the strategic objectives and priorities identified during the 19th meeting of the contracting parties to the Barcelona Convention regarding Regional Climate Change Adaptation measures as well as other regional frameworks such as the EU strategy on Adaptation to Climate Change which was adopted in 2013, the Arab Framework Action plan on Climate Change (elaborated by LAS) and the proposals of the UfM Climate Change expert group. The MedECC network of Mediterranean Experts on Climate and environmental Change could also be of reference.

M	Mapping and discussing implementation options and potentials of this priority			
	Recent a	nd ongoing relevant projects		
PROJECT	PROJECT DESCRIPTION OBJETIVES			
<b>CO-EVOLVE</b> Promoting the co- evolution of human activities and natural systems for the development of sustainable coastal and maritime tourism	Call: ERDF (European Regional Development Fund) Duration: 01/11/2016 - 31/10/2019	EU Contribution: 3.000. 000,00€ Website: https://co-evolve. interreg-med.eu	Aims at analyzing and promoting the co-evolution of human activities and natural systems in touristic coastal areas, facing effects due to climate change and allowing sustainable development of touristic activities, in coexistence and synergy with other uses of the coastal and marine space and resources, based on the principles of Integrated Coastal Zone Management and Maritime Spatial Planning.	

MPA-ADAPT Guiding Mediterranean MPAs through the climate change era: building resilience adaptation	Call: "Interreg V-B Mediterranean" Operational Programme for the 2014-2020 Duration: 2016-2019	EU Contribution: 1.904.257 € Website: https://mpa- adapt.interreg-med.eu/	<ul> <li>MPAs through the climate change era: building resilience adaptation) (2016-2019) aims to:</li> <li>1) Raise awareness of the role of effective MPAs for enhancing resilience to climate change and safeguarding ecosystem services as well as contributing to adaptation measures;</li> <li>2) Strengthen capacity of MPAs to plan for and respond to climate change impacts based on a better understanding of climate risk and vulnerability;</li> <li>3) Showcase how climate change can be integrated into planning and management of Mediterranean MPAs. Five MPAs from three Mediterranean countries act as pilot sites for the development of climate change adaptation action plans and their integration into existing management framework.</li> </ul>
ClimVar & ICZM Integration of climatic variability and change into national strategies to implement the ICZM Protocol in the Mediterranean	Call: Global Environmental Facility Duration: 2012–2015	EU Contribution: 9.200.000€ Website: https://pap- thecoastcentre.org/ projects/cv.html	<ul> <li>ClimVar &amp; ICZM UNEP-MA Project (Integration of climatic variability and change into national strategies to implement the ICZM Protocol in the Mediterranean) project (2012–2015) aimed at:</li> <li>1) strengthening knowledge on regional climate variability and change and on their impacts, defining their specific characteristics in the Mediterranean region;</li> <li>2) Improving capacity building and establish mechanisms for exchange of data and information for integration of climate variability and change into concrete ICZM policies, plans and programmes.</li> </ul>
MEDACC Life Project	Call: LIFE ENV/ ES/000536 Demonstration and validation of innovative methodology for regional climate change adaptation in the Mediterranean area Duration: 2018	EU Contribution: 1.266.208 € Website: http://medacc-life.eu/es	MEDACC Life Project (2018) aimed to develop innovative solutions for adapting agroforestry and urban systems to the impacts of climate change in the Mediterranean area (Catalonia). A series of adaptation measures have been put into practice in the fields of agriculture, forest management and water management. The results of the project contribute to quantifying how adaptation can reduce the vulnerability of natural systems and human activities to climate change and assessing the economic and environmental costs associated with the application (or not) of these adaptation measures.
LIFE Blue Natura	<b>Call:</b> LIFE program <b>Duration:</b> 01 November 2016 – 31 October 2019	EU Contribution: 2.513.792 € Website: http://life- bluenatura.eu/es/inicio/	LIFE Blue Natura: represents an ambitious and innovative initiative to quantify blue carbon and protect coastal habitats in Andalusia.

Enhancing Regional Climate Change Adaptation in the Mediterranean Marine and Coastal Areas	Call: Global Environmental Facility Duration: 2016-2019	EU Contribution: 4.891.894 € Website: https:// www.thegef.org/ project/enhancing- regional-climate- change-adaptation- mediterranean-marine- and-coastal-areas	Enhancing Regional Climate Change Adaptation in the Mediterranean Marine and Coastal Areas (Financed by GEF). The Project objective was to assist countries to increase the resilience of the Mediterranean marine and coastal areas to the impacts of climate change with the view to influencing wider development processes in the region.
<b>BRIdges</b> The GAp for Innovations in Disaster resilience	Call: H2O2O European Commission Project Duration: 2016-2020	EU Contribution: 6.999. 996,25€ Website: www.brigaid.eu	BRIGAID is a 4-year project (2016-2020) under EU Horizon2020, aimed to effectively bridge the gap between innovators and end-users in resilience to floods, droughts and extreme weather
COASTAL Co-creating evidence- based business roadmaps and policy solutions for enhancing coastal- rural collaboration and synergies SRIA Action: E2.1, E2.6, E2.7	<b>Call:</b> H2020-SC2- RUR02-2017 <b>Duration:</b> May 2018 – April 2022	EU Contribution: n.a. Website: www.h2020- coastal.eu	The overarching objective of COASTAL is to improve the rural-coastal synergies in strategic business and policy decision making and collaboration between coastal and rural actors. This is achieved by developing, demonstrating and applying a generic toolset and performance indicators by combining a multi-actor approach with system dynamics modelling. This allows us to understand the interactions with market, demographic, environmental and climate forecasts, and quantify the positive and negative externalities. By combining local knowledge and scientific expertise in a co-creation process the COASTAL project engages actors and stakeholders at all levels to improve coastal-rural interdependence and collaboration by identifying problems and setting up evidence-based business roadmaps and policy solutions, focusing on economic growth, marine spatial planning, and environmental protection, including inland water quality.
CICESMED Coralligenous based Indicators to evaluate and monitor the "Good Environmental Status" of the MEDiterranean coastal waters FP7 European Commission Project	<b>Call:</b> FP7 ERA-NET <b>Duration:</b> 01/03/2013 – 31/10/2016	Website: http://www. cigesmed.eu	The project's goal is to understand the links between natural and anthropogenic pressures and ecosystem functioning to define and maintain the Good Environmental Status (GES) of the Mediterranean Sea, by studying the typical, complex and not well-known habitats built by calcareous encrusting algae, the coralligen

ALIEM Action to limit the spread of invasive species introduced into the Mediterranean	Call: ERDF, 2014-2020 INTERREG V-A Duration: 2017- 2020	EU Contribution: 1.840.194,99 € Website: http://interreg- maritime.eu/ - http:// interreg-maritime.eu/it/ web/aliem/progetto	The issue of invasive exotic species is emerging and still poorly defined, although it has been recognised as the second cause of loss of biodiversity. These species do not know borders, and current ways of life increase their risk of being introduced. Some of these pose a threat to the economy and to health. Their propagation threatens hotspots of Mediterranean biodiversity, sensitive areas and, in particular, certain Natura 2020 sites near to introduction areas (ports, airports, etc.). To respond to this evolving phenomenon, in the difficult context of climate change, all we have available for this fight are limited means that do not respect the environment
<b>BeRTISS</b> BalkanMed real time severe weather service	Call: INTERREG Balkan- Med Duration: 2014 -2020	EU Contribution: 1.063.941,03 € Website: http://www.interreg- balkanmed.eu/approved- project/14/	BeRTISS - BalkanMed real time severe weather service (INTERREG Balkan- Med).The project aims to provide timely information and warning regarding severe weather events as well as long- term monitoring of weather and climate change in the region, through the mapping and visualization of water vapor
BlueCoast Climate-Smart Coastal Practices for Blue governance	Call: The Interreg IPA CBC Programme "Greece – Albania 2014 – 2020 Duration: 2014 –2020	Website: http://bluecoast-cbc.eu/ index.php/project/	BLUECOAST objective is to provide applicable plans & pro-active methods based on long-term conservation goals and climate change adaptation policy, in order to increase C. caretta ecosystem resilience. It will address the major stresses at land & sea, driven by human impact and climate change integrating habitats resilience into the broader regional socioeconomic development. (Greece and Albania).
CLIMEPORT Mediterranean Ports' Contribution to Climate Change Mitigation	Call: INTERREG IVB - INTERREG IV - Transnational programmes Duration: 01 August 2018 - 31 July 2020	EU Contribution: 1.610.454,00 € Website: https://trimis.ec.europa. eu/project/mediterranean- ports-contribution- climate-change-mitigation	The CLIMEPORT project encourages Mediterranean Ports to combat climate change reducing greenhouse emissions and fostering a better use of energy in order to achieve sustainable development in port communities. During the project, an extensive benchmarking process will be carried out within the Mediterranean port sector concerning the use of environmental.
<b>COASTANCE</b> Regional COmmon Action STrategy Against Coastal Erosion and climate change effects for a sustainable coastal planning in the Mediterranean basin	Call: 2007-2013 Programme MED Duration: 01/04/2009 - 31/03/2012	EU Contribution: 1.425.415,00 € Website: https://climate-adapt. eea.europa.eu/metadata/ projects/regional- common-action-strategy- against-coastal-erosion- and-climate-change- effects-for-a-sustainable- coastal-planning-in-the- mediterranean	Coastal erosion and flooding represent a major threat for the well-being and prosperity of the 70mi Europeans living within 500m from the coastline and their assets of 500- 1000bi€. Lost or seriously impacted area by erosion is estimated to be 15 km²/year.

IONian Integrated marine Observatory	Call: European Territorial Cooperation Programme, Greece-Italy 2007-2013, ERDF and National Funds Duration: 01/01/2012 - 31/12/2013	EU Contribution: 1.688.734,00€ Website: http://www.ionioproject. eu/	The IONIO project is aimed at designing and implementing a "IONian Integrated marine Observatory" that will provide environmental information and meteo- oceanographic measurements about the Southern Adriatic and Northern Ionian (SANI) Programme Area.
MED-JELLYRISK Integrated monitoring of jellyfish outbreaks under anthropogenic and climatic impacts in the Mediterranean Sea (coastal zones): trophic and socio-economic risks	Call: 2007 - 2013 Mediterranean Sea Basin ENPI CBC, ERDF Duration: 01 January 2019 - 01 December 2021	Website: http://jellyrisk.com	The Mediterranean coasts are facing increasing jellyfish outbreaks resulting from a wide variety of human activities including maritime transport, exploitation of living resources, discharges together with the impact of climate change. The MED-JELLYRISK is the first CBC (Cross- Border Cooperation) project assessing the socio-economic impacts of jellyfish blooms and the implementation of mitigation countermeasures.
The OrientGate A structured network for integration of climate knowledge into policy and territorial planning	Call: South East Europe Transnational Cooperation Programme Duration: 2012 – 2014	EU Contribution: 3.354.355,00 € Website: http://www. orientgateproject.org/	The project aims to implement concerted and coordinated climate adaptation actions across South Eastern Europe (SEE). A structured network for integration of climate knowledge into policy and territorial planning.

#### Programmes and initiatives of relevance, including research and data infrastructures

- The 19th meeting of Contracting Parties (COP19) of the Barcelona Convention endorsed in 2016 the '<u>Regional Climate</u> <u>Change Adaptation Framework for the Mediterranean Marine and Coastal Areas</u>'. The document aims at building a common regional strategic approach to increasing climate resilience and adaptation capacity.
- In February 2016, the 19th Ordinary Meeting of the Contracting Parties to the Barcelona Convention (COP19) adopted the <u>Mediterranean Strategy for Sustainable Development</u> (MSSD) 2016-2025, as a strategic guiding document for all stakeholders and partners to translate the 2030 Agenda for Sustainable Development (2030 Agenda) at the regional, sub-regional and national levels. The MSSD recognizes climate change as a priority issue for the socio-economic development and environmental sustainability of the Mediterranean and calls for increasing scientific knowledge, raising awareness, and developing technical capacities to progress towards a green, low-carbon and climate-resilient Mediterranean region.
- The <u>Mediterranean Expert Group on Climate and Environmental Change</u> (MedECC) was launched during a side event organized at the Conference 'Our Common Future under Climate Change' (CFCC) in Paris, (France) in July 2015. MedECC is an open and independent network of more than 400 scientists working towards a regional science-policy interface for climatic and other environmental changes across the Mediterranean.
- <u>Mediterranean climate Variability and predictability</u> (MeddCLIVAR) serves as a scientific network to promote better communication among different scientific disciplines and to develop a multidisciplinary vision of the evolution of the Mediterranean climate through studies that integrate atmospheric, marine, and terrestrial climate components at time scales ranging from paleo-reconstructions to future climate scenarios.
- The Foundation Euro-Mediterranean Center on Climate Change (CMCC) is a non-profit research institution established in 2005. CMCC's main mission is to investigate and model the future of our economic and economic systems, with special emphasis on impacts of climate change and related collective actions to address mitigation challenges. https://www.cmcc.it/
- MedWet Wetlands for a sustainable Mediterranean region (https://medwet.org/). Established in 1991, the Mediterranean Wetlands Initiative brings together 27 Mediterranean and peri-Mediterranean countries that are Parties to the Convention on Wetlands (Ramsar, Iran, 1971). Palestine and a number of organizations and wetland centres are also part of the MedWet Initiative. The different entities of the MedWet Initiative, as established in its Terms of Reference, are: i) The Mediterranean Wetlands Committee, ii) The MedWet Steering Group, iii) The MedWet Scientific and Technical Network, iv) The MedWet Secretariat. The MedWet/STN is working through five Specialist Groups (SGs) in the key areas where there is a need to improve the knowledge and managerial capacity related to wetland conservation and sustainable use. Among the five Key Areas is Climate change: to investigate the implications of climate change for the functioning and management of wetlands and their resources; this group will evaluate the impact of climate change on wetlands and water resources and assess both carbon stocks in Mediterranean wetlands and the role of coastal wetlands in the mitigation of the consequences of rising sea levels.
- UfM Ministerial Declaration on Blue Economy (2015; a new one upcoming in 2021) https://ufmsecretariat.org/wp-content/uploads/2015/11/2015-11-17-declaration-on-blue-economy\_en.pdf
- UfM Ministerial Declaration on Environment and Climate Change" (2014; a new one upcoming in 2020) https://ufmsecretariat.org//wp-content/uploads/2014/05/20140515\_UfM\_declaration\_FINAL\_compromiseeditorialchanges.pdf
- UfM Working Group on Blue Economy
   https://ufmsecretariat.org/ufm-working-group-blue-economy/
- Any other relevant UfM Ministerial (transport, energy, sustainable urban development, etc.), related strategies, programmes and projects https://ufmsecretariat.org/what-we-do/water-environment/

#### Target sectors and groups

Climate change adaptation is a major crosscutting issue requiring increased knowledge, technological and social innovation, as well as policy shifts throughout the EU and the Mediterranean. The Commission has already set out a clear vision for achieving climate neutrality, which includes improving the productivity of aquatic and marine resources, reducing the increasing energy efficiency of the fishing sector and increasing of shore energy production. In addition, adaptation measures for the coastlines and coastal populations should be included in National MSPs. In order to achieve this in the Mediterranean level there is a need for the co-operation of several sectors and Intergovernmental and National Bodies and groups. NGOs are also an important target group, as they have a better contact with the public and most of them have Climate Change issues on their Agenda.

#### Intergovernmental Bodies

- EC-DG Mare (https://ec.europa.eu/maritimeaffairs/home\_en) and MSP Member States Expert Group (MSEG);
- DG Clima ( https://ec.europa.eu/clima/index\_en);
- UNEP/MAP (http://web.unep.org/unepmap/) and its Regional Centers (e.g. PAP-RAC, SPA-RAC, INFO-RAC, REMPEC);
- Intergovernmental Panel on Climate Change (IPCC) (https://www.ipcc.ch/);
- Major Economies Forum on Energy and Climate (MEF);
- Union for Mediterranean (UfM) (https://ufmsecretariat.org/);
- GFCM (http://www.fao.org/gfcm/en/);
- European Environment Agency (EEA) (https://www.eea.europa.eu/)
- European Topic Center on Inland, Coastal and Marine Waters (ETC/ICM) (https://www.eionet.europa.eu/etcs/etc-icm)
- International Council for the Exploration of the Sea (ICES) (https://www.ices.dk/)
- Organisation for Economic Co-operation and Development (OECD) (http://www.oecd.org/science/);
- International Energy Agency (IEA) (https://www.iea.org/);
- European Council for Maritime Applied R&D (ECMAR, https://www.ecmar.eu).

#### Sectoral Associations and Technology Platforms

- European MSP Platform: https://www.msp-platform.eu/;
- European Aquaculture Technology and Innovation Platform (http://eatip.eu/);
- European Fisheries Technology Platform (http://eftp.eu/);
- Waterborne Technology Platform (https://www.waterborne.eu/);
- Observatoire Méditerranéen de l'Energie (OME) (http://www.ome.org/);
- European Community Shipowners Association (ECSA) (https://www.ecsa.eu/).

#### Industries

- Energy Sector;
- Shipping Sector;
- Aquaculture/Fisheries Sector;
- Agriculture Sector;
- Tourist operators;
- Water resources managers.

#### Funding options and agencies

The EU finances adaptation to climate change in Europe through a wide range of instruments, aligned with the Europe 2020 Strategy towards smart, sustainable and inclusive growth. The Multiannual Financial Framework 2014-2020 will ensure that at least 20% of the European budget is climate-related expenditure (to be approved by the European Parliament). The EU also finances climate change adaptation outside its borders.

https://ufmsecretariat.org/wp-content/uploads/2017/11/UfM-Climate-Finance-Study.pdf

Table 1: Funding to regional projects and their relevant countries in million US dollars (mUSDI)

Regional (Egypt, Jordan, Morocco, Tunisia)	GCF	151,2
Regional (Egypt, Jordan)	GEF (GEF Trust Fund)	4.0
Regional (Africa <sup>11</sup> )	GEF (SEFA)	1,2
Regional (Albania, Algeria, Libya, Morocco, Montenegro, Tunisia)	GEF (SCCF)	1,1
Regional (Morocco, Tunisia)	AFD/FFEM	1,1
Global (Mauritania)	GEF (GEF Trust Fund)	0,59

#### Funds and funding agencies:

- UfM.
- The Interreg IPA CBC Programme "Greece Albania 2014 2020.
- Horizon 2020.
- Life European Project (DGENV) and CEPSA (Private company, Spain) (Life blue Natura).
- Interreg IV B Med.
- European Territorial Cooperation Programme.
- European Climate Change Programme.
- Private Sector/Industries/Enterprises. For example, tools that exist in the Central Banks to motivate companies to adapt environmental policies.

Activities to promote the SRIA Implementation				
Examples of activities	Content and objective	How and timeframe		
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]	[Champion countries explain how the activity can be c out and timeframe within the IP (2020-2023)]		
Networking and engagement of economic sectors and national Blue Growth communities	<ul> <li>Participation in Climate – KIC Hub actions.</li> <li>Participation in MEDECC Events.</li> <li>Participate and align with next climate change related events.</li> <li>Private sector/Industries, through motivation by the states/ central banks.</li> </ul>	How:	<ul> <li>Educational Activities, promotion of innovative ideas, online courses.</li> <li>Connect Science with industry.</li> <li>Industry as funders as end users.</li> <li>Private sector wants concrete ideas to see that something is tangible.</li> <li>Scenarios on climate change with Blue economy.</li> </ul>	
Alignment and coordination	<ul> <li>BlueMed GSO working group.</li> <li>MEDECC.</li> <li>CEN-CENELEC Coordination Group 'Adaptation to Climate Change' (ACC-CG).</li> <li>The Directorate-General for Climate Action (DG CLIMA).</li> <li>IPCC.</li> <li>UfM.</li> <li>UNEP.</li> </ul>	How:	<ul> <li>Meetings and activities for the identification of priority topics / actions and of options for joint implementation. Research to strengthen dialogue and institutional capacities.</li> <li>Targeted research and innovation regarding climate change impact on food webs, biodiversity, marine habitats and therefore on fisheries and aquaculture is a key point (link to fiche 2).</li> <li>The link between climate change (sea level rise) and tourism is of priority concern in the region. Addressing these issues will need appropriate observing systems.</li> <li>Therefore, Infrastructure needs to explore new research topics (more scientific effort)</li> <li>2019 - 2023</li> </ul>	
Promotion and possibly implementation of actions coordinated and jointly undertaken by different countries, with a "variable	<ul><li>Advisory Groups.</li><li>Research organizations.</li><li>Interact.</li></ul>	How:		
geometry" approach		When:		
Start-Up actions	Start-Up actions• Climate-KIC Start ups.• Mediterranean Climate Change Adaptation Awards".	How:		
		When:		
Assessment and promotion of the capitalisation and	GSO BLUEMED Working     Group.	How:		
valorisation under the BLUEMED umbrella of ongoing and future projects	• EU RTD.	When:		

Examples of activities	Content and objective	How and timeframe	
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]	[Champion countries explain how the activity can be carried out and timeframe within the IP (2020-2023)	
Lobbying actions	<ul> <li>Climate Action Network.</li> <li>Corporate Europe Observatory.</li> <li>Search new funding</li> </ul>	How:	
	opportunities (e.g. philanthropic foundations that could give awards on innovation).	When:	
Training and capacity building initiatives	<ul> <li>Research organizations.</li> <li>Specialised schools and master courses.</li> </ul>	How:	
		When:	
Implementation Working Groups (IWG) on specific sectors• BLUEMED GSO.• EU Advisory Groups.• UNEP groups.• UNEP groups.• Research organisations and Universities.	How:		
	When:		
Communication and engagement	<ul> <li>GSO BLUEMED Working Group.</li> <li>EU Advisory Groups.</li> <li>Research organizations.</li> <li>Local Authorities.</li> <li>Non-governmental organizations.</li> </ul>	<ul> <li>How:</li> <li>Climate change day similar to researchers' night.</li> <li>Climate capital of Europe.</li> <li>Climathon: Propose an activity within Climathon 2020 related to the Med Sea, realised simultaneously in all capitals with the presence of BLUEMED (may be the Ambassadors).</li> <li>When:</li> </ul>	

FICHE 4 TOWARDS AN OBSERVING SYSTEM OF SYSTEMS CO-CHAMPION COUNTRIES: FRANCE, MALTA, ALGERIA

#### Background

Blue Growth demands for a holistic approach, integrating knowledge on oceanic dynamics, ecosystem structuration and functioning, and economy and societal needs. For a complete picture, there is also a strong need for assessing marine and coastal vulnerability and sustainability of ecosystem services. Among the pre-requisites for this approach is the open access to multidisciplinary data, which requires proper support for acquisition of high quality qualified data through the net increase and evolution of ocean observing systems. Therefore, observation is key to provide knowledge and support environmental status assessment while at the same time; it can also stimulate new services and Blue Growth.

However, a number of variables that are known to be important for monitoring of environmental conditions are still not properly observed, and in some cases the technology is not fully developed yet; and when it is developed, in certain cases, it is not accessible to southern countries. Long-term observations with prescribed methodology are available only in few parts of the Mediterranean, even though they are indispensable for a proper assessment of changes occurring in the marine environment, especially in coastal areas, which are deeply affected by current challenges and which concentrate a high proportion of human density and economic activities.

The importance of these challenges has led the United Nations to proclaim a Decade of Ocean Science for Sustainable Development (2021-2030) and to state that scientific understanding of the ocean's responses to pressures and management action is fundamental for sustainable development. Ocean observations and research are also essential to predict the consequences of change, design mitigation and guide adaptation. This strong link between the health of our seas and oceans is critical to the economic, social and environmental well-being has also been emphasized by the Leaders of the G7 at 2018 G7 Summit. In line with this statement, the Future of the Seas and Oceans Working Group has recognized the importance of ocean observing and monitoring activities.

There is therefore a clear need for more comprehensive and accessible data sets, in order to analyse and monitor risks in the Mediterranean Sea using advanced data-capturing techniques, and to unlock the Med-specific knowledge and innovation potential. In situ and remote observations of the sea are both essential ingredients for monitoring, security, safety and surveillance, but also to provide essential data for value addition and provision of novel services. This data can be used for early detection, mitigation and monitoring of both natural and human disasters as well as to provide other relevant services.

Marine and coastal observation and monitoring systems do not cover all of EcAp's ecological objectives and IMAP indicators, including common indicators related to the biological and ecological component, hydrography and those related to climate change. Significant efforts must be made in order to standardize the internal procedures as well as to make data observation timely visible, accessible and exploitable. A similar effort needs to be made to improve data sharing, especially on digital platforms. Moreover, a truly holistic approach and long-term vision should include both the strengthening of existing observing systems and the design of future augmented observatories that would take advantage of innovative cost effective technologies such as those driving the ongoing "-omics revolution" in biology or the Internet of the Things (IoT).

An interesting win-win scenario is emerging where ocean observations for environmental management, for monitoring the health of the marine ecosystem, and for marine safety and surveillance could also serve, in their non-confidential elements, to feed the research and economic sectors for added value and societal benefits at no additional data acquisition costs. In an evolving knowledge-based society, open access to key technologies, high quality data, modelling and satellite observations, are perceived to be key ingredients to support sustainable blue growth, especially in the coastal areas where many essential economic activities are occurring at the national scale. This goes hand in hand with the process of extracting essence from data, maximising their value by providing a wide range of downstream services that are fitting to the user needs at various scales.

Permanent standardized observatories that can cost effectively measure the variability of the marine ecosystem in all its interconnected components down to the coastal areas can be shaped to serve research, monitoring and industry, supporting the BlueMed challenges. Coordinating the observing system of systems and promoting open data practices, being a research and innovation enabler by definition, is relevant for the Mediterranean Sea and requires actions, conditions and opportunities involving EU and non-EU countries (with a stronger focus dedicated to identified sectors and key areas such as: coastal zones, fisheries, aquaculture, port areas, pollution including marine litter).

Priority short term actions can be identified based on existing knowledge and capitalizing on consortia and projects' achievements. Among them are; the need to improve procedures for the data sharing at the relevant scales. ; the need for data integration because these data are currently being exploited most often with sectoral orientation (fishing, pollution, infrastructures, etc.). ; the need for better development/processing of raw data for optimization of their use. In this context, the content of this fiche and the suggested actions at the end of the document are strongly linked to the work realized in the framework of Fiche 10 on Open Data, Open Science, and Open Innovation.

#### Mapping and discussing implementation options and potentials of this priority

#### Recent and ongoing relevant projects

The need to facilitate access and exchange of oceanographic information and data has led to the creation of several international initiatives from the scientific community in the field of marine observations (e.g. the Global Ocean Observing System; the IOC's International Oceanographic Data and Information Exchange, born in 1961; the International Ocean Discovery Program, Science Plan 2013–2023; the Global Ocean Ship-Based Hydrographic Investigation Program).

In the framework of the BLUEMED CSA's work, Research Infrastructures have been classified into five categories. Please refer to BLUEMED Deliverable D3.3 for further details. The following paragraphs aim at highlighting the gaps that need to be tackled by the activities that will be implemented by BLUEMED Implementation Plan to tend towards an integrated Observing System of Systems in the Mediterranean.

#### Research vessels and equipment

There is already a good level of collaboration among European countries with several existing programmes aiming at facilitating access to research vessels for scientists, and improving coordination and networking (EUROFLEETS/ERVO/OFEG). However, there are still big differences in fleet operation mechanisms among countries. Most of the research vessels operating in the Mediterranean Sea are owned by European countries. Moreover, the access to certain areas of the sea is restricted by national jurisdictions due to a lack of political agreements.

#### Marine based facilities

Several European networks (MonGOOS/EuroGOOS/DANUBIUS-RI) of observing platforms and bi-lateral initiatives (O-LIFE) exist and function efficiently.

A mixture of EU funding projects, INTERREG and ENPI CBC Med and dedicated funds from single countries have enabled the setting up of infrastructures mainly at national and bilateral scales, capacity building and sharing of technologies for marine observations and modelling, including the involvement of non-EU partners (like ODYSSEA).

At French level, the Infrastructure for Coastal and Littoral Research (IR-ILICO) can be an example of a successful project aiming at gathering eight different observation networks and services to better understand coastal ecosystems, which are deeply affected by climate change and which concentrate a high proportion of human economic activities. At European level, JERICO-NEXT aims at creating a strong network of European research infrastructures dedicated to coastal observation. This project aims at encouraging the harmonization of methods and tools in the domain to obtain joint measures and quality data at European scale. The involvement and participation of non-EU countries to this type of initiatives must be encouraged and strengthened.

Collaboration between the private sector and the scientific community can be improved to ensure long-term series of observations and data sharing.

Studying new contaminants, new cumulative impact of contamination and new sources of pollution requires the reuse of essential ocean variables (initially collected for other purposes). This new uses of "ancient" data must requires precaution considering "original" objectives and conditions of sampling and measuring.

There is still a restricted integration of modelling facilities into observational networks.

Further multi-purposes offshore platforms could be developed. For example, the implantation of three pilot floating offshore windfarms in the Gulf of Lion (from 2021) could be an opportunity to establish permanent and high frequency observatories.

#### Land based facilities

Land based facilities are already well organized in Europe, and secured by the ESFRI label in some cases (EMBRC-ERIC). However, there is a lack of laboratories in the South, and scientists may have to go far away from home to access RIs. This difficulty can be compounded by visa issues and southern scientists sometimes encounter difficulties to visit labs in the North shore. Moreover, there is a lack of visibility and awareness on RIs opportunities and services. For example, regarding European RIs, 20% of TNA is made accessible to southern countries, but most of the time, this is ignored. However, there is still need for optimising existing RI's in southern Mediterranean countries. Scientific collaboration and cooperation is still strongly oriented north-south and the need for south-south scientific collaboration and cooperation is one of the keys for the optimization of southern RI's.

The quantity of emerging pollutants and new contaminants is increasing, and there is a lack of knowledge about them, about their impacts, their evolution and there is a lack of land-based facilities specifically dedicated to this kind of studies.

Moreover, there is lack of awareness on climate change in the southern shore, this topic is not always considered as a research priority. Work should be done to encourage the development of facilities and studies on topics related to climate change such as erosion and coastal risks.

#### Satellites and spatial data

Several European programmes already exist (e.g. Copernicus/ORFEO/SPOT/EUMETSTAT Polar System/Earth Explorer ESA programmes) but difficulties for the south eastern Med countries to access these services are unresolved. The exploitation of Earth Observations into added value applicative services is a lucrative challenge especially with the advent of important satellite platforms such as the Sentinel constellation. Merging of satellite data to numerical models and in situ observations are the essence of operational oceanography targeting to serve a range of users (institutional, public and private) and providing the data backbone for research, environmental assessments, security and surveillance as well as the marine economic sector.

#### Data

Several well structured mechanisms exist in Europe (such as EMODnet/Copernicus/ SeaDataNet), where the culture of data sharing is relatively well spread. The quest to make data access open and widespread is the challenge of COPERNICUS Programme. While the access of essential regional scale data is supported by the EC through COPERNICUS, a framework to enhance national scale observing systems in the coastal areas is necessary, aiming to create COPERNICUS-like systems at country scale under a common system of systems linking to the mother COPERNICUS service.

Moreover, interactions between the scientific community and the private sector needs to be reinforced in order to access and reuse data collected by the private sector and vice-versa.

The sharing of data between the two shores of the Mediterranean, and the quantity and quality of data is not homogeneous in the whole basin (lack of data coverage and absence of data sharing culture in the southern shore). Work should be done to encourage political commitments to enable the harmonization of data standards and interoperability between the two shores.

Alongside these large-scale programmes, which benefit from strong institutional support, many project exist at a smaller scale, ran by various types of stakeholders (public bodies, private companies, NGOs) and including acquisition of data that can valuable for the assessment of the status of the marine ecosystem.

PROJECT	DESCRIPTION		OBJETIVES
EUROFLEETS+ An alliance of European marine research infrastructure to meet the evolving needs of the research and industrial communities	Call H2020 Duration: 01 February 2019 - 31 January 2023	EU Contribution: € 9,999, 360.58 Website: https://www. eurofleets.eu	Integrating and opening existing national and regional research infrastructures of European interest. EUROFLEETS+ prioritises support for research on sustainable, clean and healthy oceans, linking with existing ocean observation infrastructures, and supports innovation through working closely with industry. The project will enable access to a unique fleet of 27 state-of-the-art research vessels from European and international partners.
ILICO French seashore and coastal research infrastructure	Website: https://v	www.ir-ilico.fr/en	The French seashore and coastal research infrastructure ILICO (Infrastructure de Recherche Littorale et Côtière) was established in 2016 with the support of Ministry of Higher Education, Research and Innovation. ILICO is a notable example of national infrastructure and interinstitutional efforts to observe and understand coastal and ocean environments and ecosystems as a whole. ILICO brings together observation mechanisms involving the collection of samples and the deployment of various measuring instruments. Long-term monitoring allows for the understanding and prediction of large-scale coastal and littoral zones (for example quantifying the impact of specific extreme or intermittent events such as tsunamis or cyclones).
JERICO-NEXT Joint European Research Infrastructure network for Coastal Observatory – Novel European eXpertise for coastal observatories	Call: H2020- EU.1.4.1.2. Duration: 01/09/2015 - 31/09/2019	EU Contribution: 9.998.876,47 € Website: http:// www.jerico-ri.eu/	The objective of JERICO-NEXT consists in strengthening and enlarging a solid and transparent European network in providing operational services for the timely, continuous and sustainable delivery of high quality environmental data and information products related to marine environment in European coastal seas. It includes an enable free and open access to data, enhance the readiness of new observing platform networks by increasing the performance of sensors, showcase of the adequacy of the so-developed observing technologies and strategies.

#### Programmes and initiatives of relevance, including research and data infrastructures

#### INTERNATIONAL STRATEGIES AND PROGRAMMES

- Global Ocean Observing System (GOOS) is a programme executed by the Intergovernmental Oceanographic Commission (IOC) of the UNESCO, providing a sustained collaborative system of ocean observations, encompassing in situ networks, satellite systems, governments, UN agencies and individual scientists. It includes a multinational Steering Committee to provide oversight, scientific Expert Panels to guide system requirements, and Observation Coordination Groups that implement global unified network execution. The GOOS Project Office facilitates the collaboration between these different governance bodies.
- International Oceanographic Data and Information exchange: since 1961, facilitating the exchange of oceanographic data and information between participating MS, and by meeting the needs of users for data and information products. It:
  - Facilitates & promotes discovery, exchange and access to marine data;
  - Encourages long term archival preservation documentation management and services of marine data;
  - Develops or uses existing best practices for the discovery, management, exchange of, and access to marine data and information;
  - Assists MS to acquire the necessary capacity to manage marine research and observation data and information;
- Global Ocean Ship-Based Hydrographic Investigation Program: Joint WMO-IOC Technical commission for oceanography and marine meteorology – brings together scientists with common interests in physical oceanography, carbon cycle, marine biogeochemistry and ecosystems and other users and collectors of hydrographic data to develop a globally coordinated network of sustained hydrographic sections as part of the global ocean/climate observing system. JCOMM coordinates, develops and recommends standards of procedures for a fully integrated marine observing, data management and service system.
- International Ocean Discovery Program, Science Plan 2013-2023: International marine research collaboration to
  explore Earth's history and dynamics using ocean-going research platforms to recover data recorded in seafloor
  sediments and rocks and to monitor subsea floor environments.

#### EUROPEAN STRATEGIES AND PROGRAMMES

- Copernicus Marine Environment Monitoring System 2015-2025 –COPERNICUS Programme includes a Space Component and several Thematic Services, among which the Marine Environment Monitoring Service (CMEMS). Information from satellites and in situ observation are used for daily analyses and forecasts of the state of ocean and sea. COPERNICUS Programme also comprises the deployment of Data and Information Access Services (DIAS), namely cloud-based platforms providing centralised access to COPERNICUS data and information, also including processing tools.
- JPI Oceans aims at aligning efforts and funding in marine research between MS and associated countries through joint calls. 'Observing, modelling and predicting oceans state and processes' is one of its priorities.

#### Target sectors and groups

Key marine observations are needed by different users and stakeholders for research, monitoring and industry.

The target is to observe the sea to better understand the complex marine ecosystem and its functioning (research), to measure and assess its evolution under different stressors and manage resources sustainably (monitoring and management), to provide essential information for decision making and to identify risks and alert hazards (surveillance, security and policy), and to create win-win situations for the use of the same data by economic operators by providing the data backbone needed for a knowledge-based marine economic sector, supplying the data driven services, and promoting smart, innovative added value products to boost blue growth.

Moreover, the understanding and preservation of marine ecosystems concern all sectors and stakeholders whose activities take place in the Mediterranean Sea and it seems important to involve them more closely in observation activities.

It is also necessary to reach out to the non-EU Mediterranean countries: to promote the use of existing data sources; to support the uptake and sharing of new technologies; to participate in the joint monitoring of the marine environment, and to share the commitment for sustainable development.

#### Intergovernmental Bodies

- EC-DG Mare (https://ec.europa.eu/maritimeaffairs/home\_en).
- UNEP/MAP (http://web.unep.org/unepmap/) and its Regional Centers (e.g. PAP-RAC, SPA-RAC, INFO-RAC, REMPEC).
- IOC-UNESCO (http://msp.ioc-unesco.org/).
- Union for Mediterranean (UfM) (https://ufmsecretariat.org/).
- GFCM (<u>http://www.fao.org/gfcm/en/</u>).

#### **Maritime Clusters**

- European Network of Maritime Clusters (ENMC) (https://enmc.eu/about-us/).
- Pole Mer Mediterranee (https://www.polemermediterranee.com/).

#### NGOs

- WWF MED (http://mediterranean.panda.org/).
- MEDPAN (https://medpan.org/).
- IUCN Mediterranean (https://www.iucn.org/).

#### Private companies

Collaboration possible with very diverse economic sectors which lead their activities in the Mediterranean Sea (fisheries, ferry companies, energy companies and MREs platforms, shipping companies).

#### Funding options and agencies

#### European funding:

- **CMEMS** Copernicus Marine Environment Monitoring Service.
- Horizon 2020 especially under Pillar 1 'Excellent Science' with Research Infrastructures' thematic and under Pillar 3 'Societal Challenges' with the 'food security, sustainable agriculture, marine and maritime research and the bio-economy' thematic.
- Horizon Europe in particular under Pillar 1 'Research Infrastructures' ; Pillar 2 'Global challenges and Industrial Competitiveness' Cluster 'Food and natural resources', and within the Mission 'Healthy Oceans, Seas, Coastal and Inland Waters'.
- Union for the Mediterranean.
- <u>UNEP/MAP</u>.
- JPI Oceans.
- Private foundations.
- Competent ministries and regional/local authorities through specific calls.
- Maritime cluster:
  - European Network of Maritime Clusters (ENMC) (https://enmc.eu/about-us/).
  - Pole Mer Mediterranee (https://www.polemermediterranee.com/).
| Activities to promote the SRIA Implementation  |   |   |  |  |
|--|---|---|--|--|
| Examples of activities   | Content and objective   | How and timeframe   |  |  |
| [Champion countries<br>must choose those<br>activities that suit<br>best the priority<br>addressed]  | [Champion countries describe in more<br>detail the content and specific objective<br>of a given activity]   | [Champion countries explain how the activity ca<br>carried out and timeframe within the IP (2020-20   |  |  |
| Networking and<br>engagement of<br>economic sectors and<br>national Blue Growth<br>communities   | <ul> <li>Fixing and ement of sectors and Blue Growth nunities</li> <li>Encourage economic sector, private stakeholders, NGOs, MPAs, citizen science projects, to be involved in the collection of marine and coastal data. All those observation efforts made by the diverse stakeholders involved in Blue Growth activities need to be coordinated through common methodology and shared guidelines.</li> <li>Goal: strengthen synergies between research, economic and other maritime actors, promote the adoption of open data practices.</li> <li>Ensure support and funding of observing systems on the long term</li> </ul> |   | <ul> <li>Mediterranean Programme in collaboration with fisheries to collect data during fishing trips;</li> <li>Annual Mediterranean Conference dedicated to marine and coastal observation – gathering all the different sectors mentioned in the adjacent column;</li> <li>Encouragement of FerryBox-like projects, establishment of new routes and involvement of new companies.</li> </ul> |  |
|  |   |   | <ol> <li>2020-2023.</li> <li>One conference per year, starting 2021.</li> <li>2020-2023.</li> </ol>  |  |
| Alignment and coordination   | • Alignment and coordination with EUROFLEETS+ on the way to develop a dedicated programme to the Mediterranean Sea, with a specific   | How:  | Meetings and activities for the identification<br>of priority topics/actions and of options for<br>joint implementation. Research to strengthen<br>dialogue and institution capacities.  |  |
|  | <ul> <li>Mediterranean Sea, with a specific MedEUROFLEETS Plan of Action;</li> <li>Alignment and coordination with Copernicus Programme, promotion of Copernicus model with non-EU countries;</li> <li>Alignment and coordination with ESFRI.</li> </ul>  | When:   | 2020 – 2023.   |  |
| <ul> <li>Promotion and possibly implementation of actions coordinated and jointly undertaken by different countries, with a "variable geometry" approach</li> <li>Develop transnational joint observing systems, through a network of marine based facilities and multidisciplinary stations able to address environmental threats and pollution, and related hazards (). Target: monitor and understand ecosystem changes, improving alerts and anticipate risks (marine food chain disruptions, impact from pollution, contaminants).</li> <li>Promote the adoption of open data practices.</li> </ul> | How:  | International networking; dedicated<br>assessments to quantify and locate non-<br>local sources of pollution; study connective<br>pathways of pollutants. |  |  |
|  | When:   | 2020-2023.  |  |  |

Examples of activities	Content and objective	How and timeframe	
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]	[Cham <sub>]</sub> carried	pion countries explain how the activity can be out and timeframe within the IP (2020-2023)]
Start-Up actions	N/A	How:	N/A
		When:	N/A
Assessment and promotion of the capitalisation and valorisation under the BLUEMED umbrella	ent and Importance to define what we want to observe and to use observation as a tool to achieve and implement other BLUEMED thematic goals identified as		
of ongoing and future projects	seafood, tourism, greening transports).	When:	
Lobbying actions	Actions to highlight the importance of marine and coastal observation within the Horizon Europe Mission of Healthy Oceans, Seas, Coastal and Inland Waters, and to promote dedicated calls.		Dedicated meetings and participation to relevant working groups.
			2020-2023.
Training and capacity building initiatives	<ul> <li>Importance to better observe land sea (river inputs, sediment fluxes, pollutants) and atmospheric interfaces:</li> </ul>		Programme to develop common modelling tools between land and sea. Develop trainings to teach young scientists how to use them.
	<ul> <li>Connect observation of physical and biochemical parameters to biodiversity observations.</li> </ul>	When:	Starting end of 2021.
Implementation Working Groups (IWG) on specific sectors	Set up a regional task force composed of experts and relocatable observing system components to services and assist bordering countries with expertise and infrastructure to be deployed for dedicated joint activities.	How:	<ul> <li>Define laboratories of reference and bring them together on key specific domains of activity;</li> <li>Set-up a coordinated network of coastal multidisciplinary observing stations</li> <li>Reinforce the access to land-based facilities and strengthen TNA calls (especially by facilitating their access for non-EU scientists).</li> </ul>
		vvhen:	
Communication and engagement	Communication and engagement Conference dedicated to marine and coastal observation (already mentioned		Conference.
		When:	One conference per year, starting 2021.

# FICHE 5

# LINKING TOURISM, TOURISTS AND ENVIRONMENT

# CO-CHAMPION COUNTRIES: CYPRUS & TUNISIA

# Background

Tourism is a key sector in most of the Mediterranean coastal regions. The Mediterranean can take advantage of its valuable natural and cultural assets. Its heritage reflects a millenary history.

The climate of the area is favorable to the exercise of tourist activities throughout the year. Touristic economy is therefore of high importance for many countries. As income generator tourism also provides a valuable income for supporting preservation and conservation of natural as well as cultural heritage.

However, tourism often exerts high pressures on the coastal and marine environment, especially during seasons of high visitation, when the population of some areas increases by threefold or more (for example, Slovenia, Malta). Increased number of daily users (tourists and locals) led to high pressure on natural and cultural assets, causing abuse and destruction of those resources. In many cases, countries depend on the import of essential resources for accommodating typical tourist needs (e.g. food, drinks, energy, etc.) which significantly reduces economic benefits of tourism, while maintaining high pressure on natural and cultural resources.

By providing incomes and jobs to the local population, this sector is also considered as strategic by many coastal regions. However, tourism often exerts high pressures on the coastal and marine environment, especially during seasons of affluence when the population of some areas increases dramatically.

Thus, reducing negative impacts of tourism on natural, social and economic environment will allow for preserving the natural and cultural heritage on the long term. This priority supports the implementation of the "European Strategy on sustainable tourism for blue job in Maritime and Coastal tourism.

The transition towards a more sustainable tourism will need innovative approach and the support of socio-economic research. Connecting coastal tourism with other branches of maritime economy (e.g. pescatourism) or with the inland can be of great potential.

Very interesting prospects are also offered in this sector by the fast development of ICT. This makes possible to experiment innovation in a very short term as well as provide infrastructure for monitoring tourism's impacts; thus allowing the empirically supported decisions making for tourism sector.

Mapping and discussing implementation options and potentials of this priority			
Recent and ongoing relevant projects			
PROJECT	DESCR	IPTION	OBJECTIVES
ALTER ECO Alternative tourist strategies to enhance the local sustainable development of tourism by promoting Mediterranean identity	Call: ERDF (European Regional Development Fund) Duration: 01/11/2016 - 31/07/2019	EU Contribution: 2.293.630.00 € Website: https://alter-eco. interreg-med.eu	The Mediterranean is under threat due to the inappropriate practice and development associated with mass tourism. As a consequence areas of high tourist attraction in coastal cities are reaching their limit on carrying capacity, with a direct impact not only on the urban environment but on key elements that define MED Culture. In this context, ALTER ECO enhances the local sustainable development of tourism by promoting Mediterranean Identity through the implementation of alternative tourist strategies in 6 pilots co-designed and implemented by public and private stakeholders

			The project provides the opportunity of testing, in representative MED cities, used as LIVING LAB, existing methodologies and tools arisen in previous high impact projects in the field of sustainable tourism or proposed by key stakeholders, with the aim of reaching holistic and realistic tourist strategies at local and regional level that allow transferability in the MED territory. Project results will support policy makers to make more informed and integrated decisions for the governance and management of tourism in the Mediterranean and at the same time will enhance the coordination of actions between public and private stakeholders towards the implementation of the raised strategies in order to create new business opportunities.
Seasonal variation of waste as effect of tourism	Call: ERDF (European Regional Development Fund)	EU Contribution: 2.755.320,41 € Website: https://	14 partners from 8 countries in a systematic effort to properly identify, address and mitigate the effects of the seasonal variation of waste generation
	Duration: 01/11/2016 - 31/10/2019	blueislands.interreg-med. eu	on MED islands as an effect of tourism. The issue has been a vexing problem for years but it has never before been approached methodically: The quantity and composition of waste generated over a twelve-month period on nine MED islands will be measured and the correlation between the quantified waste generated and both the number of tourists and the presence of litter in the coastal environment will be examined. At the same time, the existing waste management structure and followed respective practices will be assessed.
BLUEMED	<b>Call:</b> ERDF (European Regional Development Fund)	EU Contribution: 2.797.549.00 €	Aims to plan/test/coordinate Underwater Museums, Diving Parks and Knowledge Awareness Centres
		Website:	responsible tourism development and
	<b>Duration:</b> 01/11/2016 - 31/01/2020	https://bluemed.interreg- med.eu	and islands of the Mediterranean.
CASTWATER Coastal areas sustainable tourism water	<b>Call:</b> ERDF (European Regional Development Fund)	EU Contribution: 2.238.116,60€	CASTWATER is the first MED project to support sustainable tourism policies & practices on water efficiency in coastal areas. The transnational challenge
management in the Mediterranean	<b>Duration:</b> 01/11/2016 – 31/10/2019	Website: https://castwater. interreg-med.eu	is to reduce the impact of tourism activities on environmental heritage and to improve management of water resources. The project's overall objective is to support sustainable tourism water management in Med coastal areas, by improving the monitoring and assessment of the water sustainability performance of the tourism sector.

COASTINC: Coastal INtegrated Governance for Sustainable Tourism Lead Partner: Andalusian Federation of Towns and Provinces	Call: ERDF (European Regional Development Fund) Duration: 01/02/2018 – 31/07/2019	EU Contribution: 1.054.612,50€ Website: https://coasting. interreg-med.eu	COASTING is a capitalisation project based on the ICZM principles application, aiming at enhancing the effectiveness of a multilevel governance tool like Coast Contract, fully framing coastal management and tourism sustainability issues. COASTING transnational partnership will activate synergies and cooperation to share specific solutions for an integrated and responsible management of coastal areas, particularly invested by tourism criticalities.
<b>CO-EVOLVE</b> Promoting the co- evolution of human activities and natural systems for the development of sustainable coastal and maritime tourism	<b>Call:</b> ERDF (European Regional Development Fund) <b>Duration:</b> 01/11/2016 - 31/10/2019	EU Contribution: 3.000.000,00€ Website: https://co-evolve. interreg-med.eu	CO-EVOLVE aims at analyzing and promoting the co-evolution of human activities and natural systems in touristic coastal areas, allowing sustainable development of touristic activities based on the principles of ICZM/MSP. CO-EVOLVE couples a presently unavailable analysis at MED scale of threats and enabling factors for sustainable tourism with local studies on representative Pilot Areas, to demonstrate through pilot actions the feasibility and effectiveness of a ICZM/ MSP-based planning process.
CONSUME-LESS Consume Less in Mediterranean Touristic Communities	Call: ERDF (European Regional Development Fund) Duration: 01/11/2016 - 31/10/2019	EU Contribution: 2.635.000€ Website: https://consume- less.interreg-med.eu	The CONSUME-LESS project faces this issue by demonstrating the effectiveness of a sustainable tourism model based on the qualification of the coastal cities as "consume-less" locations and on the enhancement of this peculiarity through an innovative communication and territorial marketing campaign, both implemented by directly involving all interested actors (local authorities, tourism operators and service providers, tourists). This will bring multiple benefits, which will be carefully monitored and accounted for through the use of a suitable set of indicators, based on the European Tourism Indicators System.
DESTIMED	Call: ERDF (European Regional Development Fund) Duration: 01/11/2016 - 31/10/2019	EU Contribution: 2.500.000 € Website: https://destimed. interreg-med.eu	Mediterranean Ecotourism Destination: main components (joint planning, monitoring, management and promotion) for a governance system in Mediterranean protected areas.

EMbleMatiC Emblematic Mediterranean Mountains as Coastal destinations of excellence	Call: ERDF (European Regional Development Fund) Duration: 01/11/2016 - 31/10/2019	EU Contribution: 2.975.571,49€ Website: https:// emblematic.interreg-med. eu	The objective of the EMbleMatiC project is to create and test a new and radically different tourism offer based on the features of these mountains and to create an alternative to the traditional holiday on the beach. This project goes even further. It is not concerned with creating a generic tourism product, but rather with piloting a new way of conceiving tourism: one which combines the development and protection of natural environments, by applying a more sustainable and responsible management of tourism flows and a greater involvement of inhabitants and local actors.
HERIT-DATA Sustainable Heritage Management towards Mass Tourism Impact thanks to a holistic use of Big and Open Data	Call: ERDF (European Regional Development Fund) Duration: 01/02/2018 - 31/01/2022	EU Contribution: 4.195.515,20€ Website: https://herit-data.interreg- med.eu	HERIT-DATA plans to develop of a sustainable and responsible tourism management towards cultural heritage in MED regions, in particular by taking advantage of technology and innovation in management tools (Smart Cities), as well as other policy and social measures. The partners will develop, test and transfer a series of knowledge and solutions (Models, Strategy, Artificial Intelligence & Big Data based-on platform and App, etc.) in line with the current sectoral changes and characteristics of smart destinations, able to collect, generate, integrate and analyse information and transform it into behaviour changes, according to ICZM recommendations.
INHERIT Sustainable tourism strategies to conserve and valorise the Mediterranean coastal and maritime natural heritage	Call: ERDF (European Regional Development Fund) Duration: 01/02/2018 - 31/01/2022	EU Contribution: 5.612.660,00 € Website: https://inherit.interreg- med.eu	INHERIT will promote sustainable tourism alleviating seasonality and tackling the surpassing of the hosting capacity, by designing and implementing a "bottom-up" protection approach relying on self- regulation and monitoring by local society and tourism stakeholders. The INHERIT protection approach will involve all the key stakeholders (at MED, national, regional and local level) in its studying, testing and capitalisation activities, to deliver: - A MED-wide policy strategy and protection measures addressing the negative effects of intensive tourism flows.

MEDCYCLETOUR MEDiteranean CYcle route for sustainable coastal TOURism	Call: ERDF (European Regional Development Fund) Duration: 01/02/2017 - 31/01/2020	EU Contribution: 2.578.131,89 € Website: https://medcycletour. interreg-med.eu	Sparkling emerald seas, kilometers of golden sand, wonderful food and ancient citiesit's not hard to find reasons to go cycling along the Mediterranean! Unfortunately, in the 8 countries covered by this project, the potential of cycling tourism has not yet been realised even though it prolongs the tourism season, reduces the environmental impact of travelling and can bring tourists to less visited areas. EuroVelo 8 – Mediterranean Route is a long-distance cycle route that connects the whole Mediterranean from Cyprus to Cádiz. The overall objective of the project is to use this route as a tool to influence regional and national policies in favour of sustainable and responsible tourism, providing transnational solutions in coastal areas across the Mediterranean.
MEDFEST MED Culinary heritage experiences: how to create sustainable tourist destinations	Call: ERDF (European Regional Development Fund) Duration: 01/11/2016 - 31/10/2019	EU Contribution: 2.218.473,66 € Website: https://medfest.interreg- med.eu	MEDFEST is tackling the challenge of diversifying traditional 'sun & sea' tourist destinations, with new and sustainable products based on rich and renowned culinary heritage of the Mediterranean. In so doing, we will increase the sustainability and quality of life in MED space. Our objective is to create tools and instruments for designing new sustainable culinary experiences, which will be offered to visitors to: 1) diversify the tourism sector in terms of products and its seasonality; 2) bring tourism development to the coastal hinterland; 3) safeguard culinary heritage for future generations.
MITOMED+ MITOMED+ Models of Integrated Tourism in the MEDiterranean Plus	Call: ERDF (European Regional Development Fund) Duration: 01/02/2017 - 31/01/2020	EU Contribution: 2.650.000,00€ Website: https://mitomed-plus. interreg-med.eu	MITOMED+ is multi-module project combining Testing and Capitalization (M2+M3). It is a follow up of the previous MITOMED project (MED Maritime), which has been working to promote the integrated management of M&C tourism by improving the knowledge of data, products, services through a set of indicators based on the NECSTouR model. MITOMED+ takes farther these results aiming to improve the coordination of strategies between territories at transnational level regarding the development of the M&C tourism through cooperation and joint planning between regions.

ShapeTourism New shape and drives for the tourism sector: supporting decision, integrating plans and ensuring sustainability	Call: ERDF (European Regional Development Fund) Duration: 01/11/2016 - 30/04/2018	EU Contribution: 598.536,50€ Website: https://shapetourism. interreg-med.eu	Shapetourism improves the tourism knowledge framework, providing analysis and operational tools to pinpoint an integrated methodology to shape and drive tourism sustainable growth, particularly for Cultural Destinations. It supports policymakers and private operators to achieve: attractiveness, growth and sustainability, taking into account the major challenges of global competition. Starting from the capitalization of scientific studies and from tourism established patterns, the project gears towards the balance between divergent public and private interests with the final scope to drive tourism development to a holistic, highly operational and sustainable approach.
SIROCCO Sustainable InterRegional cOastal & Cruise maritime tourism though COoperation and joint planning	Call: ERDF (European Regional Development Fund) Duration: 01/11/2016 - 30/04/2018	EU Contribution: 600.000,00 € Website: https://sirocco.interreg- med.eu	Addressing this challenge is hindered by three factors:1) existing knowledge is insufficient & data gaps still exist;2) coastal regions struggle to fully capture benefits generated by cruise tourism; 3) coordination of strategies and policies at regional & transnational level is limited. SIROCCO has the ambition of tackling those problems by providing: 1. An integrated view of the current state of Mediterranean cruise tourism (as a whole and per segment) and its impacts (environmental, economic, and societal). 2. A foresight of Mediterranean cruise tourism for the following decades. 3. Evidence-based, transferable recommendations on developing sustainable & responsible Cruise Value Chains in the MED . 4. Coordinated strategies & policies at regional and transnational level regarding the development of a sustainable and responsible cruise maritime/coastal tourism.
TOURISMED	Call: ERDF (European Regional Development Fund) Duration: 01/02/2017 - 31/07/2019	EU Contribution: 2.157.900,00 € Website: https://tourismed.interreg- med.eu	TOURISMED is a project aimed at testing and transferring a fishing tourism business model in the coastal territories of Italy, Cyprus, Greece, Albania, France and Spain as a way to promote a sustainable approach to tourism, while fostering the preservation of the marine ecosystem and the traditional fishing culture of the MED region.
SECNET Cross-border institutional cooperation for the improvement of port security	Call: ERDF (European Regional Development Fund) Duration: 01/10/2017 - 31/03/2019	EU Contribution: 6.996.032,25€ Website: https://www.ita-slo.eu/en/ secnet	SECNET aimed at improving the institutional competence of the Program Area's ports and to lay the groundwork for coordinated and permanent port security at the cross- border level thanks to the use of innovative ICT tools.

Riviera4seasons2	<b>Call:</b> ERDF (European Regional Development Fund)	EU Contribution: 714.174,25€	Riviera4seasons2 aimed at improving cultural tourism experiences in the Adriatic region.
	<b>Duration:</b> 01/10/2017 - 30/09/2019	Website: -	
QNeST: Quality Network on Sustainable Tourism	Call: ERDF (European Regional Development Fund) Duration: 01/01/2018 - 31/12/2019	EU Contribution: 1.465.662,95€ Website: -	QNeST aimed at promoting and fulfilling the economic potential of the common and exceptional features of the cultural, traditional and environmental heritage of the Adriatic-Ionian area.
Tourism 4.0	Call: ERDF (European Regional Development Fund) Duration: 01/09/2018 - 01/10/2021	EU Contribution: - Website: https:// tourism4-0.org/	Tourism 4.0: enriched tourism experiences, aims at developing ICT platform for monitoring tourism impacts and developing empirical support for strategic and business decision making in tourism.
Face to Face: Meet an Ancient Cypriot	Call: INTEGRATED/0916/0029 / Duration: 01/05/2019 - 01/05/2022	EU Contribution: 999.998,17 € Website: -	
ReCult - Religious Cultural Pathways	Call: Interreg/Greece- Cyprus Integrated Project Duration: 01/10/2018 - 01/10/2021	EU Contribution: 1.918.370,00 € Website: -	
Ecotourism New Knowledge by Innovation, New Jobs by Knowledge Transfer (ECOTOUR)	Call: European Project Leonardo da Vinci (LdV) Duration: 01/08/2012 - 01/09/2013	EU Contribution: 210.880,00 € Website: -	The project aimed to improve the skills and competences of people in the tourism sector by introducing an ecotourism training programme in Cyprus, Estonia, Lithuania and Spain, while at the same time encouraging ecotourism development in project countries in particular and Europe in general.
Programmes and initiatives of relevance, including research and data infrastructures			

**EUROPEAN STRATEGIES** 

# "COSME":

COSME is the EU programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises (SMEs). It supports SMEs in four areas:

- Facilitate access to finance for SMEs through the "Loan Guarantee Facility" and the "Equity Facility for Growth".
- Improving access to markets (notably thanks to the services provided by the Enterprise Europe Network).
- Improving framework conditions for the competitiveness and sustainability of Union enterprises, notably thanks to the Tourism Action Plan.
- Promoting entrepreneurship and entrepreneurial culture, notably thanks to the Erasmus for young entrepreneurs' exchange scheme.

# "Creative Europe Programme":

The Creative Europe programme helps cultural and creative organisations to operate transnationally, the circulation of works of culture as well as the mobility of cultural players. Bringing together 3 pre-existing programmes (Culture, MEDIA and MEDIA Mundus), "Creative Europe" is made of 3 parts:

- The "Culture sub-programme" for cultural & creative sectors.
- The "Media sub-programme" for the audio-visual industries71.
- The Cross-sectoral strand for joint projects between the cultural & creative sectors and the audio-visual industries.

#### "Erasmus+":

"Erasmus+" aims to boost skills and employability, as well as modernising Education and Training. In addition to the new sport action and the Youth in Action programme, it brings together 6 other pre-existing programmes:

- the Lifelong Learning Programme (Erasmus, Leonardo da Vinci, Comenius and Grundtvig)
- Erasmus Mundus, Tempus, Alfa, Edulink and the programme for cooperation with industrialised countries

#### EaSI programme:

The "Employment and Social Innovation" (EaSI) programme promotes a high level of quality and sustainable employment, guaranteeing adequate and decent social protection, combating social exclusion and poverty, and improving working conditions. It brings together:

- PROGRESS (Programme for Employment and Social Solidarity).
- EURES (European job mobility).
- EaSI Guarantee Financial Instrument (dedicated to microfinance and social entrepreneurship finance).

For details on its structure & procedures, see EaSI website and brochure.

# **European Fund for Strategic Investments**

The European Fund for Strategic Investments (EFSI) is an initiative launched jointly by the European Commission and the EIB Group (European Investment Bank and European Investment Fund) to help overcome the current investment gap in the EU by mobilising private financing for strategic investments.

EFSIO may support, among other things:

- Strategic infrastructure including digital, transport and energy.
- Education, research, development and innovation.
- Expansion of renewable energy and resource efficiency.
- Support for smaller businesses and midcap companies.

#### European Regional Development Fund

The European Regional Development Fund (ERDF) is one of the five "European Structural and Investment Funds" (ESIF). Under ESIF rules, each Member State has to draw up a strategic plan indicating its 2014–2020 objectives & investment priorities for the use of these Funds. Once the European Commission's observations adequately considered, this plan becomes a "Partnership Agreement". Member States also have to draw up "Operational Programmes" breaking down priorities listed in the Partnership Agreement into concrete actions. "Operational Programmes" (OP) are implemented by Managing Authorities set up by the Member States (at national, regional or another level). The ERDF aims to strengthen economic and social cohesion in the European Union by correcting imbalances between its regions. It may provide essential support to improve the competitiveness and quality of tourism at regional and local levels, notably in areas in (industrial / rural) decline or those undergoing urban regeneration.

ERDF support may go to 11 "thematic objectives and investment priorities" in line with the Europe 2020 policy priorities. The most relevant for the tourism sector probably are:

- Research and innovation (N°1).
- Information and Communication Technologies (N°2).
- Competitiveness of Small and Medium-Sized Enterprises (N°3).
- Shift to a low-carbon economy (N°4).
- Environmental protection and resource efficiency (N°6).
- Employment and support for labour mobility (N°8).
- Education, skills and lifelong learning (N°10).

# **Cohesion Fund**

The Cohesion Fund (CF) is one of the five "European Structural and Investment Funds" (ESIF). Under ESIF rules, each Member State has to draw up a strategic plan indicating its 2014-2020 objectives investment priorities for the use of these Funds. Once the European Commission's observations adequately taken into account, this plan becomes a "Partnership Agreement". Member States also have to draw up "Operational Programmes" breaking down priorities listed in the Partnership Agreement into concrete actions. "Operational Programmes" (OP) are implemented by Managing Authorities set up by the Member States (at national, regional or another level). In order to reduce economic and social disparities and to promote sustainable development, the Cohesion Fund is aimed at Member States whose Gross National Income (GNI) per inhabitant is less than 90 % of the EU average. According to the investment and infrastructure needs specific to each Member, the CF may support Investment in the environment, including areas related to sustainable development and energy which present environmental benefits.

# **European Social Fund**

The European Social Fund (ESF) is one of the five "European Structural and Investment Funds" (ESIF). Under ESIF rules, each Member State has to draw up a strategic plan indicating its 2014–2020 objectives investment priorities for the use of these Funds. Once the European Commission's observations adequately taken into account, this plan becomes a "Partnership Agreement". Member States also have to draw up "Operational Programmes" (OP) breaking down priorities listed in the Partnership Agreement into concrete actions. These OPs can cover entire Member States and/or regions or be cooperation programmes involving more than one country. "Operational Programmes" are implemented by Managing Authorities set up by the Member States (at national, regional or another level). The ESF aims in particular to improve employment and (workers) mobility as well as the level of professional qualifications in the EU.

# EAFRD

The "European Agriculture Fund for Rural Development" (EAFRD) aims, among other things, at promoting economic development in rural areas. Funds for rural development are allocated by Managing Authorities appointed by the Member States. Depending on the needs and choices of each Member State, support may be granted to:

- The diversification of farmers into non-agricultural activities.
- The development of non-agricultural SMEs in rural areas and engaged in sustainable.
- Responsible tourism.
- The restoration / upgrading of the cultural and natural heritage of villages and rural landscapes

# EMFF

Replacing the European Fisheries Fund, the European Maritime and Fisheries Fund (EMFF) has among its priorities to increase employment and territorial cohesion in coastal and inland communities depending on fishing and aquaculture. This should be achieved by:

The promotion of economic growth, social inclusion, creation of jobs and supporting labour mobility in these communities; the diversification of activities within fisheries and into other sectors of maritime economy.

Each Member State is allocated a share of the total Fund budget in relation with the size of its fishing industry. It then draws up an "Operational Programme", saying how it intends to spend the money. Once the programme approved by the Commission, it is up to the Managing Authority set up by each Member State (at national or regional) to implement it.

Managing authorities responsible for the implementation of EMFF operational programmes delegate a number of tasks to "Fisheries Local Action Groups" (FLAGs). These partnerships between fisheries actors and other local private/public stakeholders design local development strategies. FLAGs also manage a budget to support technically and financially the implementation of their local strategy via specific projects.

Under these local strategies, funding is available in particular for cultural fisheries and maritime cultural heritage. This can cover tourism-related projects, such as eco-tourism, pesca-tourism and fishing tourism33, local gastronomy (fish and seafood restaurants), accommodation, tourist trails, diving, etc.

# "LIFE"

LIFE is the financial instrument supporting environmental and nature conservation projects throughout the EU. The priority areas of its sub-programme for environment are:

- Environment and Resource Efficiency.
- Nature and Biodiversity.
- Environmental Governance and Information.

The priorities areas of its sub-programme for climate action are:

- Climate Change Mitigation (contributing to reduce greenhouse gas emissions).
- Climate Change Adaptation (contributing to increase resilience to climate change).
- Climate Governance and Information.

#### "Horizon 2020"

Bringing together three previous programmes / initiatives, "Horizon 2020" is the EU Framework Programme for Research and Innovation (2014-2020). It is made of "programme sections" (also called "pillars"), some being divided in sub-sections. The most interesting sections for tourism probably are:

#### "Excellent Science"

Sub-section MSCA ("Marie Skłodowska-Curie Actions") for career development and training of researchers – with a focus on innovation skills – in all scientific disciplines through worldwide and cross-sector mobility

#### "Industrial Leadership"

Sub-section programme LEIT ("Leadership in Enabling and Industrial Technologies"), among other things, for greater competitiveness of the European cultural and creative sectors by stimulating ICT innovation in SMEs Technologies.

#### "Societal Challenges"

Sub-section programme "Europe in a changing world – Inclusive, innovative and reflective societies", hereafter Reflective, to address in particular the issues of memories, identities, tolerance and cultural heritage.

#### "SME instrument"

For high-potential SMEs to develop ground-breaking innovative products, services or processes able to face global market competition.

#### The 'Cyprus Breakfast' programme

The 'Cyprus Breakfast' programme was created by the Cyprus Tourism Organisation (CTO), the Travel Foundation UK and the Cyprus Sustainable Tourism Initiative (CSTI) through the Cyprus Destination Partnership programme. The aim of the programme is to promote local gastronomy and enhance authenticity in the hotels in Cyprus. The hotels through the use of local products highlight the flavours and aromas of Cyprus and invite their guests to experience our gastronomic richness and hospitality.

UfM Ministerial Declaration on Blue Economy (2015; a new one upcoming in 2021) https://ufmsecretariat.org/wp-content/uploads/2015/11/2015-11-17-declaration-on-blue-economy\_en.pdf

UfM Ministerial Declaration on Environment and Climate Change" (2014; a new one upcoming in 2020) https://ufmsecretariat.org//wp-content/uploads/2014/05/20140515\_UfM\_declaration\_FINAL\_compromiseeditorial-changes. pdf

UfM Working Group on Blue Economy https://ufmsecretariat.org/ufm-working-group-blue-economy/

Any other relevant UfM Ministerial (transport, energy, sustainable urban development, etc.), related strategies, programmes and projects

https://ufmsecretariat.org/what-we-do/water-environment/

# Target sectors and groups

Key target groups are tourism directly and indirectly related organizations from public and private sector. As in figure 1, BlueMed initiative must address the needs and facilitate the capacity of the tourism ecosystem. To do so, by far most important action is to set up a credible and effective system for monitoring tourism's impacts (both positive and negative) and correlate the impacts with tourism target segments as well as with the carrying capacity of local environment as well as key stakeholders. Based on empirically proven tourism impacts key tactic and strategic action may be developed which will support the blue growth in the Mediterranean region.

Figure 1: tourism ecostystem - target groups



#### **Intergovernmental Bodies**

- World Tourism Organization UNWTO (<u>https://www.unwto.org/</u>).
- WTTC World Travel and Tourism Council (https://www.wttc.org/).
- IOC-UNESCO (http://msp.ioc-unesco.org/).
- Union for Mediterranean (UfM) (https://ufmsecretariat.org/).
- Organisation for Economic Co-operation and Development (OECD) (http://www.oecd.org/science/).

#### **Sectoral Associations**

- ETC European Travel Commission (https://etc-corporate.org/).
- NECSTouR Network of European Regions for a Sustainable and Competitive Tourism (https://necstour.eu/).
- European tourism association (<u>https://www.etoa.org/</u>).
- Virtual Tourism Observatory (https://ec.europa.eu/growth/tools-databases/vto/).
- Tourism Business Portal (https://ec.europa.eu/growth/sectors/tourism/business-portal\_en).
- Enterprise Europe Network: tourism and cultural heritage (https://een.ec.europa.eu/).
- European Destinations of Excellence (EDEN) (https://ec.europa.eu/growth/sectors/tourism/eden/about\_en).
- European Tourism Indicators System for sustainable destination management (<u>https://ec.europa.eu/growth/sectors/tourism/offer/sustainable/indicators\_en</u>).
- Europark Federation (https://www.europarc.org/sustainable-tourism/).

# **Maritime Clusters**

• European Network of Maritime Clusters (ENMC) (https://enmc.eu/about-us/).

	Funding options and agencies	Eunding ontions and agencies			
Funding options for tourism related resear	ch is largely based on national and Europe	an resear	ch projects.		
Possible European funding can be absorbe LIFE. COSME. Creative Europe Programme.	ed through:				
<ul> <li>Creative Europe Programme.</li> <li>Employment and Social Innovation.</li> <li>Intereg and MED programmes.</li> <li>S4.</li> <li>ESPON.</li> <li>UNWTO.</li> <li>National research agencies.</li> <li>ERC funding schemes.</li> <li>Tourism industry research funding.</li> </ul>					
A	ctivities to promote the SRIA Implementati	on			
Examples of activities	Content and objective		How and timeframe		
[Champion countries must choose those activities that suit best the priority addressed]	Ise [Champion countries describe in more detail the content and specific objective of a given activity] [Champion countries explain how the activity can be carried out and timeframe within the IP (2020-2023)]				
Networking and engagement of economic sectors and national Blue Growth communities	Networking and engagement of conomic sectors and national Blue Growth communities• Sharing key information about the ongoing projects, knowledge, infrastructure and stakeholders involved with the blue growth.		Working groups meetings, conferences and online communication platform for sharing knowledge.		
	<ul> <li>EU Sustainable Tourism Group.</li> <li>Green destinations.</li> </ul>	When:	2020.		
Funding	Support of strategic initiatives aimed at setting up the key enabling technology for monitoring and big-data based analytics.	How:	Regional SRIA implementation fund; either as a special Mediterranean development fund or as a share of the existing funding schemes.		
		When:	2020 – 2023 (at least one per year).		
Alignment and coordination	Alignment and coordination Synchronizing ideas and resources towards common goals of the SRIA and prevention of double funding misuse of knowledge, time and other resources. This will result in increasing the invested		SRIA platform with detailed database about project ideas, ongoing projects, funding opportunities, key outcomes of completed projects.		
	R&D euro.	When:	2020.		
Promotion and possibly	CSA.     Dramation of STADT LID's	How:	E-newsletter, rapport.		
and jointly undertaken by different countries, with a "variable geometry" approach	<ul> <li>Promotion of START UP's.</li> <li>BlueBoats MED.</li> <li>Share results, issues, gaps.</li> <li>Interreg.</li> </ul>	When:			
Start-Up actions	Testing innovative ideas at the TLR 1 – 6 levels and set them ready for market implementation.	How:	Special development fund supported by public sector and industry.		
		When:	2021.		

Examples of activities	Content and objective		w and timeframe
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]		ion countries explain the activity can be d out and timeframe the IP (2020–2023)]
Assessment and promotion of the capitalisation and	<ul> <li>Digital Ecosystems for Coastal tourism destinations</li> <li>Mapping the opportunities. Methods to facilitate</li> </ul>	How:	Mapping the opportunities.
valorisation under the BLUEMED umbrella of ongoing and future projects	<ul> <li>the capacity of the tourism ecosystem to direct and promote a sustainable and competitive coastal tourism.</li> <li>The research and innovation program should develop digital ecosystems able to produce Intelligence for the design of policies capable of responding to the concrete needs of coastal destinations and businesses. In particular, the innovative research pathway should allow.</li> <li>The realization of a map of opportunities able to analyse and interpret the interconnections between attractions, territory, production system and changing patterns in tourism demand behaviour. It will therefore have to support territorial systems and businesses with new perspectives of development of destinations and local tourism products as well as business management practices, providing at the same time operational tools to improve competitive and sustainable positioning.</li> <li>Pilot projects have already been launched in Italy with the involvement of both private associations (e.g. Chambers of Commerce) and public stakeholders at regional level. The ongoing activity could serve as a base for the deployment and the sharing of the outcomes and the critical issues emerged.</li> </ul>	When:	2020.
Lobbying actions	Supporting systematic and institutional (regional, national, local) support for SRIA.	How:	Setting the implementation agenda and networking with existing groups.
		When:	2020-2023.
building initiatives			
SRIA Community and Implementation Working Groups (IWG) on specific sectors	• SRIA communities (platforms) should be supported after the BlueMed project is completed with enough funding to support development and implementation of at least one R&D project per Fishe.	When:	Founded as a special working group body within EU or other territorial authority, with enough impact to provide political and financial support.
Communication and		How:	
engagement		When:	

# FICHE 6

# EFFECTIVE MARITIME SPATIAL PLANNING IN THE MEDITERRANEAN CO-CHAMPION COUNTRIES: ITALY & TURKEY / SUPPORTING COUNTRIES: SPAIN, EGYPT

# Background

MSP is about promoting the rational use of the sea and improving decision-making. It is well recognized how "Governance of the maritime space" is at the base of any socio-economic development and conservation effort. Implying a paradigmatic change in the management of the commons, it requires multidisciplinary R&I, both in terms of conceptual approaches and analysis and in terms of dedicated technologies to support the governance on the field, including surveillance. Indeed, the Mediterranean Sea presents specific governance needs, due to its morphology and its geopolitical situation. It is in the interest of all Mediterranean countries to seek to balance sectoral interests and use space more efficiently, thereby contributing to the long-term sustainable use of marine resources.

The increase in maritime activities and the development of new initiatives in the Mediterranean naturally lead to competition between maritime activities or between such activities and the environment. This is particularly true for coastal areas and ports where a variety of maritime activities take place, such as fishing, mariculture, maritime transport, dredging/sand extraction and marine and coastal tourism, but it also applies to offshore environments and activities.

The topic is fully transversal, affecting all blue economy sectors and environmental objectives. By clearly defining areas for specific purposes, especially human activity, investors in specific areas can be more easily attracted, ultimately improving citizens' well-being.

A number of actions are already ongoing at national and sea basin scale (e.g. MSFD implementation, update of Barcelona Convention Regional Frameworks, Integrated coastal management projects, discussions and agreements on disputed areas) requiring scientific and knowledge support: they can provide concrete results in short time. Beside the direct implementation of the MSP Directive, the potential policy impact of this goal is clearly very high and is linked with all existing strategies at regional and sub-regional scale. Regional and international cooperation – including on legal and political issues – and stakeholder engagement are crucial for MSP to be effective. A long-term plan is needed.

The process that brought to the last update of the BLUEMED SRIA (<u>http://www.bluemed-initiative.eu/wp-content/uploads/2018/12/BLUEMED-SRIA\_Update\_2018.pdf</u>), involving CSA partners and national pivots, through the BLUEMED Platforms, identified for Goal E-E2 the following nine Actions:

- E2.1 Improve the knowledge on the **land-sea nexus** to properly address planning, considering co-existence of coast and sea uses and environmental objectives; particular emphasis should be placed on substantially improving the connection between marine traffic with port location/activities and the main supply chains on land (train and free-way networks as well as water ways where appropriate).
- E2.2 Develop **coastal ecological engineering solutions and measures** taking into account also pressures derived from economical drivers on land.
- E2.3 Define and study **approaches and tools to identify the trade-offs between ecological dynamics and socio-economic needs**, taking into account marine ecosystems goods and services and their environmental, economic and social value, in order to inform and improve adaptive planning and management scenarios.
- E2.4 Use **integrated decision tools** to select appropriate sites for offshore installations, to ensure that they meet energy and environmental requirements.
- E2.5 Address transboundary maritime spatial planning issues to understand problems and opportunities (social, economic, environmental) and strengthen knowledge on environmental pressures across borders.
- E2.6 Develop tools/software to assess the cumulative impacts of human activities, including the role of land-based stressors, to ensure an eco-sustainable exploitation of marine resources, considering social and economic aspects.
- E2.7 Promote innovative technologies and services for a sustainable management and resulting protection of coastal areas from coastal erosion, flooding and pollution.
- E2.8 Implement **managing solutions and conservation plans**, including networks of Marine Protected Areas and their surroundings, for coastal to deep-sea ecosystems, taking into account their relationship with natural and anthropogenic changes (such as artificial reefs) in the environment while ensuring and promoting ecosystems services; best practices on adaptation and resilience.
- E2.9 Develop **best practices for deep-sea adaptive management** based on open data from diverse stakeholders and a common/shared and long-term vision.

Text in blue identifies Actions selected by countries as the "Most relevant actions identified to reach the selected goal" during the SRIA prioritization process.

Mapping and discussing implementation options and potentials of this priority					
Recent and ongoing relevant projects					
PROJECT	DE	SCRIPTION	OBJETIVES		
ADRIPLAN ADRiatic Ionian maritime spatial PLANning	Call: MARE/2012/25 Duration: Dec 2013 – Aug 2015	EU Contribution: 1.250.000,00 € Website: http://adriplan. eu/	ADRIPLAN aims to deliver a commonly agreed approach to cross-border MSP in the Adriatic- Ionian region. The project developed proposals and recommendations for MSP on the Adriatic-Ionian Macroregion and on two Focus Areas represented by the Northern Adriatic Sea (Focus Area 1) and		
SRIA Action:			the Southern Adriatic – Northern Ionian Sea (Focus Area 2)		
E2.1 / E2.3 / E2.5 / E2.8					
SUPREME SUpporting maritime spatial Planning in the Eastern Mediterranean SRIA Action: E2.1 / E2.3 / E2.5 / E2.8	Call: EASME/ EMFF/2015/1.2.1.3 Duration: Jan 2017 – Dec 2018	EU Contribution: 2.000.000,00 € Website: http://www. msp-supreme.eu/	Support the implementation of Maritime Spatial Planning in EU Member States within their marine waters in the Eastern Mediterranean, including the Adriatic, Ionian, Aegean and Levantine Seas. Launch and carry out concrete and cross-border MSP initiative between Member States in the Eastern Mediterranean.		
SIMWESTMED Supporting Implementation of Maritime Spatial Planning in the Western Mediterranean region SRIA Action: E2.1 / E2.3 / E2.5 / E2.8 / E2.9	<b>Call:</b> EASME/ EMFF/2015/1.2.1.3 <b>Duration:</b> Jan 2017 – Dec 2018	EU Contribution: 2.258.343,00 € Website: https://www. msp-platform.eu/projects/ supporting-maritime- spatial-planning-western- mediterranean-region	<ul> <li>SIMWESTMED focused on two key objectives:</li> <li>Supporting the implementation of Maritime Spatial Planning in EU Member States; Launching and carry out concrete and cross-border MSP initiatives between Member States.</li> <li>To address these objectives the activities undertaken focused on the following issues:</li> <li>Initial assessment</li> <li>Cooperation on MSP in Western Mediterranean.</li> <li>MSP process.</li> <li>Methodology for a transboundary MSP.</li> <li>Spatial demands and future trends.</li> <li>Data and information's requirements for MSP.</li> <li>Tools and methods supporting MSP.</li> <li>Stakeholder's engagement.</li> </ul>		
MUSES Multi-use of European seas SRIA Action:	<b>Call:</b> H2020-SC2- BG03-2016 <b>Duration:</b> Nov 2016 - Oct 2018	EU Contribution: 1.982.104,00 € Website: https://muses- project.com/	The Multi-Use in European Seas (MUSES) project is a Horizon 2020 funded project that is exploring the opportunities for Multi-Use in European Seas across five EU sea basins (Baltic Sea, North Sea, Mediterranean Sea, Black Sea and Eastern Atlantic).		
E2.1 / E2.3 / E2.5 / E2.8					
PORTODIMARE geoPortal of Tools & Data for sustainable Management of coAstal and maRine Environment SRIA Action: E2.9	<b>Call:</b> INTERREG ADRION <b>Duration:</b> Feb.2018 – Jul 2020	EU Contribution: 1.581.219,00 € Website: https://portodimare. adrioninterreg.eu/	PORTODIMARE project aims at creating a common platform (Geoportal) for data, information and decision support tools focused on coastal and marine areas of the Adriatic-Ionian Region. The Geoportal integrates and further develops existing databases, portals and tools developed within previous EU projects by local and national administrations and by other initiatives. Through this approach, most of the available knowledge and resources will be efficiently organized and made accessible through a single virtual space, thus supporting coordinated, regionally / transnationally coherent and transparent decision-making processes, with the perspective of remaining operative and being expanded well beyond the project conclusion.		

GEF Adriatic Project Implementation of Ecosystem Approach in the Adriatic Sea through Marine Spatial Planning SRIA Action: E2.1 / E2.3 / E2.5 / E2.8	<b>Call:</b> GEF ID No. 9545 <b>Duration:</b> Oct 2017 – Sept 2019	GEF Contribution: 1.817.900,00 USD Website: http://addis.unep.org/ projectdatabases/01423/ project_general_info	The Project will, first, develop a methodological framework for a coastal and marine monitoring programme, and, second, utilize, through MSP, the results of the SAP-MED and SAP-BIO implementation achieved to date. While the Project will implement ecosystem-based management activities, including the MSP, in two GEF-eligible countries of the Adriatic sub-region (Montenegro and Albania), it will also provide information and support to include other countries of the region, in particular through dissemination of knowledge and experience in developing marine spatial plans.
MSP Med Paving the Road to MSP in the Mediterranean SRIA Action: E2.1 / E2.3 / E2.5 / E2.8	Call: UNEP Duration: Dec 2014 – Dec 2015	EU Contribution: n.a. Website: http://www.pap- thecoastcentre.org/about. php?blob_id=101⟨=en	The project, that was of a pilot nature, intended to facilitate the implementation of the ICZM Protocol, in particular with regards to its provisions related to the marine part of the coastal zone, by evaluating methodologies and existing tools, proposing possible cooperation/management schemes and identifying prerequisites and possible ways to deal with the challenges, in an effort to assist the CPs to meet the common objectives of integrated marine spatial planning and management.
PHAROS4MPAS Blue Economy and Marine Conservation: Safeguarding Mediterranean MPAs in order to achieve Good Environmental Status SRIA Action: E2.3 / E2.8	Call: Interreg MED Programme 2014- 2020 Duration: December 2017 - May 2019	EU Contribution: 1.179.496,57 € Website: https:// pharos4mpas.interreg- med.eu/	The general objective of the PHAROS4MPAs project is to enhance management effectiveness and networking for Mediterranean MPAs, in order to contribute to the conservation of marine biodiversity and natural ecosystems, taking into account the complex ensemble of human activities developed within the Blue Growth perspective and their interaction with protected areas and marine ecosystems. Project outputs include delivering common capitalization baselines, recommendations and policy tools adapted to appropriation by the MedPAN network, MSP authorities, the European Commission, the Barcelona Convention and the various maritime sectors.
AQUASPACE Ecosystem Approach to making Space for Aquaculture SRIA Action: E2.3 / E2.8	<b>Call:</b> H2020- EU.3.2. <b>Duration:</b> March 2015 - May 2019	EU Contribution: 1.179.496,57 € Website: https:// pharos4mpas.interreg- med.eu/	The general objective of the PHAROS4MPAs project is to enhance management effectiveness and networking for Mediterranean MPAs, in order to contribute to the conservation of marine biodiversity and natural ecosystems, taking into account the complex ensemble of human activities developed within the Blue Growth perspective and their interaction with protected areas and marine ecosystems. Project outputs include delivering common capitalization baselines, recommendations and policy tools adapted to appropriation by the MedPAN network, MSP authorities, the European Commission, the Barcelona Convention and the various maritime sectors.

all: EU DG MARE D14/41 "Marine rotected areas: etwork(s) for shancement sustainable sheries in the EU editerranean aters	EU Contribution: 630.000,00 € Website: http://jadran.izor.	The main objectives of the project are to: 1.Review and integrate the knowledge produced in previous national and EU funded projects on the space-time dynamics of fisheries resources and on Ecosystem Approach to Fishery in the Central
otected areas: etwork(s) for hancement sustainable heries in the EU editerranean aters	Website: http://jadran.izor.	previous national and EU funded projects on the space-time dynamics of fisheries resources and on Ecosystem Approach to Fishery in the Central
uration: ecember 2015 - oril 2019	ni, manus, moex.num	<ul> <li>Mediterranean.</li> <li>Investigate how a network of marine managed areas (MMAs) can contribute to improve sustainable fisheries in the Central Mediterranean focusing on two case studies, the Strait of Sicily and the Northern Adriatic.</li> </ul>
all: ERA-net	EU Contribution:	ECOAST aimed to identify, develop and test
<b>uration: M</b> arch D16 - December D18	2.273.800,00 € Website: http://www.e- coast.eu/wp/	new methodologies for spatial and temporal management of fisheries and aquaculture in coastal areas. The overall approach assessed the impact of fisheries and aquaculture on coastal ecosystems, as well as synergies and conflicts between human activities. Building on previous methodologies and experiences the project evaluated marine spatial planning in seven coastal case study areas with different ecological and socio-economic characteristics: Adriatic Sea, Ionian Sea, Black Sea, Tyrrhenian Sea, Baltic Sea, Norwegian fjords and North-East Atlantic coast.
all: DG ENV	EU Contribution:	The project IDEM (Implementation of the MSFD to
<b>uration:</b> April D17 - March 2018	960.000,00 € Website: http://www. msfd-idem.eu/	Ine DEep Mediterranean Sea) aims to support the next phase of MSFD implementation, in particular to achieve, by the end of the project, a regionally coherent, coordinated and consistent initial environmental assessment and determination of GES, as well as the definition of sets of environmental targets for the Mediterranean deep Sea (below 200 m of depth). Beside this, IDEM aims at understanding, quantifying and mapping drivers, anthropogenic pressures and impacts, current knowledge and spatial coverage of data regarding the MSDF indicators in the Mediterranean deep sea. These represent crucial steps towards developing a comprehensive set of environmental targets and associated indicators/criteria that can be used to
all ur D17	: DG ENV ation: April 7 - March 2018	: DG ENV EU Contribution: 960.000,00 € ation: April 7 - March 2018 Website: http://www. msfd-idem.eu/

COASTAL Co-creating evidence- based business roadmaps and policy solutions for enhancing coastal- rural collaboration and synergies SRIA Action: E2.1, E2.6, E2.7	Call: H2020-SC2- RUR02-2017 Duration: May 2018 – April 2022	EU Contribution: n.a. Website: www.h2020- coastal.eu	The overarching objective of COASTAL is to improve the rural-coastal synergies in strategic business and policy decision making and collaboration between coastal and rural actors. This is achieved by developing, demonstrating and applying a generic toolset and performance indicators by combining a multi-actor approach with system dynamics modelling. This allows us to understand the interactions with market, demographic, environmental and climate forecasts, and quantify the positive and negative externalities. By combining local knowledge and scientific expertise in a co-creation process the COASTAL project engages actors and stakeholders at all levels to improve coastal-rural interdependence and collaboration by identifying problems and setting up evidence-based business roadmaps and policy solutions, focusing on economic growth, marine spatial planning, and environmental protection, including inland water quality.
<b>DEKOSIM</b> Center for Marine Ecosystem and Climate Research	<b>Call:</b> Ministry of Development, Turkey <b>Duration:</b> 2012- 2022	National Contribution : 3 M€ Website : Dekosim.ims.metu.edu.tr	DEKOSIM is an interdisciplinary centre of excellence funded by the Turkish Ministry of Development, established at the Institute of Marine Sciences of the Middle East Technical University. The main objective is to create an infrastructure that focuses on interdisciplinary research linking physical, chemical, biological and geological marine research. DEKOSIM aims to reach scientific excellence in marine ecosystem and climate research and provide highest-quality services to Blue Growth Sectors
METU BLUE GROWTH CENTER	Call: Middle East Technical University Duration: 2018-	Website : ims.metu.edu.tr	The main aim of the METU Blue Growth Center is to develop and implement Blue Growth activities both at the local in Turkey but also at the wider regional level in Eastern Mediterranean and the Black Sea. The center focuses on converting knowledge base from monitoring and integrated modelling systems to services and products that can be exploited by public and industry sectors. A pilot MSP project proposal has been prepared together with governmental offices to develop a methodology for ecosystem based sea-use management to be used to develop national MSP regulations.

Other projects may be of interest, tackling specific sea uses (e.g. energy, fisheries, maritime transport, sustainable tourism), including conservation, with spatial and integrated planning and management consequences.

Taking into account results of the above projects, ongoing policy implementation processes, blue growth trends and MSPrelated challenges in the Mediterranean, the list and specific content of priority actions will be revised and upgraded during the deployment of the Implementation Plan, to inform the Final Implementation Plan (September 2020). National MSP processes should be finished by March 2021, in this way, the BLUEMED implementation plan and national processes should be aligned in objectives and actions. However, MSP national processes are not in the same stage in each country, e.g. Spain is in early stage of MSP compared to France, for this reason it is important taking the experience of the recent and ongoing MSP European projects and the objectives of BLUEMED which require scientific and knowledge support, such as R&I, in terms of dedicated technologies to support the governance on the Mediterranean Sea. Key issues identified are:

- **Coherence between terrestrial and maritime planning** is a key, improving the understanding at proper spatial scales of Land-Sea Interactions (LSI), integrated management of land and maritime activities and resources and reducing impacts to the marine environment (ref. to E2.1).
- Transboundary MSP / Cooperation (e.g. Awareness and better definition of maritime zones in the Mediterranean, E2.5 Address transboundary maritime spatial planning issues to understand problems and opportunities and strengthen knowledge on environmental pressures across borders; transboundary offshore protected areas).
- Better understanding and capability to quantify **cumulative effects/impacts of anthropogenic pressures** on environmental components and resources, to support MSP scenarios and decisions, in close connection with the MSFD process and Programme of Measures, and conservation measures (i.e. potential areas for new MPAs, improved connectivity of the MPA network, reduced impact on existing MPAs from other maritime uses) (ref. to E2.6, E2.8, E2.4).
- Awareness and better understanding of MSP needs, drivers and solutions for planning and management of **deep sea spaces and resources** (Mediterranean deep sea covers ca. 80% of the MED area, but most areas are still largely unexplored), in close connection with transboundary governance issues (ref. to E2.9, E2.5).
- Define and study approaches and tools to identify the **trade-offs between ecological dynamics and socio-economic needs** (e.g. environmental accounting) (ref. to E2.3).
- Data for MSP (connection of existing Geoportals (from national to EU to Intl.) on environment and human activities. Build a "Knowledge Catalogue" for MSP (ref. from E2.1, E2.9).
- **Stakeholder engagement** should be effective to ensure best practices in marine spatial planning of maritime sectors to contribute to the long-term sustainable use of the marine resources (ref. to E2.9).

# Programmes and initiatives of relevance, including research and data infrastructures

# INTERNATIONAL STRATEGIES AND PROGRAMMES

- Barcelona Convention (in particular ICZM Protocol of the Barcelona Convention (UNEP, 2008) and Conceptual Framework for MSP in the Mediterranean) (http://wedocs.unep.org/bitstream/id/74412/17ig23\_23\_2307\_eng.pdf).
- Sustainable Development Goals Agenda (UN, 2015), and in particular SDG14 ("Life below water") (https:// sustainabledevelopment.un.org/sdg14).
- International Legally Binding Instrument under the UN Convention on the Law of the Sea (UNCLOS) on the Conservation and Sustainable Use of Marine Biological Diversity of Areas Beyond National Jurisdiction (BBNJ) (<u>https://enb.iisd.org/</u> oceans/bbnj/igc3/).
- ACCOBAMS Agreement on the Conservation of Cetaceans of the Black Sea, Mediterranean Sea and contiguous Atlantic Area (http://www.accobams.org/).
- UfM Ministerial Declaration on Blue Economy (2015; a new one upcoming in 2021) https://ufmsecretariat.org/wp-content/uploads/2015/11/2015-11-17-declaration-on-blue-economy\_en.pdf UfM Ministerial Declaration on Environment and Climate Change" (2014; a new one upcoming in 2020) https://ufmsecretariat.org//wp-content/uploads/2014/05/20140515\_UfM\_declaration\_FINAL\_compromiseeditorialchanges.pdf
- UfM Working Group on Blue Economy
   https://ufmsecretariat.org/ufm-working-group-blue-economy/
- Any other relevant UfM Ministerial (transport, energy, sustainable urban development, etc.), related strategies, programmes and projects
  - https://ufmsecretariat.org/what-we-do/water-environment/

#### EUROPEAN STRATEGIES AND PROGRAMMES

- EU Maritime Spatial Directive (2014/89/EU).
- The goal E-E2 EFFECTIVE MARITIME SPATIAL PLANNING IN THE MEDITERRANEAN is by definition cross-sectoral/ cross-cutting, having the objective to promote the coexistence in space (terrestrial coastal area and marine waters) and the synergies among sea and coastal uses, not compromising ecosystems and the environmental objectives established by the International and EU policies. Therefore, harmonization with the implementation processes of several policies and directives is required (e.g. Marine Strategy Framework Dir (2008/56/EC), Water Framework Dir (2000/60/EC), EU Biodiversity Strategy 2020 (COM.(2011)244), Habitat & Birds Dir.(92/43/EEC; 2009/147/EC), Common Fisheries Policy (Reg.(EC)1967/2006; Reg.(EU)1380/2013; COM.(2011)804), Aquaculture (COM.(2013)229), Tourism (COM.(2010)352; COM.(2014)86), Energy (COM.(2008)768; COM.(2014)15); Reg.(EU)347/2013), Renewable Energy Dir.(2009/28/EC), Safety Oil & Gas Dir.(2013/30/EU), Transport (COM.(2009)10; COM.(2013)295; Reg.(EU)1315/2013), Bioeconomy (COM. (2012)60), EU Maritime Security Strategy (11205/14), Search & Rescue Dir (2013/32/EU)).

# MACRO-REGIONAL STRATEGIES AND PROGRAMMES

- MSPglobal Initiative (UNESCO/IOC) (http://www.mspglobal2030.org/).
- EUSAIR (COM(2012)713; COM(2014)357), with regard in particular to Pillar 1 Topic 3 (Maritime and marine governance and services) and Pillar 3 Topic 1 (The marine environment) (<u>https://www.adriatic-ionian.eu/</u>).
- WESTMED (COM.(2017)183), with reference to Goal 3 Better governance of the sea and its priority "3.1 Spatial planning and coastal management" (https://www.westmed-initiative.eu/).

# Target sectors and groups

Effective Maritime Spatial Planning is a key enabling factor for sustainable Blue Growth in the Mediterranean and elsewhere (COM(2012)494; COM(2014)254; SWD(2017) 128 final) and is also a key tool to promote the achievement of environmental objectives (e.g. MSFD, Barcelona Convention, SDC14), by reducing single and cumulative impacts from coastal and sea uses.

As such, all sectors of sea economy are potentially involved, together with public administrations, research, NGOs and the civil society.

#### **Intergovernmental Bodies**

- EC-DG Mare (https://ec.europa.eu/maritimeaffairs/home\_en) and MSP Member States Expert Group (MSEG).
- UNEP/MAP (http://web.unep.org/unepmap/) and its Regional Centers (e.g. PAP-RAC, SPA-RAC, INFO-RAC, REMPEC).
- IOC-UNESCO (http://msp.ioc-unesco.org/).
- Union for Mediterranean (UfM) (https://ufmsecretariat.org/).
- GFCM (http://www.fao.org/gfcm/en/).
- ICCAT (International Commission for the Conservation of Atlantic Tunas (https://www.iccat.int/en/).
- Organisation for Economic Co-operation and Development (OECD) (http://www.oecd.org/science/).

#### Sectoral Associations and Technology Platforms

- European MSP Platform (https://www.msp-platform.eu/).
- European Aquaculture Technology and Innovation Platform (<u>http://eatip.eu/</u>).
- European Fisheries Technology Platform (http://eftp.eu/).
- Waterborne Technology Platform (<u>https://www.waterborne.eu/</u>).
- Observatoire Méditerranéen de l'Energie (OME) (http://www.ome.org/).
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#### Maritime Clusters

- European Network of Maritime Clusters (ENMC) (https://enmc.eu/about-us/).
- Pole Mer Mediterranee (<u>https://www.polemermediterranee.com/</u>).
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# NGOs

- WWF MED (<u>http://mediterranean.panda.org</u>/).
- MEDPAN (<u>https://medpan.org/</u>).
- IUCN Mediterranean (https://www.iucn.org/).

#### Funding options and agencies

#### International Programmes

- Horizon 2020 (in particular SC2-BG): https://ec.europa.eu/programmes/horizon2020/en
- European Maritime and Fisheries Fund (EMFF) (in particular the calls/tenders on Blue Economy and on MSP) (<u>https://ec.europa.eu/fisheries/files/docs/c-2018-8384-annex\_en.pdf</u>).
- Interreg MED 2014–2020 (in particular Axes 3 "Natural and cultural resources" and Axes 4 "Governance) (<u>https://interreg-med.eu/</u>).
- Other cross-border and transboundary Interreg Programmes (e.g. ADRION (https://www.adrioninterreg.eu/), IT-HR (https://www.italy-croatia.eu/), IT-FR Marittimo (http://interreg-maritime.eu/).
- Interreg-IPA CBC IT-AL-MO (https://www.italy-albania-montenegro.eu/).
- ENI CBC MED (in particular Priority B.4.4. "Incorporate the Ecosystem-Based management approach to ICZM into local development planning, through the improvement of intra-territorial coordination among different stakeholders) (http://www.enpicbcmed.eu/enicbcmed-2014-2020).
- ESPON EGTC (https://www.espon.eu/programme/espon/espon-2020-cooperation-programme).
- GEF (<u>https://www.thegef.org/</u>).
- General Fisheries Commission for the Mediterranean (GFCM- FAO) (<u>http://www.fao.org/gfcm/es/</u>).
- Horizon Europe (in particular under Pillar 2 "Global Challenges and Industrial Competitiveness" Cluster "Food and natural resources" and within the Mission "Healthy Oceans, Seas, Coastal and Inland Waters") (<u>https://ec.europa.eu/</u> info/horizon-europe-next-research-and-innovation-framework-programme\_en).
- Marine Spatial Planning Programme at UNESCO-IOC: http://msp.ioc-unesco.org/about/msp-at-unesco/

Ad	ctivities to promote the SRIA Implementation	on
Examples of activities	Content and objective	How and timeframe
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]	[Champion countries explain how the activity can be carried out and timeframe within the IP (2020-2023)]
Networking and engagement of economic sectors and national Blue Growth communities	<ul> <li>Participation in the National and Regional Trainings on MSP organised in the framework of the Western Mediterranean Pilot Project under MSPglobal Initiative (UNESCO/IOC).</li> <li>National Workshop (Italy) on Blue Growth and Maritime Zones (TBC).</li> </ul>	How:Workshops for national authorities and stakeholders.When:• Autumn 2019; Summer 2020.• Early 2020.
Alignment and coordination	<ul> <li>GSO BLUEMED Working Group.</li> <li>Alignment and coordination with Westmed on initiatives and projects on MSP. To be discussed with Westmed Presidency / vice-Presidency and the Steering Committee.</li> <li>Alignment and coordination with EUSAIR on initiatives and projects on MSP. To be discussed with Pillar 1 and Pillar 3 coordinators and with the EUSAIR Facility Point.</li> <li>Alignment and coordination with UNESCO/IOC on the MSPglobal Initiative, and in particular with the Western Mediterranean Pilot Project.</li> <li>Alignment and coordination with UNEP/MAP on the process to adopt and implement the "Conceptual Framework for MSP in the Mediterranean".</li> <li>Alignment and coordination with Dg Mare MSEG and MSP Platform Technical Assistance</li> </ul>	<ul> <li>How: Meetings and activities for the identification of priority topics / actions and of options for joint implementation. Research to strengthen dialogue and institutional capacities.</li> <li>When: 2019 - 2023.</li> </ul>

Activities to promote the SRIA Implementation					
Examples of activities	Content and objective		How and timeframe		
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity] [Champion countries expl the activity can be carried timeframe within the IP (20)		npion countries explain how tivity can be carried out and ne within the IP (2020-2023)]		
Promotion and possibly implementation of actions coordinated and jointly undertaken by different countries, with a "variable geometry" approach		How: When:			
Start-Up actions		How:			
		When:			
Assessment and promotion of the capitalisation and valorisation under the BLUEMED umbrella of ongoing and future projects	<ul> <li>Participation of BLUEMED as Observer in the new project/s (call EMFF-2019-1.2.1.8) on MSP implementation in the</li> </ul>	How:	Bidirectional exchange of results and experiences, through dedicated workshops and meetings.		
	<ul> <li>Mediterranean.</li> <li>Participation of BLUEMED at the Final Conference of the project ADRION- PORTODIMARE (geoPortal of Tools &amp; Data for sustainable Management of coAstal and maRine Environment).</li> <li>Participation of BLUEMED at the Capitalization Phase of the project MED-PHAROS4MPAS (Blue Economy and Marine Conservation: Safeguarding Mediterranean MPAs in order to achieve Good Environmental Status).</li> <li>Capitalization within BLUEMED of the results of ongoing activities on MSP of the Italian Cluster on Blue Growth "BIG": Trajectory "Sustainability and economic uses of the sea" and ITEM Project.</li> </ul>	When:	October 2019 – September 2020.		
Lobbying actions	• Actions to highlight the role of	How:	Dedicated meetings.		
	<ul> <li>Effective Maritime Spatial Planning within the Horizon Europe Mission on Healthy Oceans, Seas, Coastal and Inland Waters, and to promote dedicated calls.</li> <li>Actions to highlight the role of Effective Maritime Spatial Planning to Interreg and ENI CBC Managing Authorities, also via the Regional Strategies and Initiatives cited above, and to promote dedicated calls.</li> </ul>	When:	2020 – 2023.		
Training and capacity building initiatives	<ul> <li>Training on "Ecosystem-Based Management in/for MSP", jointly organised with MED-PANACEA 2 project (TBC).</li> <li>Training course on "Science-Policy- Society interactions in marine resource management", jointly organised with COST (European Cooperation in Science and Technology).</li> <li>Training course about MSP for non-EU countries, also exploring potentials from the new EMFF Blue Skills calls.</li> </ul>	How: When:	Co-organisation and participation in training courses and capacity building events. • Summer 2020. • March 2020. • TBD.		

Examples of activities [Champion countries must choose those activities that suit best the priority addressed]	<b>Content and objective</b> [Champion countries describe in more detail the content and specific objective of a given activity]	How and timeframe [Champion countries explain how the activity can be carried out and timeframe within the IP (2020-2023)	
Implementation Working Groups (IWG)		How:	
on specific sectors		When:	
<ul> <li>Communication and engagement</li> <li>Thematic Event on MSP on R&amp;I needs for Effective MSP in the Mediterranean, at the BLUEMED Final Conference.</li> <li>News, announcements, new materials, etc.</li> </ul>		How:	Dedicated Session at Bluemed Final Conference / Website, social networks (twitter, facebook, instagram).
		When:	September 2020 / Social media during the whole process.

# FICHE 7 GREENING VESSELS, FACILITIES AND SERVICES CO-CHAMPION COUNTRIES: ITALY & TURKEY

# Background

Shipping and ports are significant economic drivers in the Mediterranean Sea, which represents 30% of global sea-borne trade by volume, is the world's second largest market for cruise ships and hosts over 450 ports and terminals. It is therefore a necessity to develop green activities and innovative solutions to reduce the environmental footprint of commercial as well as tourism-oriented maritime transports and port infrastructures.

The development of new concepts and efficient ships, using new materials, advanced design, production techniques, with lower manufacturing, construction, installation, dismantling and recycling costs, in the perspective of circular economy, would be a strong source of employment and would generate new skills for professionals. These actions are required to reduce the pollution emitted at sea (i.e. towards lower emissions and noise reduction) and at ports (i.e. towards ship electrification and sustainable new infrastructures). Innovative smart and clean technologies will also considerably improve the health and wellbeing of coastal/port areas inhabitants and professionals using vessels and port facilities.

A realistic plan of action can be established for the next few years on green and smart ship, smart grid harbour, low emission in CO2, NOx, SOx, etc., LNG then hydrogen energy propulsion. Those actions are important to combat climate change due to increasing GES. Synergies can be established between this cluster of goals and ongoing international strategies and stakeholders' associations (e.g. SeaEurope). For example, a proposal supported by several countries to establish a potential Emission Control Area (ECA) in the Mediterranean Sea is being under study by the IMO. The implementation of such an area would address both sulfide and nitrogen oxides, and would have the greatest positive effect in reducing air pollution and bringing socioeconomic and ecological benefits.

Moreover, increasing connectivity among ports and developing efficient Motorways of the Sea can be great assets to strengthen links between Mediterranean ports' communities and to increase economic operations.

With reference to the Bluemed SRIA the following actions, relevant for the priority "Greening vessels, facilities and services", have been selected:

- T-A1.1 Implement multidisciplinary integrated methodologies to evaluate the impact of ships and harbours on the environment at transnational level, in the light of the specific characteristics of the Mediterranean basin.
- T-A1.2 Develop new vessel concepts, i.e. flexible, modular and high efficient ships, using new materials (e.g. high strength, lightweight, smart, ...) and advanced design and production techniques, with lower manufacturing, construction, installation, dismantling and recycling costs from the perspective of the circular economy.
- T-A1.3 Low emission alternative fuels: support the design of LNG-fuelled ships and appropriate inland, coastal and offshore infrastructures, and the research on biofuels and hydrogen.
- T-A1.4 Exploit new technologies and tools to monitor pollution from ships on route coast and in harbours.
- T-A1.5 Towards shipping electrification: support research on cold ironing from renewable resources, batteries and fuel cells and internal combustion engines in particular for fishing boats.
- T-A1.6 Design and develop innovative green infrastructure solutions and tailored software to improve the sustainability of logistics and ports, with special reference to energy efficiency and externalities related to the surrounding built environment.
- T-A1.7 Develop innovative design and management solutions for eco-friendly vessels, e.g. antifouling, greener propulsion for transport, leisure and fishing boats, fuel saving and noise reduction materials for vessel-water interface.
- T-A1.8 Zero emission fuels: support the design and implementation of module-based hydrogen fuel cells and internal combustion engines for propulsion and power generation of ferries and other types of ships and vessels and appropriate infrastructures for producing the hydrogen from wind renewable energy doing a paradigm shift towards entirely emissions-free maritime transport.
- T-A3.2 Towards efficient Motorways of the Sea (MoS) and their connections among Ports: develop feasibility studies, identifying main obstacles, and innovative methodologies/tools for the efficient functioning of the existing MoS and the establishment of new ones.
- K-A2.3 Conduct in situ measurements and develop modelling (including Big-Data modelling) tools to understand the distribution, intensity and sources of underwater noise, as well as its effect on marine species.

# Proposals for new actions

- Short term R & I actions to support the 'zero emissions' targets in vessels/facilities are needed. For example, the demonstration of utilization of solar energy/new photovoltaics (in vessels/ports) can be a short-term action.
- Address the problem of biofuling.
- Improve traffic monitoring system and share information to increase the overall efficiency of the transport system.

# Mapping and discussing implementation options and potentials of this priority

# Recent and ongoing relevant projects

Focus is on the international level, which means including mostly information of European/international projects that are relevant to the priority and to the MED area.

For the topic "Greening vessels, facilities and services" there are not specific calls under SC2 "Blue Growth". Calls labelled BG have been issued under "Smart, green and integrated transport" (SC4) but so far have been focused mainly on underwater vehicles and technologies. Only the latest BG calls will include topics related to "Low carbon technology" and "Underwater noise". A list of projects related to the specific actions selected from the Bluemed SRIA is reported below.

PROJECT	DESC	RIPTION	OBJETIVES
HOLISHIP HOLIstic optimisation of SHIP design and operation for life cycle	Call: H2020-MG-2015 Duration: Sept. 2016 – Aug. 2020	EU Contribution: 11.431.746€ Website: http://www. holiship.eu	Maritime products are designed based on customer requirements and have to show high efficiency, flexibility and low environmental impact at a competitive price. Product design is thus subject to global trade-offs among traditional constraints (customer needs, technical requirements, cost) and new requirements (life-cycle, environmental impact, rules). The HOLISHIP project addresses these industry needs by developing innovative design methodologies and integrating diverse requirements at an early design stage. The project will develop integrated design platforms and demonstrate the concepts in digital mock-ups.
LEANSHIPS Low Energy And Near to zero emissions Ships	<b>Call:</b> H2020-MG-2014 <b>Duration:</b> May 2015 – April 2019	EU Contribution: 21.550.241€ Website: http://www. leanships-project.eu	LeanShips is combining technologies for efficient and less polluting vessels with end-user requirements to demonstrate the effectiveness and reliability of energy saving and emission reduction technologies at full scale. The project targets $CO_2$ reduction of at least 25%, estimated fuel saving of up to 25% and expected decrease of Sulphur Oxides ( $SO_x$ ), Nitrogen Oxides ( $NO_x$ ) and particle matter air pollutants by up to 100%.
AIRCOAT Air Induced friction Reducing ship COATing	<b>Call:</b> H2O2O-MG-2017 <b>Duration:</b> May 2018 – April 2021	EU Contribution: 5.299.097€ Website: https://aircoat. eu/	AIRCOAT promotes a ground-breaking passive air lubrication technology with a high potential to revolutionise the ship-coating sector by reducing energy consumption and ship emissions.

QUIETMED2 Joint programme for GES assessment on D11- noise in the Mediterranean Marine Region	Call:DG ENV/MSFD 2018 Duration:2018-	Website: https:// quietmed2.eu/	quietMED Project aims to get better coordination among member states that share marine regions and sub-regions to increase the protection level and the conservation status of the marine spaces of the Mediterranean Sea against the damages caused by underwater noise resulted from anthropogenic activities. quietMED project aims to improve the level of coherence and the comparability as regards Descriptor 11 (underwater noise) by enhancing cooperation among Mediterranean Sea Basin countries within the implementation of the second cycle of the Marine Strategy Framework Directive.
<b>ProNoVi</b> Analysis Methods and Design Measures for the Reduction of Noise and Vibration Induced by Marine Propellers	Call: MarTERA Cofund Duration: June 2018 – May 2021	EU Contribution: 1.900.000 € Website: http://www. pronovi.eu	The objective of the ProNoVi project is to improve the numerical and experimental methods for the prediction of noise and vibrations induced by a propeller operating behind ship hull in full scale conditions, and to elaborate practical recommendations for the reduction of noise and vibration levels for single and twin-screw vessels of different size and speed range.
HERCULES-2 Fuel Flexible, Near-Zero Emissions, Adaptive Performance Marine Engine	<b>Call:</b> H2O2O <b>Duration:</b> 2016-2018	EU Contribution : 25.000.000 € Website : http://www. hercules-2.com/	The HERCULES-2 project takes into account: a) the increasing availability of alternative fuels and their potential contribution to the environmental and economic performance of vessels through their use in fuel flexible engines, b) the societal target of economic production of ship propulsion power with near zero emission s, c) the importance of lifetime performance optimization for new and existing ships, in the changing operational environment of global waterborne transport.
H2MOVE Hydrogen generator for higher fuel efficiency and lower carbon emissions in maritime transport	Call: H2O2O, SMEInst (small business innovation research for transport and smart cities mobility) Duration: O2/17 - O5/17	EU Contribution: 50.000€ Website: https://trimis. ec.europa.eu/project/ hydrogen-generator- higher-fuel-efficiency- and-lower-carbon- emissions-maritime- transport	Aris Pump Ltd. developed H2MOVE, safe small foot-print hydrogen generator to be installed into engines of marine vessels to significantly improve performances, delivering 35% less air pollution, 30% better fuel efficiency and consequently 30% fuel cost saving with a safe hydrogen technology.
H2Ports Implementing Fuel Cells and Hydrogen Technologies in Ports	<b>Call:</b> H2020-JTI- FCH-2018-1 <b>Duration:</b> Jan. 2019 – Dec. 2022	EU Contribution: 3.999.948€ Website: https://h2ports. eu/	H2Ports aims to boost the transition of the European port industry towards an effective low-carbon/zero-emission and safe operative model, piloting, evaluating and demonstrating new Fuel Cell technologies oriented to increase energy efficiency, decarbonisation and safety of port terminals. The pilots to be tested in the project will be the first experiences of the use of hydrogen technologies in port handling equipment in Europe.

Poseidon Med II LNG Bunkering Project	<b>Call</b> : CEF <b>Duration:</b> 2016 – 2020	<b>CEF Contribution:</b> n.a. <b>Website:</b> https://www. poseidonmedii.eu/	Poseidon Med II is an EU co financed program that aims at promoting the adoption of LNG (Liquefied Natural Gas) as marine fuel in the Easter Mediterranean Sea, while making Greece an international marine bunkering and distribution hub for LNG in South Eastern Europe.
			Poseidon Med II is a partnership between 3 Mediterranean countries (Cyprus, Greece and Italy), which involves 6 European ports (Piraeus, Patras, Igoumenitsa, Heraklion, Limassol, Venice) and 1 LNG Terminal (Revithoussa LNG terminal). In order to promote small scale LNG services, 26 top business partners have joined forces, knowledge and experience.
SUPAIR Sustainable ports in the Adriatic-Ionian region	Call: ADRION-1 <sup>st</sup> call Duration: Jan. 2018 –Dec. 2019	EU Contribution: 1.052.948€ Website: https://supair. adrioninterreg.eu/	SUPAIR will establish a network of ADRION low-carbon ports committed to exchange on good practices regarding soft and hard environment-friendly solutions for a greener, safer and more efficient transport system.
<b>PortForward</b> Towards a green and sustainable ecosystem for the EU Port of the	<b>Call:</b> H2O2O-MG-2017- Two-Stages	EU Contribution: €4.994.311	PortForward proposes a holistic approach that will lead to a smarter, greener and more sustainable port ecosystem and which will include the following features:
Future	Duration: 07/18 - 12/21	Website: http://www. portforward-project.eu/	<ul> <li>The introduction of an Internet of Things (IoT) concept for port assets (infrastructure, vehicles, cargo, people).</li> <li>The socio-economic analysis of the port interface with its surrounding area and the port-city, as well as the rest of the logistics value chain</li> </ul>
<b>GAINN4MOS</b> Sustainable LNG Operations for Ports and Shipping - Innovative Pilot Actions	<b>Call:</b> H2O2O <b>Duration:</b> 01/15 - 09/19	Website: http://www. gainnprojects.eu/ gainn4mos/	GAINN4MOS Action aims to improve the Motorways of the Sea network in 6 Member States by carrying out engineering studies of ships retrofitting and/or new buildings and port LNG infrastructures and bunkering stations and a large set of pilot projects.
LNCHIVE2 Infrastructure and Logistics Solutions	Funding: European co- funding CEF Transport Duration: 09/18 - 02/22	EU contribution: 3Million € Website: https://trimis. ec.europa.eu/project/ Inghive2-infrastructure- and-logistics-solutions	LNGHIVE2 aims at offering holistic solutions to the new requirements of the shipping and the rail sectors. The main benefit will be in terms of completion of the adaptation of all LNG regasification plants in Spain and ensuring that all sizes of bunkering barges and ships can load LNG at Spanish plants.
CORE LNGas hive Core Network Corridors and Liquefied Natural Gas	<b>Funding</b> : European co- funding <b>Duration</b> : 01/14 - 12/20	Website: http:// coreIngashive.eu/en/	The Action, CORE LNGGas hive, aims at supporting the deployment of LNG infrastructure for maritime transport and ports operations along the Spanish and Portuguese sections of the Atlantic and Mediterranean Core Network Corridors in line with the corresponding Corridor Work Plans. It includes a group of studies and real-life pilot deployments.

Nearly all EU projects on ship electrification and fuel cells have specific application to the Northern basins, mainly Baltic sea, and do not include Mediterranean partner. Some examples are reported below.

PROJECT	DESCI	RIPTION	OBJETIVES
HySeas III Realising the world's first sea-going hydrogen- powered RoPax ferry and a business model for European islands	<b>Call</b> : H2O2O-MG-2017- Two-Stages <b>Duration:</b> 07/18 - 12/21	EU Contribution: €9.276.373 Website: <u>https://www.</u> hyseas3.eu/	The HySeas III project will bring to market the world's first zero emission, sea-going ferry that will be powered by hydrogen from renewable sources. It builds on the pioneering experience of the coordinator (Ferguson Marine), which previously developed the first diesel/electric hybrid ferry in 2013 and involves the leading European supplier of hydrogen fuel cell modules (Ballard Power Systems).
MARANDA Marine application of a new fuel cell powertrain validated in demanding arctic conditions	<b>Call</b> : H2020-JTI- FCH-2016-1 <b>Duration:</b> 03/17 - 02/21	EU Contribution: €2.939.458 Website: https://trimis. ec.europa.eu/project/ marine-application-new- fuel-cell-powertrain- validated-demanding- arctic-conditions	In MARANDA project an emission- free hydrogen fueled PEMFC based hybrid powertrain system is developed for marine applications and validated both in test benches and on board the research vessel Aranda, which is one of about 300 research vessels in Europe. Special emphasis is placed on air filtration and development of hydrogen ejector solutions, for both efficiency and durability reasons. In addition, full scale freeze start testing of the system will be conducted.
<b>Port-Liner</b> Zero emission" ships for inland waterways	<b>Funding:</b> European <b>Duration:</b> 07/17 – 12/19	Website: <u>https://www.</u> portliner.nl/	The Action is part of a Global Project aiming to promote the uptake of zero emission shipping based on electric propulsion, targeting inland waterway vessels. As first step, six inland waterway vessels for container transport, with full electrical propulsion, fed by batteries (1.6 MW) containerized in E-Power boxes will be built and put into operation.
<b>FLAGSHIPS</b> Clean waterborne transport in Europe	<b>Call:</b> H2O2O-JTI- FCH-2O18-1 <b>Duration:</b> O1/19 - 12/22	EU Contribution: €4.999.979 Website: <u>https://flagships.</u> eu/	The FLAGSHIPS project raises the readiness of zero-emission waterborne transport to an entirely new level by demonstrating two commercially operated hydrogen fuel cell vessels.
Other relevant recent projects are SONIC and AQUO (FP7) for the topic " <i>underwater radiated noise</i> ", Tram (H2020) for the topic "modular ships".			

#### Programmes and initiatives of relevance, including research and data infrastructures INTERNATIONAL STRATEGIES AND PROGRAMMES Barcelona Convention (in particular Dumping Protocol of the Barcelona Convention (UNEP, 1976/1992) and Prevention ٠ and Emergency protocol (UNEP, 2002): http://wedocs.unep.org/bitstream/id/74412/17ig23\_23\_2307\_eng.pdf The United Nations Convention on the Law of the Sea (UNCLOS). International Convention for the Prevention of Pollution from Ships (MARPOL Convention): 0 MARPOL Annex I - Prevention of Pollution by Oil. MARPOL Annex IV - Prevention of Pollution by Sewage from Ships. 0 MARPOL Annex V - Prevention of Pollution by Garbage from Ships. 0 MARPOL Annex VI - Air Pollution, Energy Efficiency and Greenhouse Gas Emissions. 0 International Convention for the Safety of Life at Sea (SOLAS). International Convention for the Control and Management of Ships' Ballast Water and Sediments (BWM): http:// www.imo.org/en/About/Conventions/ListOfConventions/Pages/International-Convention-for-the-Control-and-Management-of-Ships'-Ballast-Water-and-Sediments-(BWM).aspx Guidelines for the control and management of ships' biofouling to minimize the transfer of invasive aquatic species -Biofouling Guidelines (resolution MEPC.207 (62)). Ports: Port Services Regulation (2017). 0 Review General Block Exemption Regulation (2017). 0 UfM Ministerial Declaration on Blue Economy (2015; a new one upcoming in 2021) https://ufmsecretariat.org/wp-content/uploads/2015/11/2015-11-17-declaration-on-blue-economy\_en.pdf UfM Ministerial Declaration on Environment and Climate Change" (2014; a new one upcoming in 2020) https://ufmsecretariat.org//wp-content/uploads/2014/05/20140515\_UfM\_declaration\_FINAL\_compromiseeditorialchanges.pdf UfM Working Group on Blue Economy https://ufmsecretariat.org/ufm-working-group-blue-economy/ Any other relevant UfM Ministerial (transport, energy, sustainable urban development, etc.), related strategies, programmes and projects https://ufmsecretariat.org/what-we-do/water-environment/ **EUROPEAN POLICIES** EU Commission: Towards clean, competitive and connected mobility: the contribution of Transport Research and Innovation to the Mobility package, SWD (2017) 223. Strategic Transport Research and Innovation Agenda roadmap: Cooperative, connected and automated transport (2019). 0 Transport electrification (2016). 0 Vehicle design and manufacturing (2016). 0 Low-emission alternative energy for transport (2016). 0 Network and traffic management systems (2016). 0

- Smart mobility and services (2016).
- o <u>Infrastructure</u> (2016).

# MACRO-REGIONAL STRATEGIES AND PROGRAMMES

- EUSAIR (COM(2012)713; COM(2014)357), with regard in particular to Pillar 2, https://www.adriatic-ionian.eu/
- WESTMED (COM(2017)183), <u>https://www.westmed-initiative.eu/</u>

# EUROPEAN INITIATIVES AND AGENDAS

- Waterborne Technology Platform (Waterborne TP, <u>http://www.waterborne.eu/</u>) <u>Strategic Research Agenda for the European Waterborne Sector.</u>
- European Council for Maritime Applied R&D (ECMAR, https://www.ecmar.eu) ECMAR position paper (2017).
- Joint Programming Initiative for Healthy and Productive Seas and Oceans (JPI Oceans, <a href="http://www.jpi-oceans.eu/">http://www.jpi-oceans.eu/</a>) Strategic Research and Innovation Agenda.

# Target sectors and groups

- International Maritime Organization (IMO, <u>http://www.imo.org/</u>).
- Union for the Mediterranean (UfM, https://ufmsecretariat.org/).
- Waterborne Technology Platform (Waterborne TP, http://www.waterborne.eu/).
- European Council for Maritime Applied R&D (ECMAR, https://www.ecmar.eu).
- Sea Europe (<u>http://www.seaeurope.eu</u>).
- Joint Programming Initiative for Healthy and Productive Seas and Oceans (JPI Oceans, http://www.jpi-oceans.eu/).
- International Towing Tank Conference (ITTC, <u>https://ittc.info/</u>).
- International Ship and Offshore Structures Congress (ISSC, http://www.issc2018.org/content/overview).
- Marine and shipping registers (certification).
- o RINA, https://www.rina.org/it
- o Lloyds, <u>https://www.lr.org/</u>
- o Bureau Veritas, https://www.bureauveritas.fr/
- Det Norske Veritas, DNV, <u>https://www.dnvgl.com/</u>
- Port Authorities.
- Coastal Guards.

#### Clusters

Pole Mer Mediterranee, <u>https://www.polemermediterranee.com/</u>

#### Funding options and agencies

- Horizon 2020:
  - Smart, green and integrated transport (SC4).
  - o ERANET- Cofound: MARTERA.
- European Maritime and Fisheries Fund (EMFF).
- Interreg Programmes:
  - ADRION (https://www.adrioninterreg.eu/).
  - o IT-FR Marittimo (http://interreg-maritime.eu/).
  - o IT-HR (https://www.italy-croatia.eu/).
  - o IPA CBC IT-AL-MO (https://www.italy-albania-montenegro.eu/).
  - o Grece-Italy (https://greece-italy.eu/what-is-interreg-v-a-greece-italy-programme/).
- Horizon Europe (in particular under Pillar 2 "Global Challenges and Industrial Competitiveness" Cluster "Climate, Energy and mobility") (<u>https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme\_en</u>).
- CEF Transport- Connecting Europe Facility (CEF) for transport.
- World Bank blue economy programmes.

Activities to promote the SRIA Implementation					
Examples of activities	Content and objective		How and timeframe		
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]	[Cham] the ac timefrar	npion countries explain how tivity can be carried out and ne within the IP (2020-2023)]		
Networking and engagement of economic sectors and national Blue	Strengthening the cooperation with national and regional clusters.	How:	Organization of workshops on specific topics.		
Growth communities		When:	At least one per year.		
Alignment and coordination	<ul> <li>Coordination with Waterborne to align the agendas.</li> <li>Coordination with Eusair activities related to Pillar 2 <i>Connecting the Region</i>.</li> <li>Coordination with the JPI-OCEANS to foster the inclusion</li> </ul>	How:	<ul> <li>Joint meetings specifically organized/invitation to participate to the next Bluemed.</li> <li>Meetings/participation to the meetings of the other initiatives, TP, etc.</li> </ul>		
	<ul> <li>of technological topics related to waterborne transport in the JPI agenda, aligned with the actions of the Bluemed SRIA and/or for the creation of a specific JPI action.</li> <li>Coordination with Westmed.</li> <li>Contribute to the ECA (emission control area) implementation.</li> </ul>	When:	Sept. 2019-Sept. 2020.		
Promotion and possibly implementation	Noise from maritime transport: a cross	How:			
of actions coordinated and jointly undertaken by different countries, with a "variable geometry" approach	cutting issue also related to observing systems, marine spatial planning and maritime sector. Build on existing initiatives such as MSFD reports and DG-ENV funded QUIETMED to develop a cross—cutting Bluemed-labelled best practice, integrating observing, planning and sectoral approaches/ representatives in a few selected pilot areas (short term).	When:			
Start-Up actions	Monitor the creation and the activities of new start -up actions.	How:	Bluemed "Expo", Other "Expo".		
		When:	Each year.		
Assessment and promotion of the capitalisation and valorisation under the BLUEMED umbrella of ongoing and future projects	<ul> <li>Monitor the results of the listed projects.</li> <li>Monitor the activities of future projects that will be funded in the next BG calls.</li> <li>Promote the submission of projects for new BG calls by consortia within the Bluemed community.</li> </ul>	How:	<ul> <li>Annual report.</li> <li>Bidirectional exchange of results and experiences, through dedicated workshops and meetings.</li> <li>Networking activities (brokerage events, B2B, etc.).</li> </ul>		
		When:	2020-2023.		
Lobbying actions	<ul> <li>Maintain the link with the national delegates/At Ministerial level</li> </ul>	How:	Meetings at National level.		
	<ul> <li>delegates/At Ministerial level, implementing effective and targeted communication strategies.</li> <li>Consider the impact of military vessels and activities on the environment. Correlation with EDA -SRIA and promote dual use activities (greener vessels and operations but also monitoring activities carried out by military vessels).</li> </ul>		As soon as possible, regularly.		

Examples of activities	Content and objective		How and timeframe	
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]	[Champion countries explain how the activity can be carried out and timeframe within the IP (2020-2023)]		
Training and capacity building initiatives	• Support the creation of high level trans-Mediterranean training	How:	Partnerships with Universities.	
	<ul><li>courses.</li><li>Promote the courses that already exist.</li></ul>	When:	From Summer 2020 - Academic Year 2020/21.	
Implementation Working Groups (IWG)	Regulation of ballast water, and other	How:	Participation to IWG	
on specific sectors	shipping-based inputs are regulated at IMO level but Bluemed can contribute towards monitoring the implementation of new regulation.	When:		
Communication and engagement	Disseminate the results of ongoing projects and discuss publicly the priorities and impacts of Bluemed initiative.	How:	<ul> <li>Participation of Bluemed to the future Transport Research Arena (TRA) Conference.</li> <li>Organization of the "Bluemed annual conference" to monitor the results of ongoing projects and evaluate over time the impact of Bluemed.</li> </ul>	
		When:	<ul> <li>Starting from April 2020 and then each year.</li> <li>Starting from July 2020 and then each year.</li> </ul>	

# FICHE 8 EXPLORING THE POTENTIAL OF BLUE-BIOTECH RELATED GOALS: E-A2. GENERATING NEW PRODUCTS AND SERVICES CO-CHAMPION COUNTRIES: ITALY & TUNISIA

# Background

The marine environment is the largest ecosystem of our planet and it is a key provider of goods and services to the human society. Beyond the food resources currently exploited on a daily basis, the marine environment has also been identified as a potential key provider of biotechnological novelty, both under the form of bioactive compounds and potentials for bio-mimicry. There is a general consensus that marine organisms might host metabolites and bio-solutions very different from those of terrestrial organisms, which might have a high potential for applications in biotechnology, materials and even engineering.

The Mediterranean Sea is unique in its physical, chemical and biological characteristics. Additionally, it is considered one of the marine environments exposed to the highest anthropogenic pressure due to the large populations present along its coasts and the heavy maritime traffic while being at the same time a hot-spot for unique biological diversity.

Despite this, a large gap remains between the biotechnological potential of the resources present in the marine environment, and especially in the Mediterranean Sea, and their exploration and exploitation. While direct economical 'weight' of blue biotech is proportionally small today (with a high number of emerging topics with low TRL), it may have a great potential on the long term. Recent advances in genomics and other (bio)molecular techniques are providing all necessary tools to access the still-untapped marine biotechnological resources on a larger scale and, consequently, enabling exploitation of the true promise of the blue biotechnology.

Fiche 8 aims at supporting initiatives filling the "Blue Biotech" knowledge gap. This goal is at the crossroads of biotechnology, food production, and sustainable use of bio-resources with socioeconomic impacts in several fields. Convergences are clear with European biotech infrastructures and a number of other initiatives.

Goals

# EA2.1 Improve the knowledge of the Blue-Biotech

Increase and improve the knowledge on the Mediterranean Sea as a source of new molecules and compounds deriving from marine microbes, algae, seaweeds and invertebrates to be used for new drugs (e.g., antibiotics, antioxidants, immunomodulators, antivirals, antidiabetics anticancer compounds), functional ingredients for human health (e.g., polysaccharides, mineral, vitamins, proteins) and industry (e.g., pigments) and environmentally-applicable molecules or organisms (e.g., bioremediating microbes or agents).

#### EA2.2 Study and define the economic potential of Marine Biotechnology

Evaluate Blue Biotechnologies for their economical impact as a growing field, and promote the concept of industry-academia partnerships as a win-win collaboration system.

#### EA2.3 Support the development of Marine Biotech

Foster collaborative research through transdisciplinary fields of expertise (e.g. genomics, data bases, outreach) and promote education through training the next generation of marine biotechnologists.

# EA2.4 Implementing or create shared policies within the Mediterranean basin for a sustainable exploitation of marine bioresources and/or biomasses

Create, improve or implement dedicated policies on the use and exploitation of Mediterranean Sea environment and life for biotechnological purposes, and to share such common policies and practices among all the actors of blue-biotech in the Mediterranean area.

Mapping and discussing implementation options and potentials of this priority			
Recent and ongoing relevant projects			
PROJECT	DESC	RIPTION	OBJETIVES
ASSEMBLE Association of European Marine Biological Research Laboratories Expanded	<b>Call</b> : H2020- INFRAIA-1-2016-2017	EU Contribution:	ASSEMBLE Plus integrates over 30 marine biological stations and installations from various regions of the world's oceans and seas; providing scientists from academia, industry and policy with the services of these marine stations.
		€ 9.999.911,47	
	<b>Duration:</b> October 2017-September 2020	Website: http://www. assembleplus.eu/	
ВАММВО	Call: FP7-KBBE-2010-4	EU Contribution:	BAMMBO will provide innovative
Biologically Active Molecules of Marine Based Origin	<b>Duration:</b> March 2011-March 2014	€ 2.992.421 Website: http://www.	solutions to overcome existing bottle- necks associated with culturing marine organisms in order to sustainably produce high yields of value-added products for the pharmaceutical, cosmetic and
		bammbo.eu	industrial sectors.
BlueGenics	Call: FP7-KBBE	EU Contribution:	n: BlueGenics is an EU-FP7 project with the aim to combine the knowledge in marinegenomics, chemogenetics and advanced chemistry to produce recombinantly prepared novel secondarymetabolite (lead) compounds and analogous from them, as well as pharmacologically active peptides, and to bring them up to the pre-clinical, and hopefully also to the clinical studies.
From gene to bioactive product: Exploiting marine genomics for an innovative and sustainable European blue biotechnology industry	<b>Duration:</b> August 2012- July 2016	€ 5.999.869 Website: http://bluegenics. eu	
CIRCLES	Call H2020-SFS-2018-1	EU Contribution:	CIRCLES will provide the scientific
Controlling mIcRobiomes CircuLations for bEtter food Systems	<b>Duration</b> : November 2018-October 2023	€ 9. 999.964,88 Website: https:// circlesproject.eu/	knowledge to exploit natural microbiomes for the sustainable production of high-quality food, with the ultimate objective to deliver new and healthier food applications. CIRCLES will explore microbiome interactions and circulations across <b>7 food chains</b> : spinach, tomatoes, poultry, swine, farmed and wild salmon, and farmed and wild seabream.
EMBRIC	Call H2020-EU.1.4.1.1.	EU Contribution:	The objectives of EMBRIC are to: develop
European Marine Biological Research Infrastructure Cluster to promote the Blue Bioeconomy	<b>Duration:</b> June 2015-May 2019	€ 9 041 611 <b>Website:</b> www.embric.eu	and data resources, and deploy common underpinning technologies and practices; strengthen the connection of science with industry by engaging companies and by federating technology transfer services; defragment RDI policies and involve maritime regions with the construction of EMBRIC.
ERA-NET MarineBiotech	Call FP7-KBBE	EU Contribution:	ERA-NET MarineBiotech recognises
	<b>Duration:</b> December 2013-November 2017	€ 1.999.838 Website:	organisms are largely unexplored, understudied and underutilized, in spite of Europe's access to an extensive and diverse set of marine ecosystems, supporting an enormous marine biodiversity
		www.marinebiotech.eu	chormous munic biodiversity.
EUROFLEETS+ An alliance of European marine research infrastructure to meet the evolving needs of the research and industrial communities	<b>Call</b> H2O2O <b>Duration:</b> 01 February 2019 – 31 January 2023	EU Contribution: € 9.999. 360,.58 Website: https://www.eurofleets.eu	Integrating and opening existing national and regional research infrastructures of European interest. EUROFLEETS+ prioritises support for research on sustainable, clean and healthy oceans, linking with existing ocean observation infrastructures, and supports innovation through working closely with industry. The project will enable access to a unique fleet of 27 state-of-the-art research vessels from European and international partners.
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<b>GIAVAP</b> Genetic Improvement of Algae for Value Added Products	<b>Call</b> FP7-KBBE-2010-4 <b>Duration</b> : January 2011-December 2013	EU Contribution: € 5.596.607 Website: https://cordis. europa.eu/project/ rcn/97420_en	GIAVAP adapts genetic engineering techniques to various algal strains of economic interest focusing on carotenoid and PUFA production and the overexpression of peptides of commercial value. In parallel it will develop cultivation technologies, harvesting and extraction methods for lipids, carotenoids and proteins using existing model algae strains that will then be adapted to suitable improved strains. Furthermore products will be tested for energy, pharmaceutical, nutritional or medical applications for economic evaluation of the production processes and their economic exploitation.
INMARE Industrial Applications of Marine Enzymes: Innovative screening and expression platforms to discover and use the functional protein diversity from the sea	Call: H2O2O-EU.3.5. Duration: April 2015-March 2019	EU Contribution: € 5.999.557,13 Website: http://www. inmare-h2020.eu/ Contract Nr 634486	INMARE unifies multidisciplinary expertise and facilities, including advanced technologies to access and sample unique marine biodiversity hot-spots; state- of-the art technologies for construction of metagenomic libraries; innovative enzyme screening assays and platforms; cutting-edge sequence annotation pipelines and bioinformatics resources; high-end activity screening technology; bioanalytical and bioprocess engineering facilities and expertise, nanoparticle- biocatalysts; high-quality protein crystallization and structural analysis facilities and experts in IP management for biotechnology.
LYPOYEASTS Mobilising the enzymatic potential of hydrocarbonoclastic bacteria and the oleaginous yeast Yarrowia lipolytica to create a powerful cellular production platform for lipid-derived industrial	Call FP7-KBBE-2007-1 Duration: August 2008- July 2011	EU Contribution: € 911,111 Website: http://www.lipoyeasts. ugent.be	This project develops a versatile fermentation platform for the conversion of lipid feed stocks into diverse added-value products. It will develop the oleaginous yeast Yarrowia lipolytica into a microbial factory by directing its versatile lipid metabolism towards the production of different industrially valuable compounds.
MaCuMBA Marine Microorganisms: Cultivation Methods for Improving their Biotechnological Applications	<b>Call</b> FP7 Cooperation, KBBE <b>Duration:</b> August 2012 – July 2016	EU Contribution: € 8.999.948,00 Website: www. macumbaproject.eu	The objective of the MaCuMBA project is to uncover the untold diversity of marine microbes using cultivation-dependent strategies. Furthermore, MaCuMBA aims to improve the isolation rate and growth efficiency of marine microorganisms from conventional and extreme habitats by applying innovative methods and using automated high-throughput procedures

MAMBA Marine metagenomics for new biotechnological applications	Call FP7-KBBE-2008-2B Duration: July 2009- June 2013	EU Contribution: € 2.875.245 Website: http://mamba.habgor. ac.uk/media.php	The Project aims at the mining of individual enzymes and metabolic pathways from extremophilic marine organisms and the metagenomes from microbial communities from peculiar marine environments and consequent funnelling the new enzymatic reactions and processes towards the new biotechnological applications.
MAREX Exploring marine resources for bioactive compounds: from discovery to sustainable production and industrial applications	Call FP7-KBBE-2009-3 Duration: August 2010- July 2014	EU Contribution: € 5.999.984 Website: http://www.marex.fi	MAREX project will collect, isolate and classify marine organisms, such as micro- and macroalgae, cyanobacteria, sea anemones, tunicates and fish from the Atlantic, Pacific and Indian Oceans as well as from the Mediterranean, Baltic and Arabian Seas. Extracts and purified compounds of these organisms will be studied for several therapeutically and industrially significant biological activities, including anticancer, anti-inflammatory, antiviral and anticoagulant activities by applying a wide variety of screening tools, as well as for ion channel/receptor modulation and plant growth regulation.
<b>MarPipe</b> Improving the flow in the pipeline of the next generation of marine biodiscovery scientists	Call H2020-EU.1.3.1 Duration: November 2016-October 2020	EU Contribution: € 2 853 005,40 Website: www.marpipe.eu	MarPipe aims to discover and further develop lead compounds with anticancer and anti-infective activity that has already been identified by the consortium from extremophilic marine microorganisms.
MC4U Marine Genomics for Users	<b>Call:</b> FP7 <b>Duration:</b> January 2011 – June 2013	EU contribution : € 997.826 Website : www.mg4u.eu	MG4U is an FP7 coordination action which aims to facilitate knowledge transfer, technology transfer, and technology translation between high-throughput marine genomics, industry and society. Marine genomics has enormous potential to improve our lifestyles and prosperity, and to assist with governance and sustainable management of the marine environment. However, many end users of marine genomics knowledge are not yet aware of how marine genomics hold great potential for problem solving and industrial commercial advantage. Valuable knowledge needs to be made accessible and disseminated in user friendly contexts. MG4U aims to spread results from recent and on-going projects in marine genomics and facilitate rapid, efficient knowledge transfer to generate interdisciplinary research capacity in Europe.
Micro B3 Microbial Biodiversity, Bioinformatics and Biotechnology	<b>Call</b> FP7-KBBE <b>Duration:</b> January 2012- December 2015	EU Contribution: € 8 987 491 Website: www.microb3.eu	Micro B3 developsinnovative bioinformatic approaches and a legal framework to make large-scale data on marine viral, bacteria; archaeal and protists genomes and metagenomes accessible for marine ecosystems biology and to define new targets for biotechnological applications.

NoMorFilm Novel marine biomolecules against biofilm. Application to medical devices	Call H2O2O-EU.3.2. Duration: April 2015- March 2019 Call H2O2O-EU.1.3.3. Duration: December 2015-November 2019	EU Contribution: € 7.651.315 Website: www.normorfilm.eu EU Contribution: € 360.000 Website: www.oceanmedicines.eu	This project also addresses the biosynthesis of the targeted bioactive compounds in sustainable microalgae co-cultures, diminishing cultivation costs by mimicking natural aquatic ecosystems. Most industrially interesting antibiofilm molecules will be incorporated into nanoparticles in order to develop manufacturing methodologies able to incorporate these compounds into real prosthetic devices matrixes. Ocean Medicines is a network of academic, research centres and SMEs across Europe. The aim is to establish a network of collaboration and knowledge- exchange between industrial and academic partners to further develop lead compounds from marine microorganisms having anticancer or anti-infective effects that have already been identified by the consortium.
<b>PharmaSea</b> Increasing Value and Flow in the Marine Biodiscovery Pipeline	Call FP7-KBBE Duration: October 2012-March 2017	EU Contribution: € 9.465.907 Website: www.pharma-sea.eu	The PharmaSea project focuses on obstacles in marine biodiscovery research, development and commercialization and brings together a broad interdisciplinary team of academic and industry researchers and specialists to address and overcome these.
<b>PolyModE</b> Novel POLYsaccharide Modifying enzymes to Optimise the potential of hydrocolloids for food and medical applications	Call FP7-KBBE-2007-2A Duration: May 2009-April 2013	EU Contribution: € 5.999.948 Website: http://polymode.eu	The PolyModE project convenes an international, interdisciplinary, and intersectorial consortium to identify, characterise, and optimise novel polysaccharide modifying enzymes, and to develop robust fermentation strategies for their largescale production, to exploit the potential of biopolymers for food, pharmaceutical, cosmetic, and technical applications.
SeaBioTech From sea-bed to test- bed: harvesting the potential of marine biodiversity for industrial biotechnology SUNBIOPATH Towards a better sunlight to biomass conversion efficiency in microalgae	Call FP7-KBBE Duration: August 2012- July 2016 Call FP7-KBBE-2009-3 Duration: January	EU Contribution: € 7 461 716 Website: http://spider.science. strath.ac.uk/seabiotech/ EU Contribution: € 2.998.182	SeaBioTech is an EU-FP7 project designed and driven by SMEs to create innovative marine biodiscovery pipelines as a means to convert the potential of marine biotechnology into novel industrial products for the pharmaceutical (human and aquaculture), cosmetic, functional food and industrial chemistry sectors. SUNBIOPATH – towards a better sunlight to biomass conversion efficiency in microalgae – is an integrated program of research aimed at improving biomass
enciency in microalgae	2010-February 2013	Website: http://cordis.europa.eu/ project/rcn/92954_en.html	yields and valorisation of biomass for two Chlorophycean photosynthetic microalgae, Chlamydomonas reinhardtii and Dunaliella salina.
TASCMARToolsAndStrategiestoaccesstooriginalbioactivecompoundsfromCultivationofMARineinvertebratesandassociatedsymbionts	Call H2O2O-EU.3.2. Duration: April 2015- March 2019	EU Contribution: € 6.755.950,25 Website: http://www.tascmar.eu	TASCMAR project aspires to develop new tools and strategies in order to overcome existing bottlenecks in the biodiscovery and industrial exploitation of novel marine derived biomolecules (secondary metabolites and enzymes) with applications in the pharmaceuticals, nutraceuticals, cosmeceuticals and fine chemicals industries.

Chibio	Call: KBBE.EU.3.4-01.	EU Contribution:	ChiBio project is adopting the integrative			
Development of an		€ 2.904.425,00	and sustainable approach of a biorefinery,			
integrated biorefinery	Duration: November		shell waste by consecutive material and			
biowaste to specialty	2011 - November 2014	Website:	energetic utilisation process steps, in			
and fine chemicals		www.chibiofp7.fraunhofer.				
		de				
BIOVecQ Biotochnologia marina	Call: EIVP-(IT-TN) PS1.3 08.	EU Contribution:	The strategic project BIOVecQ (IT-TN) established a cross-border research			
vecteur d'innovation et		€ 1.549.790,40	cooperation between experts from Tunisia			
de qualité/ Marine biotechnology	Duration: February		valorization using biotechnological tools.			
vector of innovation and	2013- May 2016	eu	The project contributed to stronger links with the economic sector with establishing			
quality			agreements with private firms to transfer			
			(food/cosmetic). BIOVecQ contribute also			
			to the creation of a new Laboratory (Blue Biotechnology & Aquatic Bioproucts-			
			B <sup>3</sup> Aqua) startups and the harmonization of			
			Sicilian Labs.			
SecurAqua	Call: EIVP-(IT-TN)	EU Contribution:	The standard project SecurAqua (IT-TU)			
Sécurité et Qualité des Produits Aquacoles : le	PS1.3.020	€ 771.397.81	activities were conducted to establish the sanitary and nutritional statutes of			
développement d'une	2014- May 2016		farmed fish (marine and freshwater) and to bring innovation to sector This			
sicilienne/		<b>Website:</b> www.securaqua.	project contributed to farmed products			
Safety and quality of aquatic products:			accreditation of B <sup>3</sup> Aqua laboratory in			
towards establishing			INSTM-Tunisia.			
Sicilian route						
Progr	ammes and initiatives of rel	evance, including research ar	nd data infrastructures			
	EUROPEAN INF	RASTRUCTURES AND INITIA	TIVES			
EMBRC (The Europea societal Crand Challer	n Marine Biological Resourc	e Centre) is a global reference	e Research Infrastructure responding to the			
MIRRI (Microbial Res	ource Research Infrastructu	ire) is the pan-European rese	earch infrastructure for microbial resources			
<ul> <li>(https://www.mirri.or</li> <li>ELIXIR is an intergove</li> </ul>	·g). rnmental organisation that b	rings together life science reso	ources from across Europe. These resources			
<ul> <li>include databases, so</li> <li>ESERI (European Strat</li> </ul>	ftware tools, training materi	als, cloud storage and superc	omputers (https://elixir-europe.org).			
for the next 10-20 yea	for the next 10-20 years in the context of the Lisbon agenda, and will have a major impact on marine research infrastructures					
EU IBISBA 1.0 Industr	<ul> <li>and will play a role in Marine Biotechnology development in Europe.</li> <li>EU IBISBA 1.0 Industrial Biotechnology Innovation and Synthetic Biology Accelerator. EU-IBISBA it is an emerging ESFRI</li> </ul>					
approved (2018), distr synthetic biology. The	ributed European research a aim is to support and accel	nd innovation infrastructure th erate the uptake of industrial	hat will support industrial biotechnology and biotechnology as a key enabling technology			
for advanced manufa	cturing. To do this, IBISBA 1.0	D will provide a distributed ne	etwork of research infrastructure facilities to			
יון מאמי איז איזאראין איז	rocess development and Su	pport this bioeconomy KET (V	v vv vv.ibisba.eu).			

The European Straits Initiative (ESI) is a multilateral cooperation launched in 2009 by Pas-de-Calais County Council (France) and Kent County Council (United-Kingdom), the lead partners on the shores of Dover Strait. ESI now brings together 11 straits, representing 24 partners. ESI works towards the recognition of the specificities of European straits in current debates and the launch of structuring projects in these territories. ESI encourages exchange of experiences between partners facing similar issues, for example through European cooperation projects (http://www.europeanstraits.eu/).

 PANORAMED – Governance platform that supports the process of strengthening and developing multilateral cooperation frameworks in the Mediterranean region for joint responses to common challenges and opportunities. Panoramed will dedicate a specific call for Innovation on Blue Technology and Social Innovation themes.

## Conferences

- GIM. International Symposium on the Genetics of Industrial Microorganisms. It will focus on the most recent advances in the microbial sciences related to industrially relevant microorganism as producers of bioactive molecules, of fine chemicals, of flavors, etc., and to be used as whole cells for health and wellbeing.
- SIMGBM. Congress of the Italian Society of General Microbiology and Microbial Biotechnology. Every year brings together the Italian and international experts working on different aspects of microbiology and biotechnology.
- FISV. Congress of the Italian Federation of Life Sciences. In particular topic: Environmental Microbiology and Biotechnology; Genetics of Microorganisms.
- European Congress of Biotechnology, which is held by rhe European Federation of Biotechnology (EFB), a non-profit federation of National Biotechnology Associations, Learned Societies, Universities, Scientific Institutes, Biotech Companies and individual biotechnologists working to promote biotechnology throughout Europe and beyond.
- CIESM Conference The Mediterranean Science Commission, that organizes always a dedicated session to marine microbiology & biotechnology.
- BlueProduct. Congress on alternative ingredients production from sustainable aquatic sources: Identifying opportunities for new technologies and businesses.

## EUROPEAN POLICIES

• OECD SCIENCE, TECHNOLOGY AND INNOVATION. Innovation for a sustainable ocean economy (in 2030).

## MACRO-REGIONAL STRATEGIES AND PROGRAMMES

• EU Strategy for the Adriatic and Ionian Region (EUSAIR), with particular reference to the Interreg ADRION (Adriatic-Ionian) projects (https://www.adriatic-ionian.eu/).

#### Target sectors and groups

## **Intergovernmental Bodies**

- EC-DG Mare (https://ec.europa.eu/maritimeaffairs/home\_en).
- UNEP/MAP (http://web.unep.org/unepmap/).
- Union for Mediterranean (UfM) (https://ufmsecretariat.org/).
- GFCM (http://www.fao.org/gfcm/en/).
- Organisation for Economic Co-operation and Development (OECD) (http://www.oecd.org/science/).

## Clusters

- Cluster Tecnologico Nazionale "Blue Italian Growth" (BIG): BIG will answer to the main social challenges regarding marine coastal environments, blue biotechnologies, renewable sources of energy from the sea, abiotic and biotic marine resources, marine robotics, within the frame of the sustainable use of the sea.
- Bio-based business/R&D: such cluster will integrate innovative biotechnological tools and processes including waste utilisation for the development of innovative aqua-food and ingredient products.
- Blue bioenergy: this will rely on alternative aquatic and sustainable bio-resources production such as microorganisms (micro-algae, bacteria and yeast) for commodity chemical and bioenergy generation.

## Funding options and agencies

#### International Programmes

- Horizon 2020.
- BBI JU. The Bio-Based Industries Joint Undertaking (BBI JU) is a €3.7 billion Public-Private Partnership between the EU and the Bio-based Industries Consortium. Operating under Horizon 2020, this EU body is driven by the Vision and Strategic Innovation and Research Agenda (SIRA) developed by the industry.
- Horizon Europe.
- Interreg MED 2014–2020.
- Interreg-IPA.

Ac	tivities to promote the SRIA Implementation	<u>on</u>	
Examples of activities	Content and objective		How and timeframe
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]	[Champion countries explain how the activity can be carried out and timeframe within the IP (2020-2023)]	
Networking and engagement of economic sectors and national Blue Growth communities	<ul> <li>Workshop on Blue Biotechnology.</li> <li>Creation of a transnational platform dedicated to blue biotechnology products.</li> </ul>	How:	<ul> <li>Workshop for national and international authorities and stakeholders, to favour exchanges and to identify the topics of interest of companies and needs of consumers.</li> <li>Extending existing cross-border platforms to a transnational level.</li> </ul>
		When:	2020-2021.
Alignment and coordination	<ul> <li>GSO BlueMed WG.</li> <li>Alignment to the Marine Biotechnology ERA-NET (ERA-MBT) Biotechnology Strategic Research and Innovation Roadmap.</li> <li>Alignment and coordination with</li> </ul>	How:	Meetings, working groups and activities to define and identify priority topics and actions and to strengthen communication and institutional collaboration.
	IBISBA 1.O.	When:	2020-2023.
Promotion and possibly implementation		How:	
of actions coordinated and jointly undertaken by different countries, with a "variable geometry" approach		When:	
Start-Up actions	Creation of startups within Blue living labs or companies.	How:	EU, FAO or national funding calls.
		When:	2021.
Assessment and promotion of the	Capitalization of the results from the	How:	Workshops and meetings.
the BLUEMED umbrella of ongoing and future projects	the areas of interest within BLUEMED.	When:	2020-2023.
Lobbying actions	Actions to highlight the importance	How:	Workshops and meetings.
	of Blue Growths and Biotechnologies, also by promoting new dedicated calls within EU and Regional Initiatives.	When:	2020-2023.
Training and capacity building initiatives	Training course on Blue Biotechnologies and Blue Bio-economy also aiming at the creation of blue careers.	How:	Organisation and/or participation to training courses.
		When:	2020-2021.

# FICHE 9

# PROMOTE THE ROLE OF MARINE RENEWABLE ENERGIES (MRE) IN THE ENERGY TRANSITION PHASE

## CO-CHAMPION COUNTRIES: FRANCE & TURKEY

## Background

Though the Mediterranean Sea is a vast territory, several characteristics applies to it as a whole:

- Deep water even close to the shore.
- Very small tidal range and then low tidal currents (except in localised corridors).
- Many islands.
- Inhomogeneous winds distribution with localized strong wind areas.
- Evaporation basin, high amount of solar energy.

The blue energy sub-sectors that constitute a real opportunity for the Mediterranean Sea are the floating offshore wind and to a lesser extent the wave and tidal (hydrodynamic current) energies:

- Offshore Wind Energy (OWE), with bottom-fixed Wind Farm technology up to now, is the fastest growing activity in the blue economy in Europe. Among it Floating Offshore Wind Technology (FOWT) that can be deployed in Mediterranean deeper waters, has made MRE a breakthrough innovation market.
- Wave and tidal Energy: progress has been made as regards these energies demonstration. Production systems could be deployed locally, particularly for insular territories.

These two areas of MRE are very different economically:

- OWE (Offshore Wind Energy) have reached maturity: tens of billions of dollars / Euros are invested every year in the world for OWE, which allows to produce this energy at competitive costs (about 50 € / MWh) thanks to the experience curve of these technologies.
- Other oceanic MREs (waves, tidal, etc.) have been in the demonstration phase for a long time and the objective is to reduce their operating costs so that they can be applied to specific territories (islands).

It is also important to analyze the potential co-activities of MREs for designing integrated multi-purpose platforms that can serve both wind and other sectors, including aquaculture and bioenergy, for example with fisheries and aquaculture, particularly IMTA.

Other uses of offshore energy production are the decentralized production of fuels to be used for fuel cells and in electrolytic processes (methanol, hydrogen ...), the desalination processes of seawater and for aquaculture activities.

Therefore, MRE will have a direct and important impact on other key blue growth sectors such as, harbour and shipping industries, tourism, maritime surveillance, fishing and aquaculture. MRE are expected to have a great impact in terms of economic development, jobs and well-being of citizens.

## Mapping and discussing implementation options and potentials of this priority

#### Recent and ongoing relevant projects

**European collaborative projects** funded by INTERREG-Med, H2O2O or Med-Maritime Integrated programs are very active in related countries. They tackle various relevant challenges linked to promotion, knowledge sharing and key R&D barriers that the marine renewable energy sector is currently facing.

Some of these European collaborative projects have more of a promoting goal: for example BLUENE aims to contribute to the Blue Growth by enlightening economic opportunities generated by marine resources, ENERCOAST aims at identifying technical and non-technical solutions to increase the use of renewable energy sources technologies in marine-coastal areas, PELAGOS targets the creation of transnational Mediterranean innovative cluster in blue energy, which would be composed of seven national clusters while PRISMI promotes renewable energy sources integration for smart Mediterranean islands and MAESTRALE aims to broaden the sharing of knowledge among scientists, policy makers, entrepreneurs and citizens and encourage effective measures and investments for the blue growth.

Other European collaborative projects are more R&D-focused: they usually deal with one specific R&D aspect that is key for the future development and commercialization of blue energy technologies. For example, OSMOSE, DREAM and TILOS work on the smart electrical grid needs: OSMOSE aims for the development of an optimal system-mix of flexibility solutions for European electricity while DREAM laid the foundations for a novel "heterarchical" management approach of complex electrical power grids, providing new mechanism for consumer involvement in economic and ecological electricity use as well as stable and cost effective integration of distributed renewable resources. TILOS focuses more on smart grids for insular territories as it aims at demonstrating the optimal integration of local scale energy storage in a smart island micro grid that will also communicate with a main electricity grid in order to fully integrate renewable energy sources to the power system. Other projects focus on new concepts such as multi-purpose floating offshore systems (REPOS), modular steel jacket for offshore wind farms (JABACO) and innovative meteorological mast platform (FLOATMASTBLUE). On their side, MARINET and DTOCEAN PLUS aims at providing easier access to R&D tools, as they respectively target research infrastructure integration and easy access and design tools availability.

COCONET – towards COast to COast NETworks of marine protected areas (from the shore to the high and deep sea), coupled with sea-based wind energy potential (FP7 project). Other projects concerning big data management should be highlighted too. These projects focus on the observation of social, physical, biological and chemical parameters of Mediterranean seas in order to develop accurate management systems to increase the effectiveness and mitigate potential impacts of offshore renewable energy investments.

To be noted that the European Union, via for example its H2O2O SME Instrument's project also finances projects developed by SME's. This is the case of Ideol in France with its Leadfloat project, Nautilus in Spain which both worked on a type of floating foundation for floating offshore wind turbine and iReact project developed by EMTECH Diastimiki, which is a smart-grid component to facilitate automated reactive load compensation in power distribution substations for Offshore and Onshore Renewable Energy Sources.

Although the EU finances many projects linked to the blue energy sector, it is key to point out that several projects are also led at national level only. This is the case for example of E-Wave in Cyprus, a project which was developed by the Oceanography Centre of the University of Cyprus and which studied the wave energy potential. In Turkey a nationally pilot project on wave energy has been established in Zonguldak (Black Sea). In France, France Energy Marine has launched and managed more than 30 R&D projects since 2012 through 4 research programs.

Another type of projects that cannot be left aside given their significant impact on the blue energy sector development in Europe are demonstration projects and pilot farms.

For what relates to the floating offshore wind sector, we can count 4 pilot farms in France, 1 in Portugal and 2 in Spain that should be in operation in the coming years: 3 of these pilot farms are located in the Mediterranean Sea (off the French coast in Gulf of Lion).

MISTRAL Mediterranean Innovation STRAtegy for transnational activity of clusters and networks of the Blue Growth.

MISTRAL\_Marine Renewable Energies: https://mistral.interreg-med.eu/

PELAGOS. PELAGOS aims to establish a transnational Mediterranean Cluster in Blue Energy (BE) to accelerate the development of BE sector in Mediterranean coastal, insular and marine regions. https://pelagos.interreg-med.eu/

PHAROS4MPAs - A review of solutions to avoid and mitigate environmental impacts of offshore windfarms R https://pharos4mpas. interreg-med.eu/

PROJECT	DES	SCRIPTION	OBJETIVES
<b>BLUENET</b> Creating new life for discarded fishing and aquaculture gears to prevent marine litter generation	<b>Call:</b> EASME/ EMFF/2017/1.2.1.12 - Sustainable Blue Economy <b>Duration:</b> 01/02/2018 - 31/07/2020	EU Contribution : 550.691,00 € Website : https://www. bluenetproject.eu/	BLUENET will set up a programme for recycling abandoned, lost or discarded fishing and aquaculture gear: recovering gear from the sea and using it as raw material to manufacture new gear. Spain and Italy
ENERCOAST Renewable energies in the marine-coastal areas of the Adriatic- Ionian region	Call: Interreg MED Programme	EU Contribution : 289.000,00 € Website : http://www. medmaritimeprojects.eu/ section/enercoast	The specific objective of the ENERCOAST project is to obtain clear proposals on how to contribute to the Blue Growth with emphasis on technical and economic activities of blue energy in the Adriatic- Ionian marine-coastal are such as: solar radiation, wind power, wave and tidal current power and sea water thermal energy to be used in heat pumps.
PELACOS Promoting Innovative NEtwork Sand CLusters Form Arine Renewable Energy SynerGies In Mediterranean COasts And ISlands	<b>Call:</b> Interreg MED Programme <b>Duration:</b> 01/11/2016 – 30/04/2019	EU Contribution : 2.042.200,00 € Website : https:// pelagos.interreg-med.eu/	PELAGOS targets the creation of transnational Mediterranean innovative cluster in blue energy, which would be composed of seven national clusters.
<b>PRISMI</b> Promoting RES Integration for Smart Mediterranean Islands	<b>Call:</b> Interreg MED Programme <b>Duration:</b> 01/11/2016 – 30/04/2019	EU Contribution : 509.637,06€ Website : https://prismi. interreg-med.eu/	PRISMI promotes renewable energy sources integration for smart Mediterranean islands.
MAESTRALE	Call: Interreg MED Programme Duration: 01/11/2016 – 30/11/2019	EU Contribution : 2.046.311,25€ Website : https:// maestrale.interreg-med. eu/	The project Maestrale intends to lay the basis for a Maritime Energy Deployment Strategy in the Mediterranean. Based on a survey of existing and innovative technologies, hindrances and potentials in participating countries, it aims to widen knowledge sharing among scientists, policy makers, entrepreneurs and citizens and prompt effective actions and investments for blue growth. Notwithstanding the large number of academic and technical studies in the field of renewable blue energy, there is a lack of concrete initiatives and operating plants in the MED area. To fill this gap, project partners will cooperate to detect maritime renewable energy potentials in participating countries as regards their physical, legal, technological, economic and social contexts. Among the issues to be faced, there are environmental sustainability, technological innovation, acceptability by citizens, and possible conflicts with marine ecosystems.

OSMOSE Optimal System-Mix Of flexibility Solutions for European electricity	Call: H2020- EU.3.3.4. Duration: 01/01/2018 - 31/12/2021	EU Contribution : 21 852 098,69€ Website : https://www. osmose-h2020.eu/	OSMOSE aims for the development of an optimal system-mix of flexibility solutions for European electricity. OSMOSE proposes four TSO-led demonstrations (RTE, REE, TERNA and ELES) aiming at increasing the techno-economic potential of a wide range of flexibility solutions and covering several applications, i.e.: synchronisation of large power systems by multiservice hybrid storage; multiple services provided by the coordinated control of different storage and FACTS devices; multiple services provided by grid devices, large demand-response and RES generation coordinated in a smart management system; cross-border sharing of flexibility sources through a near real- time cross-border energy market.
DREAM Design for Resource and Energy efficiency in cerAMic kilns	<b>Call:</b> H2020- EU.2.1.5.3. <b>Duration:</b> 01/10/2016 – 30/09/2019	EU Contribution : 21 852 098,69€ Website : https://www. spire2030.eu/dream	DREAM laid the foundations for a novel "heterarchical" management approach of complex electrical power grids, providing new mechanism for consumer involvement in economic and ecological electricity use as well as stable and cost effective integration of distributed renewable resources.
TILOS Technology Innovation for the Local Scale, Optimum Integration of Battery Energy Storage	Call: H2020- LCE-2014-3 Duration: 01/02/2015 - 31/01/2019	EU Contribution : 11,008,623€ Website : http://www. tiloshorizon.eu/	The TILOS project is testing the integration of an innovative local-scale, molten-salt battery (NaNiCl2) energy-storage system in the real grid environment on the island of Tilos (Greece). It is planned to test smart grid control system and provision of multiple services, ranging from microgrid energy management, maximisation of RES penetration and grid stability, to export of guaranteed energy amounts and provision of ancillary services to the main grid. The battery system is used to support both stand-alone and grid-connected operations, while ensuring its interoperability with the rest of microgrid components and demand side management.
JABACO Development of modular steel jacket for offshore windfarms	Call: European Union Research Fund for Coal and Steel Duration: 01/07/2015- 31/12/2018	EU Contribution : 1.429.196€	Aim of JABACO is to develop a Modular Jacket concept composed by components of pre-qualified quality, for cost reduction of offshore wind farms. The concept is based on an integrated design considering water depths 30-80m, turbine sizes 5-10 MW, in the North Sea and the Mediterranean. Design of basic six cases, tests and numerical simulations of structural components conducted together with a sensitivity analysis. Deliverable is the "JABACO manual", containing procedure / recommendations for modular jacket design and the six case studies optimized, which will define apathway to lowering cost of energy for upcoming offshore wind farms in European waters.
FLOATMASTBLUE Offshore Wind Energy Cost Reduction by an Innovative Floating Met Mast Platform	Call: H2O2O-EU.3.2.5. H2O2O-EU.3.2.3. H2O2O-EU.2.3.1. Duration: 01/12/2017- 30/11/2020	EU Contribution : 2.048.567,51€ Website : http://www. floatmast.com/	FloatMast is a floating platform that performs the best wind data measurements for the most promising and advanced Blue Energy activity, Offshore Wind Parks (OWPs). These wind measurements are vital for the cost benefit analysis of OWPs as they are used in the estimation of the annual income.

MARINET 2 Marine Renewable Infrastructure Network for Enhancing Technologies	Call: H2020- EU.1.4.1.2. Duration: 01/01/2017- 30/06/2021	EU Contribution : 10.592.285,23€ Website : http://www. marinet2.eu/	Integrating activities planned under MaRINET 2 build upon the achievements of the advanced community created in MaRINET FP7. MaRINET 2 will ensure the continued integration and enhancement of all leading European research infrastructure and facilities specialising in research, development and testing of offshore renewable energy systems including electrical sub systems and grid integration through a range of TRLs (1-7). MaRINET FP7 proved the added value of uniting these facilities, and substantially improving their capability as a community of practice to deliver consistent testing services ensuring, quantifiable, stepwise innovation and progress in the development of devices and key components, and identifying critical areas for further technical investigation and enhancement.
DTOCEAN PLUS Advanced Design Tools for Ocean Energy Systems Innovation, Development and Deployment	<b>Call</b> : H2020- EU.3.3.2. <b>Duration:</b> 01/05/2018 - 30/04/2021	EU Contribution : 6.689.076,50€ Website : https://www. dtoceanplus.eu/	Ocean Energy can play an important role in addressing one of the EU's biggest challenges: providing clean, affordable and sustainable energy. However, ocean energy technologies are not yet mature enough to overcome all challenges related to performance, reliability, survivability, and resulting cost of energy. DTOceanPlus will accelerate the commercialisation of the Ocean Energy sector by developing and demonstrating an open source suite of design tools for the selection, development, deployment and assessment of ocean energy systems (including sub- systems, energy capture devices and arrays). This will align innovation and development processes with those used in mature engineering sectors.
COCONET Towards COast to COast NETworks of marine protected areas ( from the shore to the high and deep sea), coupled with sea-based wind energy potential	Call: FP7-KBBE Duration: 01/02/2012 - 31/01/2016	EU Contribution : 9.000.000€ Website : https:// cordis.europa.eu/project/ id/287844/reporting	CoCoNet focused on the Mediterranean and the Black Seas and its objectives were the production of: 1- Guidelines for the institution of networks of Marine Protected Areas (MPAs); 2 - Smart Wind Chart evaluating the feasibility of Offshore Wind Farms (OWFs). Both objectives call for the identification of spatially explicit marine units where the management of human activities (both in terms of protection and in clean energy production) is based on the features of natural systems, as both the ecosystem approach and marine spatial planning require. Desk-based and field studies (carried out in two pilot areas) identified these natural units as Cells of Ecosystem Functioning (CEFs): portions of the water column that are more connected with each other than with other portions. This novel concept is based on connectivity and will prove useful for any planning of the use of marine space. The data gathered during the project are stored into a multi-layered Geodatabase, an essential platform to achieve full awareness of the natural and socio-economic features of the marine environment.

FLOATCEN Demonstration of two floating wind turbine systems for power generation in Mediterranean deep waters	<b>Call</b> : FP7-ENERGY <b>Duration:</b> 01/01/2013 - 31/12/2016	EU Contribution : 19.568.404€ Website : https:// floatgen.eu/	The objective of the FLOATGEN project is to demonstrate the technical and economic feasibility of two different multi-megawatt integrated floating- wind turbine systems in deep waters, never applied before to Mediterranean Sea conditions, in order to extend deep offshore wind resources and demonstrate decrease of costs for electricity generation down to competitive level. The project will also assess, compare and obtain conclusions about performance of suchtwo different combinations of wind turbine and floating structure technologies to get the knowledge to improve performance of the future replication projects of these technologies.
LEADFLOAT Leading the Floating Wind Market Development	Call: H2O2O-EU.3 H2O2O-EU.2.3. H2O2O-EU.2.1 Duration: 01/10/2018 - 30/09/2020	EU Contribution : 2.498.562,50€ Website : https:// www.ideol-offshore. com/en/leadfloat	IDEOL, a French SME created in 2010, has emerged as one of the few international leaders in floating wind, with two demonstrators built in France and Japan, relying on its patented floating platform technology, the most cost competitive solution in the market. Its team, composed by more than 40 engineers, is globally recognized as one of the best technical team with a unique know-how and innovative approach. IDEOL is already engaged in different pre-commercial and commercial projects in France, Japan and California. It is the only European technology provider and the only foreign company having convinced the Japanese government and experts. LEADFLOAT aims to impose IDEOL's solution as the market leader of floating wind by keeping its cost competitiveness advantage, leveraging on its demonstrators' return of experience and securing early market share in key markets. It will contribute to keep Europe ahead and to positions its industry on the top of the new emerging floating-wind market over the competition from US and Japan.
E-wave	<b>Duration:</b> 03/01/2011 - 26/01/2010	Website : http://www. oceanography.ucy.ac.cy/ ewave/	The development of an integrated, high resolution system for monitoring the energy potential from sea waves at the Exclusive Economical Zone (EEZ) of Cyprus coupled with the well established Cyprus Coastal Ocean Forecasting System (CYCOFOS).
MISTRAL Mediterranean Innovation Strategy for transnational activity of clusters and networks of the Blue Growth	Call: Interreg- MED 2014-2020 Duration: 48 months	EU Contribution: 4.100.000€ Website: https://mistral. interreg-med.eu/	<ul> <li>to promote and make effective a transnational BG ecosystem of innovation where SMEs and corporate, RTOs, higher education institutions, public sector, cooperate to:</li> <li>Develop sustainable innovation actions,</li> <li>Increase their innovation performance,</li> <li>Sustain the development of the entrepreneurial spirit,</li> <li>Increase the access and sharing of the marine knowledge.</li> </ul>

PHAROS4MPAS Blue Economy and Marine Conservation: Safeguarding Mediterranean MPAs in order to achieve Good Environmental Status SRIA Action: E2.3 / E2.8	Call: Interreg MED Programme 2014-2020 Duration: December 2017 - May 2019	EU Contribution: 1.179.496,57 € Website: https:// pharos4mpas.interreg- med.eu/	The general objective of the PHAROS4MPAs project is to enhance management effectiveness and networking for Mediterranean MPAs, in order to contribute to the conservation of marine biodiversity and natural ecosystems, taking into account the complex ensemble of human activities developed within the Blue Growth perspective and their interaction with protected areas and marine ecosystems. Project outputs include delivering common capitalization baselines, recommendations and policy tools adapted to appropriation by the MedPAN network MSP authorities the European		
			Commission, the Barcelona Convention and the various maritime sectors.		
Prog	rammes and initiative	es of relevance, including res	search and data infrastructures		
	INTERNA	TIONAL PROGRAMMES AN	D INITIATIVES		
• The 2030 Agenda and modern energy	<b>a for Sustainable Dev</b> rgy for all.	<b>elopment 2016-2030</b> – Goal	7: Ensure access to affordable, reliable, sustainable		
• The Atlantic Strat grid.	t <b>egy</b> – reduce Europe	's Carbon Foot Print through	offshore renewable energy and associated energy		
<ul> <li>UfM Ministerial D https://ufmsecre UfM Ministerial D https://ufmsecre changes.pdf</li> <li>UfM Working Gro https://ufmsecre</li> <li>Any other relevant</li> </ul>	<ul> <li>UfM Ministerial Declaration on Blue Economy (2015; a new one upcoming in 2021) https://ufmsecretariat.org/wp-content/uploads/2015/11/2015-11-17-declaration-on-blue-economy_en.pdf UfM Ministerial Declaration on Environment and Climate Change" (2014; a new one upcoming in 2020) https://ufmsecretariat.org//wp-content/uploads/2014/05/20140515_UfM_declaration_FINAL_compromiseeditorial- changes.pdf</li> <li>UfM Working Group on Blue Economy https://ufmsecretariat.org/ufm-working-group-blue-economy/</li> <li>Any other relevant UfM Ministerial (transport_energy_sustainable urban development_etc.), related strategies</li> </ul>				
programmes and https://ufmsecre	tariat.org/what-we-d	o/water-environment/			
	EURO	PEAN PROGRAMMES AND I	NITIATIVES		
<ul> <li>Renewable Energy Directive of the European Union - (2008, renewed in 2014), to reach 27% share of renewable energy consumption in 2030. Energy generated by offshore wind power has gained increasing importance in the EU as well as worldwide.</li> <li>European Strategic Energy Technology Plan (SET PLAN) aims to accelerate the development and deployment of low-carbon technologies. It seeks to improve new technologies and bring down costs by coordinating national research efforts and helping to finance projects. Concerning FOWE (Floating Offshore Wind Energy), SET Plan targets in its declaration of Intent to develop "cost-competitive integrated wind systems, including infrastructure that can be used in deeper waters (&gt;50 m) at a maximum distance of 50km from the coastline with a level energy cost of less than € 120/ MWh by 2025 and less than 90€/MWh by 2030, in the interest of cost competitiveness. Given the great dynamics of development of this energy worldwide it is likely that these cost targets will be achieve more quickly and will continue to lower to reach the costs of the bottom-fixed Wind Farm, e.g. around 50€/ MWh https://setis.ec.europa.eu/system/ files/setplan_wind_implementationplan_0.pdf</li> <li>European Regional Development Fund – supports regional and local development ty co-financing investments in energy and transport infrastructures.</li> <li>Cohesion Fund – encourages investments, especially in the field of trans-European transport networks and investments related to energy benefiting to the environment in terms of energy sufficiency:         <ul> <li>Promotes the production, distribution and use of energy derived from renewable sources;</li> <li>Supports energy efficiency and smart energy management.</li> </ul> </li> </ul>					
<ul> <li>products and bio</li> <li>EU Blue Growth objectives focuse</li> </ul>	<ul> <li><u>bioeconomy strategy</u> - addresses the production of renewable biological resources and their conversion into vital products and bio-energy.</li> <li><u>EU Blue Growth Strategy</u> - supports sustainable growth in the marine and maritime sectors as a whole. One of its objectives focuses on ocean energy.</li> </ul>				

## Target sectors and groups

The main objective is to produce energy at competitive costs (about  $50 \in /MWh$ ), especially for OWE and at competitive costs for other MRE (waves, tides, marine bioenergy) in specific areas where the energies are expensive, as in the islands. These MREs must be accepted as new activities at sea, where there are many historical actors, and to have acceptable impacts on ecosystems (marine ecosystems, avifauna).

As a result, MREs will have a **direct and significant impact** on other key sectors of blue growth such as the **port and maritime industries, tourism, maritime surveillance, fisheries and aquaculture.** MREs should have a **significant impact in terms of economic development, jobs and citizens' well-being.** 

Target groups and stakeholders can be classified in different kinds of entities: **companies, public authorities, associations, professional and support organizations, which help the development of innovation.** It is hence a very wide category and the project partners from the Mediterranean countries under study reference heterogeneous actors. However, some tendencies can be highlighted.

Target groups and stakeholders of the Blue Energy are mainly evaluated with medium relevance for the development of the sector and a medium-high readiness level. These actors have an important role to play in the innovation in this area.

For countries with less maturity in the field of MREs, **public authorities** are the key stakeholders to target. For countries with a higher MREs maturity level, the target groups will rather include **private entities** such as companies and professional networks/ associations. It is a good projection of the market maturity and potential: in countries where there are fewer opportunities, private entity does not yet seize markets.

#### The most important target groups are those of the company's energy ecosystem.

This ecosystem includes actors from several categories that are sometimes different depending on the country: in particular in the European countries, there are no longer state-owned companies while in other countries this sector is nationalized.

We can mention the following actors:

- **Energy operators** (two main categories):
  - Most of them are <u>energy operators</u> with long-standing positions in the field of fossil fuels (oil, gas, coals... Nuclear, hydroelectricity...). These operators exist in each Med country:
    - France: EDF, ENGIE, TOTAL;
    - Spain IBERDROLA, UNION FENOSA;
    - Greece IED;
    - Italy <u>ENEL</u>, EDI POWER;
    - Portugal: <u>EDP;</u>
    - Turkey: EÜAŞ (Elektrik Üretim A.Ş.)
    - o Etc...
  - We notice the emergence of more <u>recent alternative energy operators</u>, especially in the field of renewable energies:
    - Sometimes they are subsidiaries of the groups mentioned above such as <u>EDF</u> <u>Energies Nouvelles</u> in France;
    - o Other times they are new companies: Quadran Marine Energies.
  - Managers of electrical networks:
    - Managers of electricity grids are important because renewable energies, which are by their nature highly distributed, involve new networks, such as <u>RTE</u> in France.
  - Energies unions:
    - Unions or federations represent operators and lobby at national and European level. For example, in France: France Energie Eolienne (FEE), the Union of Renewable Energies (SER), etc.
  - Engineering of energy.

Environmental NGOs also have a growing influence in the field as they promote more and more "green energies" such as <u>WWF</u>.

The European Parliament and the European Commission also have a prominent role in the domain. All these actors mentioned above can play an important lobbying role with European authorities.

## Funding options and agencies

Investments in renewable energy depend on countries' energy policies. MREs are part of these policies and are related to natural features and supporting industries, mainly energy and maritime, in these countries.

European policy provides guidance in this area and projects: R & D, demonstration, cooperation between interested countries (e.g. MED) contribute to strengthening the implementation of MREs.

Currently the technologies are generally mature but there is still research and innovation needed to reduce the LCOE so that these energies are competitive and less and less subsidized by public budgets.

The large-scale demonstrators are being tested; they have been helped by European funds. It is no longer necessary to launch new demonstrators. On the other hand, it is necessary to share the results of these experiences between the potentially interested countries.

### Resources/ funding

Despite the strong commitment of the EU through its funding programs and the investment of some countries, there is a lack of funding for Blue Energies.

It is needed to have public funds targeting the economic development and sustainability of the technologies, in order for them to become cost-competitive.

In fact, it is key to note that the current scheme of national financing of commercial plants, such as offshore wind energy commercial plants in France, is controversial. In fact, the French government does not directly subsidise the commercial projects, however it commits to buy the produced electricity at a price higher than the current electricity market: although it has yet to be confirmed for the FOW commercial plants in the Mediterranean Sea, the committed buying price would be in the range of 90–120 €/MWh, which is 40 to 70€/MWh greater than the 50 €/MWh current market price. This constitutes a significant cost for the state, and behind it, taxpayers.

Consequently, public national financing should grand projects working on cost-reduction and cost-competitiveness of MRE, otherwise the subsidy bill for commercial plants (once in operation) will be tremendous. By enabling MRE to become cheaper, through innovation and economies of scale, funding of new commercial plants will be more affordable.

There is also a need for funding in order to assess the environment interaction and impact of MRE to improve public acceptance. A need for new and adapted infrastructures to the development of MRE has been expressed (for ports especially).

- Funds come mainly from the EU. National or regional governments could develop funding plan as well in that sector. National initiatives could be as well tax incentives
- Possibility to enhance private funding though investor confidence reinforcement (ref. policies);
- Governments have to have clear communication on the available funds and political intent.
- Investment funds could come European Bank or World Bank or other investment bank specially for non-EU countries.

#### Access to funding

The public commitment will stimulate private investment and foster a long-term investors' confidence for the future of marine energy industry in MED. The countries in which investments were first and most important (Germany, Netherland, Denmark, the UK and more recently France) have changed their legislation to facilitate investment in offshore wind farms. This change is mainly about the risk reduction of investors (energy specialists) who respond to the call for tenders. This risk reduction is based on the fact that the Public authorities give the tender specifications full knowledge of the initial states (soil, wind, environment, etc.). Thus investors do not take a margin for risks. As MRE are at different stages of development, those investments are expected to finance from the early stage devices, to pilots, large scale demonstrators and commercial farms installation.

They are also required to de-risk the technologies that will be deployed at a commercial stage. In most of the European countries where MRE are currently developed/ under development, national public calls for projects were launched (England, France, Germany and Portugal). Time will be finally necessary to the production price as the experience curve (Boston Consulting Group) demonstrates: "company's unit production costs would fall by a predictable amount—typically 20 to 30 percent in real terms—for each doubling of "experience," or accumulated production volume".

- <u>Horizon 2020</u> especially under Pillar 3 'Societal Challenges' with the 'secure, clean and efficient energies' thematic;
- Horizon Europe in particular under Pillar 2 'Global challenges and Industrial Competitiveness' Cluster 'Food and natural resources'; Cluster 'Climate, Energy and Mobility' and within the Mission 'Healthy Oceans, Seas, Coastal and Inland Waters';
- Interreg through dedicated and specific calls;
- Union for the Mediterranean;

## UNEP/MAP;

- JPI Oceans;
- European Investment Bank;
- Private foundations;
- Competent ministries and regional/local authorities through specific calls and the development of national funding plans for MREs;
- Maritime cluster:
  - European Network of Maritime Clusters (ENMC) (https://enmc.eu/about-us/),
  - Pole Mer Mediterranee (https://www.polemermediterranee.com/).

## Activities to promote the SRIA Implementation

## Gaps to address

Based on the situation of MRE advancement in Europe, the main gaps currently constituting a barrier to further and smoother development of the blue energy sectors can be identified.

## Policies

In order to reinforce investors' confidence and allow stakeholders of the blue energy value chain to keep committing to this sector, governments should provide a clear view on their capacity ambition, project pipeline and supporting policies in their National Energy and Climate Plans (NECPs) to 2030. This would provide regulatory certainty concerning planning, design criteria and characterization of concession areas.

In the most mature countries, the government should publish a long-term calendar of the next calls for bids, which should present a significant number of coming bids, well spread in time, with sufficient capacity requirement (for example minimum 500 MW per FOWE project) to optimize connection grid and enable stakeholders to make out future economies of scale.

In countries where the blue energy sector is not as mature, it is a key that governments show their will to evaluate available marine renewable resources, proceed with mapping and characterisation of concessions areas as this would be a good start to boost the blue energy sector.

Furthermore, the governments should coordinate their schedules of deployment and supporting policies for MRE in order to maximise regional cooperation in the development of a European supply chain.

All these policy measures would allow operators and manufacturers to consider positioning themselves, plan for investments and size their production tool accordingly. Electricity distributors could also anticipate grid connection investments.

It will also be key that governments work to improve public perception about the growing share of renewable energies in household's electricity bills and justify the fact they bid on renewable energies, which currently remain more expensive than other sources of energy such a nuclear energy in France.

The national and European regulators could also work on defining ways of solving potential conflicts about use of maritime space (ref MSP).

Finally, at European level, additional funding instruments should be earmarked to provide access to low cost financing for pilot projects and increase the funding to research and innovation focused on cost-competitiveness. Some already exist, as for example the NER 300 European programme, which is endowed with 300M€ and targets demonstrators. It has granted Floatgen in France and Windfloat Atlantic in Portugal.

## Skills/ Human Resources

Despite the fact that different training courses exist with competences and expertise already available, there are gaps to address. As seen in the previous section, they are few training courses available that are fully dedicated to MRE sector.

We need more partnership in Med between research organizations and industry, and more Clusters such as competiveness clusters (ex Pole Mer Mediterranéee).

Students should experience both research and industry during our education.

It is relevant to capacity building in next EU initiatives.

MRE training courses are needed to convert these previous skills to the requirements of MRE projects and to acquire specialised skills that are needed for those specific technologies and infrastructures.

Concerning professional lifelong learning, there is a lack of professional courses and qualifications (no high-degree but more technicians and qualified workers). We can also underline specific needs concerning skilled welders and electrician workers for offshore platform.

A dedicated competence & training centre at EU level to support the development of marine energies could be envisioned to have shared qualifications.

Finally, skills and an exchange of experience is required for the development of soft competences to enable the dialogue between the stakeholders and facilitate the decision to implement MRE project.

#### Research & Development

There are still many topics on which research must be done and for which innovation must be developed. Some of these R&D needs are technological but a number of them are not.

The main technological stakes are:

- Overall cost reduction;
- Connection to the electricity grid;
- Connection between turbines and the substation;
- Electricity system flexibility and storage: allowing MRE which is intermittent by nature (in particular wind energy) to be integrated;
- Suitability of the anchors and foundations to the surrounding environment: to reduce the cost of anchoring and maintaining MRE systems, it is necessary to develop and adapt MRE systems to the specificities of the locations (current, waves, nature of the sea floor, soil etc.) with solutions allowing rapid and safe interventions;
- Performance of production systems;
- Resistance of MRE systems in rough marine conditions: materials must be adapted to resist against corrosion and marine biofouling;
- Reliability and affordability of submarine electrical connection solutions;
- Protection, stability and accessibility of submarine cables;
- Optimization of the processes and means of installation and maintenance works: this is will require solutions adapted to the management of port infrastructures and the associated logistical means but also, for example, the tools that will allow to plan interventions to reduce the costs of preventive maintenance operations;
- Adaptation of shipyards and ports.

The main non-technological stakes are:

- Estimation of exploitable resources and predictability of electricity production;
- Environmental impacts and interaction;
- Socio-economic impacts and cross-sectorial interaction;
- Safety and security of construction, installation, maintenance and dismantling procedures.
- The acceptability of citizens who are doubtful or even reluctant to these energies, because there is a lack of knowledge of the impacts.
- •

Given the technologies adapted to the Mediterranean context are still at early stage of development, R&D is still a key enabling driver of their further advancement and commercialisation.

The emphasis must also be made on demonstration projects, which enables to anticipate potential challenges and to involve additional players in the game while constituting a showcase for the industry.

#### Marketing

There is a lack of marketing actions in the different countries and a lack of awareness about Marine Renewable energies in general and this concerns the different stakeholders: Industries, Research and academics actors, Policy makers and the civil society.

To cover this gap, significant communication campaigns are needed to increase public understanding and facilitate the acceptance of MRE projects. Research results regarding MRE industry impacts on the environment should be notably published in order to facilitate acceptance by local communities.

Marketing, communication to public authorities and publicity are indicated as very influential and impactful factors for future developments in MRE.

Activities to promote the SRIA Implementation					
Examples of activities	Content and objective	How and timeframe			
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]		[Champion countries explain how the activity can be carried out and timeframe within the IP (2020-2023)]		
Networking and engagement of economic sectors and national Blue Growth communities	<ol> <li>Develop more partnerships between research organizations and industries through clusters organization;</li> <li>Exchange and cooperation in experience skills through tools such as transnational clusters;</li> <li>Mediterranean Conference dedicated to MREs: last lessons learned from existing projects, harbour infrastructures and on- shore solutions supporting deployment, innovations in grid and electrical connections, win/win deal for the environment, innovations in methods and key components, financing and insuring commercial-scale farms.</li> </ol>		<ol> <li>Building national clusters in countries deeply interested by MREs;</li> <li>Creation of a Mediterranean transnational cluster with a focus on MREs;</li> <li>Organisation of a Conference dedicated to MREs at Mediterranean level.</li> <li>2020-2023.</li> <li>2020-2023.</li> <li>Each year from 2021.</li> </ol>		
Alignment and coordination	Alignment with climate change and energy European policy.	How:	Strengthening dialogue with EU institutions and participation of MREs stakeholders to relevant events/ workshops/meetings/activities taking place in Brussels in the field of climate change and Energy policy.		
		When:	2020-2023 according to the agenda.		
Promotion and possibly implementation of actions coordinated and jointly	Development of <b>multi-purpose platform</b> to ensure an optimal use of marine space and to reduce both ecological footprint and cost	How:	Brainstorming meetings and answering dedicated regional, national or European calls.		
undertaken by different countries, with a "variable geometry" approach	different of marine activities. Example: deployment of multi-use platforms integrating wind energy, combined with desalination and potentially aquaculture. These new solutions can also combine green energy production with offshore research (scientific observation and continuous measurements), marine life and environmental monitoring, maritime surveillance and pollution monitoring.		Starting 2021.		
Start-Up actions		How:			
		When:			

Examples of activities	Content and objective	How and timeframe		
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]	[Char the ad timefra	mpion countries explain how ctivity can be carried out and me within the IP (2020-2023)]	
Lobbying actions	<ol> <li>Actions to encourage national governments to provide a clear view of on their capacity ambition, project pipeline and supporting policies in their National Energy and Climate Plans to 2030;</li> <li>In MREs most mature countries, encourage governments to publish a long-term calendar of the next calls for bids, which should present a significant number of coming bids, well spread in time, with sufficient capacity requirement;</li> <li>In countries where the blue energy sector is not as mature yet, encourage governments to evaluate available marine renewable resources, proceed with mapping and characterisation of concessions areas;</li> <li>Actions to highlight the importance of MREs within the Horizon Europe Pillar 2, Cluster "Climate, Energy and Mobility" and within the Mission of Healthy Oceans, Seas, Coastal and Inland Waters, and to promote dedicated calls. These specific calls would enable, at a large scale, the in-depth study and analysis of MREs' interactions with natural habitats:         <ul> <li>Develop a socio-ecosystem approach to the environmental and socio-economic impacts of floating wind farms;</li> <li>Identification of the physical-biological coupling in the modifications induced by the MRE projects on the habitats. Instrumentation adapted to the monitoring of physicochemical and biological parameters. Modelling the reef effect locally and globally. Modelling the interactions with avifauna.</li> </ul> </li></ol>	How:	<ol> <li>Relevant actions and discussions to lead with competent national and regional authorities;</li> <li>Idem;</li> <li>Dedicated meetings and participation to relevant working groups.         <ul> <li>Research studies and experimentations with innovative sensors adapted to MRE platforms in network, and exchanges between such national platforms.</li> </ul> </li> <li>2020-2023.</li> <li>2020-2023.</li> <li>2020-2023.</li> <li>2020-2023.</li> <li>2020-2023.</li> </ol>	
Training and capacity building initiatives	<ol> <li>Develop new training courses fully dedicated to MREs following a schedule that is correlated with industrial development (2021?)</li> <li>Build bridges for students so they can experiment both research and industry during their education;</li> <li>Support professional lifelong learning (professional courses and technician qualifications);</li> </ol>	How:	Creation of a <b>dedicated</b> <b>competence and training</b> <b>centre at EU level</b> to support the development of marine energies and shared qualifications.	
Implementation		How:		
Working Groups (IWG) on specific sectors		When:		
Communication and	Mediterranean Conference dedicated to MREs (mentioned	How:	Organization of a conference.	
engagement	above). Public information on environment impacts from the MRE.	When:	Once a year, starting 2021.	

# FICHE 10 OPEN DATA, OPEN SCIENCE, OPEN INNOVATION CO-CHAMPION COUNTRIES: FRANCE, MALTA & TURKEY

Background

The Mediterranean Sea, a closed basin with unique characteristics, is a common good of the riparian countries. Sharing knowledge about the health, evolution and functioning of its marine and coastal ecosystems is a challenge. Progress in this direction is necessary to ensure the preservation of its resources, develop sustainable activities, control pressures and anticipate the responses to global change.

Especially in the Mediterranean, Blue Growth therefore demands for a holistic approach, integrating oceanic dynamics, knowledge on ecosystem functioning, economy and societal needs. Open innovation, open data and open science are a key dimension to achieving blue growth. Technological development is making a great impact on Blue Growth especially through the use of artificial intelligence (AI), Internet of Things and the infrastructural backbone of Blockchain to create and network innovative products, and support the marine sector with smart and intelligent applications.

Open innovation is a way for companies to benefit from external ideas/technologies (Outside-In) and valorise internal ideas/ technologies with external partners (Inside-Out) to reduce the financial risks associated to innovation, and quickly get a competitive advantage. As such it implies accelerating internal R&D and innovation along value chains through collaboration between the technological supply – and demand – side. Open innovation needs to be operational and this is done possible through networked, multi-collaborative ecosystems involving representative maritime clusters or intermediaries. Open innovation today is a well-known concept in large companies, which have developed specific mechanisms such as Big data/ numerical challenges, hackathon-like initiatives.

A specific methodology for blue growth project emergence has been developed at the European level (NEPTUNE project and the innovation clubs based on STAR methodology) and could be adapted and applied at the Mediterranean level.

However, SMEs are less aware of the opportunities offered by open innovation. Innovation intermediaries or brokers, such as technology centres or competitive clusters, can help SME solution providers get closer to large industrial users to co-create new products/services through a better anticipation of their needs. In addition, there is a need to clarify intellectual and industrial property management issues potentially hampering open innovation.

Collecting marine, environmental and socio-economic data is expensive and data a valuable asset. Rapid access to reliable and accurate information is vital in addressing threats to the marine environment, developing policies and legislation to protect vulnerable areas of our coasts and oceans, understanding trends and forecasting future changes. Sharing data and knowledge is a key element in establishing a common understanding of the issues related to the marine environment and strengthening the science-policy interface. The strong link existing between data and observation infrastructures should be here underlined. Firstly marine and coastal observing systems are a key source of information and data that can be valued in many areas. Secondly, the storage, the cataloging and the availability of data require appropriate IT infrastructures.

Data provided with high and certified quality can be valued in several ways. To get the most out of data, it must be openly and freely accessible on same terms to researchers, public policy makers and the private sector which will be able to develop services based on these data. Sharing data is also a booster for innovation. Fundamental to growth and development is the concept of fair playing field allowing equal opportunities and equal competition to make new, innovative services for society from the open interoperable resources available.

The sharing of data and best practices allows technologies to progress more quickly and efficiently, while easily moving across boundaries of countries, market sector, culture, race, etc. This strategy is promoted at the European level (Inspire, European Open Science Cloud, EMODnet, Copernicus, Eurostat...). Taking measures for implementing these open approaches in the Mediterranean could be of great benefit for all the Mediterranean countries.

In an evolving knowledge-based society, access to key technologies, high quality data, modelling and satellite observations, are perceived to be key ingredients to support sustainable blue growth, especially in the coastal areas where many essential economic activities are occurring at the national scale. This goes hand in hand with the process of extracting essence from data, together with value addition by a wide range of downstream services that are fitting to the user needs, especially in the local scale application scenarios. In this context, the European Commission through DG GROW and its entrusted entities the European Environmental Agency (EEA) and Mercator Ocean International (MOI), running the Land and Marine Services respectively, are in the process of delivering under the MED7 initiative a white paper targeted to set the pace to develop Copernicus products for coastal areas. This entails products merging data from more than one Copernicus Core service, and a special framework linking Copernicus to Member State national coastal services such as in-situ coastal monitoring networks, and high-resolution models in the coastal and near shore domains.

These guidelines are fully in line with the Joint Communication on international ocean governance – EU's response to the UN 2030 Agenda for Sustainable Development - that proposes ways the EU can step up and play a stronger role at global and regional level by shaping the way oceans are used and managed.

## Open data and blue economy

The development of the blue economy relies on increased exploitation of the capacity of marine and coastal ecosystems to provide services and resources to populations. However, all human activity related to the sea generates pressures (resource exploitation, waste, modification or occupation of the space, etc.). Many examples (e.g. collapse of certain fish stocks) show the difficulty of anticipating and taking pressure control measures to ensure the sustainability of sea related economic activities.

This difficulty in sustainably managing the resources and services offered by the sea faces several challenges:

- The lack of knowledge on the state of the marine environment and its evolution, but also the difficulty of characterizing the pressures exerted by human activities on the sea and the coast;
- The complexity of the functioning of the marine "socio-ecosystem" and the interactions at work, with the consequent lack of reliable predictive models and the difficulty of building scenarios;
- The difficulty in predicting the consequences of large-scale changes at work (global warming, biodiversity erosion, etc.) that will significantly impact Blue economy sectors (sea level rise, changes in marine habitats and communities, riverine inputs, atmospheric forcing...).

Given the dynamics of the almost enclosed Mediterranean Sea, many of the questions raised must be addressed at basin or subbasin level (e.g. MPA connectivity, plastic pollution carried by currents). At these scales, making diagnoses and taking coherent and effective management measures requires a transnational approach. These objectives cannot be achieved without a solid base of indicators and knowledge built on reliable and comparable data.

The marine environment is also characterized by:

- The need for a multidisciplinary approach, essential to understanding ecosystem functioning;
- The high cost of acquiring marine data, particularly offshore.

These considerations justify the promotion of a policy of data and knowledge sharing, whether within a community or between actors sharing different objectives. It should be also pointed that qualified data sets can be of interest to multiples actors: scientific research, public authorities, the private sector and citizens.

An open approach on data and science is therefore expected to benefit to a large panel of stakeholders and to lead to progress in terms of:

- Qualification of data due to their increased use;
- Valuation of acquisition costs;
- Harmonization, comparability of data sets;
- Acceleration of assimilation, through science and support for public policies;
- Reduction of the costs of developing a new activity at sea.

Mapping and discussing implementation options and potentials of this priority				
Recent and ongoing relevant projects				
PROJECT	DESC	RIPTION	OBJETIVES	
SeaDataNet II Pan-European infrastructure for ocean and marine data management SRIA Action: A1.2 / A1.3	<b>Call:</b> FP7- INFRASTRUCTURES <b>Duration:</b> 01/10/2011 - 30/09/2015	EU Contribution: 6.000.000,00 € Website: https://www. seadatanet.org/	SeaDataNet is the leading network in Europe, actively operating and developing a pan-European infrastructure for managing, indexing and providing access to ocean and marine datasets and data products, acquired from research cruises and monitoring activities in European marine waters and the global oceans.	
SeaDataCloud	Call: H2020-	EU Contribution:	SeaDataCloud aims at considerably advancing	
Further developing the pan-European infrastructure for marine and ocean data management SRIA Action: A1.2/ A1.3	EU.1.4.1.2. <b>Duration:</b> 01/11/2016 - 31/10/2020	9.999.737,50 € Website: https://www. seadatanet.org/	SeaDataNet services and increasing their usage, adopting cloud and HPC technology for better performance. More users will be engaged and for longer sessions by including advanced services in a Virtual Research Environment. Researchers will be empowered with a collection of services and tools, tailored to their specific needs, supporting marine research and enabling generation of added-value products.	
ATTRACT	<b>Call:</b> H2020-	EU Contribution:	The ATTRACT Phase-1 project proposes a new	
breAkThrough innovaTion pRogrAmme for a pan-European Detection and Imaging eCosysTem SRIA Action: A1.1 / A1.2/ A1.3 / A1.4	EU.1.4.2.1 Duration: 01/08/2018 - 30/11/2020	19.999.072,50 € Website: https:// attract-eu.com/	collaboration paradigm aligned with the 'Open Science, Open Innovation and Open to the World' philosophy. Its objective is the identification and initial development of breakthrough detection and imaging technology concepts for expanding fundamental research frontiers and suitable for future industrial upscaling for novel applications and business. It promotes the involvement of national and pan-European Research Infrastructures and their associated research communities, industrial organizations (especially SMEs) and innovation and business specialists.	
ECOPOTENTIAL Improving future ecosystem benefits through Earth Observations	<b>Call:</b> H2020- EU.3.5.5. <b>Duration:</b> 01/06/2015 -	EU Contribution: 14.874.340,00 € Website: https:// www.ecopotential-	ECOPOTENTIAL project focus its activities on a targeted set of internationally recognised Protected Areas, blending Earth Observations from remote sensing and field measurements, data analysis and modelling of current and future ecosystem conditions and services. ECOPOTENTIAL considers	
SRIA Action: A1.2	31/10/2019	project.eu/	regional to continental scales, addressing long- term and large-scale environmental and ecological challenges.	
EUROFLEETS2 New operational steps towards an alliance of European research fleets SRIA Action: A1.2	<b>Call:</b> FP7- INFRASTRUCTURES <b>Duration:</b> 01/03/2013 - 31/06/2017	EU Contribution: 6.000.000,00 € Website: https:// cordis.europa.eu/ project/rcn/108205/	The project aimed at further consolidating the alliance of marine research centres, universities and industrialists initiated in EUROFLEETS (1), with enlargement to the Polar research fleet community. It supported research services for progress of scientific knowledge on marine environment and the sustainable management of regional seas and second to protect the protect of the p	
		reporting/en	access to modern and well equipped research vessels to European and international scientists on sole condition of scientific excellence, thereby contributing to the EU ambitious goals for maintaining the ocean biodiversity or understanding climate change.	

AQUACOSM Network of Leading European AQUAtic MesoCOSM Facilities Connecting Mountains to Oceans from the Arctic to the Mediterranean SRIA Action: A1.2	<b>Call:</b> H2O2O- EU.1.4.1.2 <b>Duration:</b> 01/01/2017 - 31/12/2020	EU Contribution: 9.999.804,75 € Website: https:// www.aquacosm.eu/	The project aims to integrate scattered know-how between freshwater and marine RI and unit aquatic mesocosm science in an open network beyond the core consortium, with industry involved in an ambitious innovation process, to promote ground- breaking developments in mesocosm technology, instrumentation and data processing.
EGI-Engage	Call: H2020-	EU Contribution:	The mission of EGI-Engage is to accelerate the
Engaging the EGI Community towards an Open Science Commons <b>SRIA Action:</b> A1.2 / A1.4	EU.1.4.1.3. Duration: 01/03/2015 - 31/09/2017	9.000.000,00 € Website: https:// cordis.europa.eu/ project/rcn/194937/ factsheet/en	implementation of the Open Science Commons vision, where researchers from all disciplines have easy and open access to the innovative digital services, data, knowledge and expertise they need for their work. The Open Science Commons is grounded on three pillars: the e-Infrastructure Commons, an ecosystem of key services; the Open Data Commons, where any researcher can access, use and reuse data; and the Knowledge Commons, in which communities have shared ownership of knowledge and participate in the co-development of software and are technically supported to exploit state-of-the-art digital services.
JERICO-NEXT Joint European Research Infrastructure network for Coastal Observatory – Novel European eXpertise for coastal	<b>Call:</b> H2020- EU.1.4.1.2. <b>Duration:</b> 01/09/2015 - 31/09/2019	EU Contribution: 9.998.876,47 € Website: http://www. jerico-ri.eu/	The objective of JERICO-NEXT consists in strengthening and enlarging a solid and transparent European network in providing operational services for the timely, continuous and sustainable delivery of high quality environmental data and information products related to marine environment in European coastal seas.
SRIA Action: A1.2 / A1.4			It includes an enable free and open access to data, enhance the readiness of new observing platform networks by increasing the performance of sensors, showcase of the adequacy of the so- developed observing technologies and strategies.
ODIP 2 Extending the Ocean Data Interoperability Platform SRIA Action: A1.4	Call: H2O2O- EU.1.4.3.2. Duration: 01/04/2015 - 31/03/2018	EU Contribution: 1.912.086,25 € Website: http://www. odip.org/	The project is promoting the development of a common global framework for marine data management by developing interoperability between existing regional e-infrastructures. Through a series of international workshops attracting relevant domain experts a number of prototype interoperability solutions will be developed which will be implemented by the regional data infrastructures to provide users with open access to good quality multidisciplinary data and associated services.
NeXOS Next generation, Cost- effective, Compact, Multifunctional Web Enabled Ocean Sensor Systems Empowering Marine, Maritime and Eicheries Management	<b>Call:</b> FP7- ENVIRONMENT <b>Duration:</b> 01/10/2013 - 31/09/2017	EU Contribution: 5.906.479,00 € Website: http://www. nexosproject.eu/	The NeXOS project aims to improve the temporal and spatial coverage, resolution and quality of marine observations through the development of cost-efficient innovative and interoperable in-situ sensors deployable from multiple platforms, and Web Services for key domains and applications.
SRIA Action: A1.4			

MARINE-EO Bridging Innovative Downstream Earth Observation and Copernicus enabled Services for Integrated maritime environment, surveillance and security SRIA Action: A1.1 / A1.4	<b>Call:</b> H2020- EU.2.1.6.3. <b>Duration:</b> 01/01/2017 - 30/11/2020	EU Contribution: 4.378.584,38 € Website: https:// www.marine-eo.eu/	The project aims to Develop, test and validate two sets of demand-driven EO-based services, adopted on open standards, bringing incremental or radical innovations in the field of maritime awareness and leveraging on the existing Copernicus Services and other products from the Copernicus portfolio. Propose a set of "support" / "envelop" services which will better integrate the abovementioned EO and Copernicus-enabled services to the operational logic and code of conduct. Strengthen transnational collaboration in maritime awareness sector by facilitating knowledge transfer and optimization of resources for the public authorities participating in the buyers group.
ASSEMBLE Plus Association of European Marine Biological Laboratories Expanded SRIA Action: A1.1 / A1.2	<b>Call:</b> H2020- EU.1.4.1.2. <b>Duration:</b> 01/10/2017 - 30/09/2021	EU Contribution: 9.999.911,47 € Website: https:// cordis.europa.eu/ project/rcn/211566/ factsheet/en	ASSEMBLE Plus will provide scientists from academia, industry and policy with a quality- assured programme of Transnational Access (TA) and Virtual Access (VA) to marine biological stations offering a wide variety of marine ecosystems, unique marine biological resources, state-of- the-art experimental and analytical facilities with integrated workflows, historical observation data, and advanced training opportunities. The goal is to stimulate European excellence in fundamental and applied research in marine biology and ecology, thereby improving our knowledge- and technology-base for the blue economy, policy and education.
COLUMBUS Monitoring, Managing and Transferring Marine and Maritime Knowledge for Sustainable Blue Growth SRIA Action: A1.1 / A1.2 / A1.3	<b>Call:</b> H2O2O-EU.3.2 <b>Duration:</b> 01/03/2015 - 28/02/2018	EU Contribution: 3.997.488,00 € Website: http://www. columbusproject.eu/	The COLUMBUS project intends to capitalise on the EC's significant research by ensuring accessibility and uptake of research Knowledge Outputs by end-users (policy, industry, science and wider society). COLUMBUS will ensure measurable value creation from research investments contributing to sustainable Blue Growth within the timeframe of the project. It will then set about identifying and collecting "Knowledge Outputs" from past and current EC projects. Rigorous analysis will take place to identify specific applications and end-users. Transfer will be achieved and measured through tailor-made knowledge transfer. All knowledge collected will be made accessible the pre-existing Marine Knowledge Gate.
COMMON SENSE Cost-effective sensors, interoperable with international existing ocean observing systems, to meet EU policies requirements SRIA Action: A1.1 / A1.4	Call: FP7- ENVIRONMENT Duration: 01/11/2013 - 28/02/2017	EU Contribution: 4.664.072,00 € Website: https:// cordis.europa.eu/ project/rcn/110790/ factsheet/en	The COMMON SENSE project will contribute to support the implementation of the Marine Strategy Framework Directive (MSFD) and other EU policies (e.g. Common Fisheries Policy), providing easily usable across several platforms, cost-effective, multi-functional innovative sensors to detect reliable in-situ measurements on key parameters by means of methodological standards. This proposal will focus, by means of a multidisciplinary and well-balanced consortium on eutrophication, contaminants, marine litter and underwater noise descriptors of the MSFD.

EOSC-Life Providing an open collaborative space for digital biology in Europe SRIA Action: A1.1 / A1.4	<b>Call:</b> H2O2O- EU.1.4.1.1 <b>Duration:</b> 01/03/2019 - 28/02/2023	EU Contribution: 23.745.996,25 € Website: https:// cordis.europa.eu/ project/rcn/219199/ factsheet/en	EOSC-Life brings together the 13 Biological and Medical ESFRI research infrastructures (BMS RIs) to create an open collaborative space for digital biology. It is our joint response to the challenge of analysing and reusing the prodigious amounts of data produced by life-science. Managing and integrating this data is beyond the capabilities of most individual end-users and institutes. By publishing data and tools in a Europe-wide cloud EOSC-Life aims to bring the capabilities of big science projects to the wider research community.
FIXO3 Fixed Point Open Ocean Observatories Network SRIA Action: A1.2	<b>Call:</b> FP7- INFRASTRUCTURES <b>Duration:</b> 01/09/2013 - 31/08/2017	EU Contribution: 7.000.000,00 € Website: http://www. fixo3.eu/	The Fixed point Open Ocean Observatory network (FixO3) seeks to integrate European open ocean fixed point observatories and to improve access to these key installations for the broader community. These will provide multidisciplinary observations in all parts of the oceans from the air-sea interface to the deep seafloor.
EUROARGO Euro-Argo RI European contribution to the Argo programme		Website: https:// www.euro-argo.eu/	European contribution to the international Argo programme. Its aims are: to provide, deploy and operate an array of around 800 floats contributing to the global array (a European contribution of ¼ of the global array); to provide enhanced coverage in the European regional seas; to implement the new phase of Argo, with extensions towards biogeochemistry, greater depths and high latitudes; and to provide quality controlled data and access to the data sets and data products to the research (climate and oceanography) and operational oceanography (e.g. Copernicus Marine Environment Monitoring Service - CMEMS) communities.
EuroGEOSS Programme		Website: http://www. eurogeoss-fp7-project. eu/default.aspx	Strengthening the benefits for Europe of the Global Earth Observation System of Systems (GEOSS), should also facilitate the access to and integration of untapped national in-situ Earth observation data with research-based data and different sources such as Copernicus, the European research infrastructures, citizen science initiatives and others, into user oriented applications. EuroGEOSS should focus on delivering information for the achievement of the 2030 Agenda for Sustainable Development and other GEO engagement priorities in a European context.
ODYSSEA Operating a network of integrated observatory systems in the Mediterranean sea	Call: H2020- EU.3.2.5. Duration: 01/06/2017 - 30/11/2021	EU Contribution: 8.398.716€ Website: http:// odysseaplatform.eu/	ODYSSEA will develop, operate and demonstrate an interoperable and cost-effective platform that fully integrates networks of observing and forecasting systems across the Mediterranean basin, addressing both the open sea and the coastal zone. The platform will collect its data from the many databases maintained by agencies, public authorities, and institutions of Mediterranean EU and non-EU countries, integrating existing earth observation facilities and networks in the Mediterranean Sea building on key initiatives such as Copernicus, GEOSS, GOOS, EMODNet, ESFRI, Lifewatch, Med-OBIS, GBIF, AquaMaps, Marine IBA e-atlas, MAPAMED and others with marine and maritime links.

ShareMED Sharing and enhancing capabilities to address environmental threats in Mediterranean sea	<b>Call:</b> Interreg MED strategic project	Website: https:// governance.interreg- med.eu/	<ul> <li>The project will capitalise on knowledge provided by previous projects and existing EU infrastructures, and will contribute to the definition of long term strategies and action plans for assessing and addressing environmental threats in the Mediterranean. SHAREMED will: <ul> <li>engage stakeholders and authorities, and jointly define state-of-the-art and regional strategies;</li> <li>collate and harmonise existing info, data and knowledge and contribute to joint production of a database of coherent data;</li> <li>define common procedures and jointly produce atlas of state and hazard maps;</li> <li>integrate existing observing infrastructures in a common transnational system of systems and jointly disseminate</li> <li>observations through common portals;</li> <li>enhance forecast capabilities through development and implementation of coastal high resolution transnational systems;</li> <li>explore potential of new observing methodologies;</li> <li>define roadmaps, guidelines, action plans.</li> </ul> </li> </ul>
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Programmes and initiatives of relevance, including research and data infrastructures

## EUROPEAN PROGRAMMES AND INITIATIVES

Different programs, strategies, policy frameworks are related to this priority and already exist in the Mediterranean at the regional, national, European or international scale.

## Open data

The need to share and facilitate access to data on the ocean and coastal environment has led to establishing collaborative international programmes from the scientific community (e.g. ARGO in physical oceanography, born in the 1990s, or OBIS in marine biology).

At the institutional level, the Barcelona Convention implemented under the umbrella of UNEP plays an important role in reporting on the state of the environment and pressures in the Mediterranean. UNEP/MAP is currently setting up an information system implemented by INFO/RAC to host data on the state of the marine environment. However, today few UNEP/MAP data can be accessed online. The work carried out within the frame of this Regional Sea Convention mainly takes the form of reports based on expertise or data that are not public.

At European level, significant efforts have been made for years to improve sharing of environmental and marine data. The most prominent programs are:

- Copernicus (https://www.copernicus.eu/en) the European Union's Earth Observation Programme, that offers information services based on satellite Earth Observation and in situ data. CMEMS is the marine services component of Copernicus http://marine.copernicus.eu
- SeaDataNet, a distributed Marine Data Infrastructure for the management of large and diverse sets of data deriving in situ ocean observation <a href="https://www.seadatanet.org/">https://www.seadatanet.org/</a>
- WISE-marine (Water Information System for Europe), which is a portal and an infrastructure for sharing information about the marine environment at European level <u>https://water.europa.eu/marine</u>
- EMODnet (European Marine Observation and Data Network) that gathers data from various sources about the state of the seas and the maritime activities <a href="http://www.emodnet.eu/">http://www.emodnet.eu/</a>

Even if these programs have been initiated with different purposes (development of marine research infrastructures, environmental policy implementation, support to integrated marine policies), they are interlinked and being developed in a coordinated manner (e.g. EMODnet Physics and EMODnet Chemistry are based on the SeaDataNet infrastructure).

In terms of socio-economic data:

- Eurostat (the statistical office of the European Union). Linked with Eurostat, the project Medstat, supported by the European ENPI funds, aims at regional statistical cooperation in South Mediterranean countries <u>https://ec.europa.eu/</u>eurostat/web/european\_neighbourhood-policy/enp-south/medstat-iv
- Fishery and aquaculture data are available through the FAO (GFCM data base <u>http://www.fao.org/gfcm/data/en/</u>. For the Mediterranean, FAO, Ocean Science for Sustainable Development, includes the promotion of a free and open data sharing and multi-stakeholder contributions by governments (rich and poor), the private sector and citizens: http:// www.fao.org/3/CA0463EN/ca0463en.pdf
- Data (e.g. tourism, maritime transport) are also accessible through international sectoral organisations (e.g. World Tourism Organization) <u>https://www2.unwto.org/content/data</u>

Although most of the programmes previously mentioned are open to Mediterranean southern and eastern countries, significant gaps remain in the Mediterranean:

- Huge imbalance between EU and non-EU countries (e.g.: EMODnet integrates some data sets from Southern countries, but the maps built from the data bases show mainly data on the northern part of the sea;
- Lack of homogeneity of data sets between countries (even at European level), leading to difficulties for aggregating and comparing data;
- Granularity is often not fine enough. This is particularly true for socio-economic data which are mostly available at country level. This is especially an issue for countries with several maritime borders such as France (Atlantic, Channel and Western Mediterranean, Italy (Adriatic and Western Mediterranean) or Turkey (Aegean, Eastern Mediterranean, Marmara and Black Sea).

## Open science

In the area of Open Science, several European and international initiatives do not specifically target marine sciences, but they promote free sharing and access to data and knowledge. Open Science has been gradually recognized over the past years as a key driver for accelerating innovation and answering the main societal challenges. Among the most prominent initiatives, we can give the examples of:

- The European Open Science Cloud (EOSC), which has been initiated by the European Commission in 2016 and whose aim is to create a virtual trusted environment with open and seamless services for storage, management, analysis and re-use of research data and knowledge. The EOSC Declaration has been endorsed by more than 70 institutions <a href="https://ec.europa.eu/research/openscience/index.cfm?pg=open-science-cloud">https://ec.europa.eu/research/openscience/index.cfm?pg=open-science-cloud</a>
- Plan S is an initiative for Open Access publishing launched in September 2018, supported by the European Commission and the European Research Council. The plan requires that, from 2021, scientific publications that result from research funded by public grants must be published in compliant Open Access journals or platforms. <u>https://www.coalition-s.</u> org/
- Knowledge Exchange (KE) is a European partnership made of six organizations aiming at developing infrastructures and services to enable the use of digital technologies to improve higher education, research and to enable open scholarship; <a href="http://www.knowledge-exchange.info/">http://www.knowledge-exchange.info/</a>
- The Directory of Open Access Journal (DOAJ), which hosts a community-curated list of open access journals and meeting high quality standards; <u>https://doaj.org/</u>
- The Confederation of Open Access Repositories (COAR) is an international association with over 140 members and partners from around the world representing libraries, universities, research institutions, government funders and others. <u>https://www.coar-repositories.org/</u>

The culture of open science gradually increased over the past years. However, work remains to be done to promote the principles of Open Science, to encourage scientists to publish their papers in open access and to include non-EU countries in those existing networks.

#### Open innovation

Two projects are to be mentioned:

- H2020-INNOSUP-2018-2020 For a better innovation support to SMEs | The future project involves the setting-up
  of a European Open Innovation Network in advanced technologies with a central brokerage service point, aimed at
  matching innovation needs/requests from large industries with innovative solutions from SME technology providers.
  Innovation intermediaries such as technology centres can help SME solution providers get closer to large industrial
  users to co-create new products/services through a better anticipation of their needs. One major role of technology
  centres is "to bridge the gap between internal and external know-how". They are therefore well-positioned as
  innovation intermediaries in an open innovation context.
- NEPTUNE (New cross sectoral value chains creation across EuroPe facilitaTed by clUsters for SMEs' iNnovation in bluE growth). In the frame of the NEPTUNE project, ESTIA is in charge of delivering a specific methodology of project emergence in interclustering and intersectoral context to animate innovation clubs. The innovation clubs can be defined as sustainable sub-workgroups addressing innovative topics. This specific proposed methodology is named STAR methodology. Following a creativity approach, in the case of NEPTUNE, the STAR methodology stimulates the emergence of Blue Growth projects and the identification of the best ones. The potential participants to NEPTUNE innovation clubs, in particular SMEs, are located all around Europe. Specifically, the SMEs are spread out in the seven countries the NEPTUNE consortium is located. In order to optimize travels, staff costs, and efficiency of the work sessions, innovation clubs will rely on the interconnection of nine physical meeting rooms (one in each NEPTUNE region) combined with the use of a dedicated software (called hereafter the STAR platform). Hence, the proposed approach allows the participants (SMEs mainly) to be distributed into different virtual thematic sub-workgroups. Furthermore, participants will be able to join the innovation clubs sessions through their own laptop from a remote place.

In order to foster innovation the European Union has created the European Institute of Innovation and Technology (EIT). EIT has in particular supported the development of "Innovation communities" bringing together businesses (industry and SMEs), research centres and universities as partners. Some of these communities are relevant to BLUEMED (e.g. Climate, Food, and Digital).

#### Academia and capacity building

In 2019, the EC launched the first pilot of the <u>European Universities Initiative</u> by funding 17 alliances to network universities in Europe for a deep level of integration involving joint curriculum design with seamless student mobility opportunities, development of complementary research facilities, and facilitating diverse degree pathways basing on the specialties of the different high class institutions composing the alliances. One of these networks led by the University of Cádiz, Spain, and comprising the University of Kiel, Germany; Western Brittany, France; Split, Croatia; and Cdansk, Poland; along with the University of Malta, are building the European University of the Sea (SEA EU). The target is to synergise resources and combine infrastructures from the partner universities to offer a broader and complete approach in marine and maritime studies, targeting to empower the future professionals with skills and excellence to meet the future challenges of the evolving marine sector.

Specialised post-graduate research and taught courses like the MSc in Applied Oceanography offered by the University of Malta (https://www.um.edu.mt/science/geosciences/physicaloceanography/msc), and dedicated short thematic training courses are setting the scene for applicative, hands-on learning programmes spanning and merging the scientific, technical and applicative aspects of marine and maritime studies to offer students a wide-ranging integrated approach, linking science to management, putting technology at the service of users and stakeholders, and providing tools and training for more efficient service oriented applications. Such formative experiences should be also offered to the non-EU countries. These initiatives should be synergised under a common framework under for example the Med School for Applied Oceanography.

The following programmes and initiatives need also to be mentioned as they promote the openness and the coordination in the area of marine data, knowledge and innovation.

#### International scale:

- International Oceanographic Data and Information exchange since 1961 – aims at facilitating the discovery, access and exchange of oceanographic data, information and products between participating MS, and by meeting the needs of users for data and information products. It also assists MS to acquire the necessary capacity to manage marine research and observation data and information + encourages the long term archival, preservation, documentation, management and services of all marine data, products and information;

**Clobal Ocean Ship-Based Hydrographic Investigation Program** – Joint WMO-IOC Technical commission for oceanography and marine meteorology – brings together scientists with common interests in physical oceanography, carbon cycle, marine biogeochemistry and ecosystems and other users and collectors of hydrographic data to develop a globally coordinated network of sustained hydrographic sections as part of the global ocean/climate observing system. JCOMM coordinates, develops and recommends standards of procedures for a fully integrated marine observing, data management and service system.

European and Mediterranean scales:

- **European Regional Development Fund** aims at strengthening economic and social cohesion of the EU by correcting imbalances between regions. One of its key priorities is the digital agenda;
- **Copernicus Marine Environment Monitoring Service 2015-2025** information from satellites and in situ observation used for daily analyses and forecasts of the state of ocean and sea. Its Service Evolution Strategy aims at delivering high quality products and downstream services + making CMEMS data and products widely accessible;
- **JPI Oceans** aims at aligning efforts and funding in marine research between MS and associated countries through joint calls. Will to act as a Science-Policy Interface and to link Oceans, Human Health and Wellbeing (Open Science);
- **EU Integrated Maritime Policy** seeks to coordinates existing policies on specific maritime sectors and one of its priorities is related to marine data and knowledge;
- **EU Blue Growth Strategy** supports sustainable growth in the marine and maritime sectors as a whole. One of its three main components concerns the necessity to provide knowledge, legal certainty and security in the blue economy and highlights the importance to strengthen marine knowledge to improve access to information about the sea;
- **EU Digital Single Market Strategy** adopted in 2015 aims at improving access to digital services and goods for consumers and businesses; developing an environment where digital networks and services can prosper; maximizing the growth potential of the EU digital economy. A specific objective aims at helping large and small companies, researchers, citizen and public authorities to make the most of new technologies;
- **Mediterranean Sea Policy** aims at promoting a virtual knowledge center for marine and maritime affairs in the Mediterranean;
- Virtual Knowledge Center managed by the UfM and launched in 2014 to provide a centralized platform for marine and maritime information and to improve synergies across different initiatives and projects in the Mediterranean;
- United Nations Environment Program/Mediterranean Action Plan coordinating unit for the Mediterranean Action Plan Secretariat to the Barcelona Convention and its Protocols. It coordinates the efforts for information sharing and communication and is managing a spatial data infrastructures and data portal for the whole Mediterranean area;
- INSPIRE 2007/2/EC Directive European countries are committed to open policies and common rules exist in the EU.
- MSP Directive 2014/89/EU
- **UfM Ministerial Declaration on Blue Economy** (2015; a new one upcoming in 2021) https://ufmsecretariat.org/wp-content/uploads/2015/11/2015-11-17-declaration-on-blue-economy\_en.pdf
- UfM Ministerial Declaration on Environment and Climate Change (2014; a new one upcoming in 2020) https://ufmsecretariat.org//wp-content/uploads/2014/05/20140515\_UfM\_declaration\_FINAL\_compromiseeditorialchanges.pdf
- UfM Working Group on Blue Economy https://ufmsecretariat.org/ufm-working-group-blue-economy/
- Any other relevant UfM Ministerial (transport, energy, sustainable urban development, etc.), related strategies, programmes and projects

https://ufmsecretariat.org/what-we-do/water-environment/

## Target sectors and groups

The access to data and knowledge as a public good and free of charge, is the basis for use and re-use of data to generate a multiplier effect and for value addition by a wide range of users, leading to the generation of knowledge and supporting service provision and economic activity.

Throughout history the sea has played a crucial role in the socio-economic development of the Mediterranean region. Today the quest for environmental security, based on the concepts of sound ocean governance, sharing of knowledge and the controlled use of resources, is the precursor for prosperity, sustainability and peace. The importance of marine resources to our wellbeing calls for the sustainable use of the sea in both open and coastal domains. There is an ever increasing responsibility on the scientific community to provide accurate and routinely updated information for a more comprehensive knowledge on the state of the sea and the marine ecosystem, to support the chain of policy, planning and decision-making undertakings, to understand and address climatic change impacts, to provide frameworks for more effective surveillance and monitoring, and furthermore to generate added value to data and support smart and innovative applications in marine-related economic activities.

Beyond the scientific community, it is important to target public authorities and bodies (agencies...), at different levels (national, regional...) whose missions include data collection and production of knowledge.

All the sectors of the Blue Economy are concerned by sharing data and knowledge about the status of the marine ecosystem, the understanding and the monitoring of the response of the ecosystem to the pressures exerted by human activities. As such, private companies operating in the field of blue economy must be involved in the process of improving data and knowledge sharing.

It is also necessary to consider the many NGOs working at different scales on environmental or economic issues related to the sea.

There is moreover a recognition of the opportunities and advantages which transpire from regional cooperation on marine research and environmental monitoring especially in a region like the Mediterranean where the multitude of jurisdictions and multiple uses of marine space calls for more stringent regulations, a holistic approach across disciplines, and collaborative management across stakeholders and across countries.

## Funding options and agencies

Most of the actions described in the following table rely on efforts produced at national, regional or local scales. For instance, data on the status of the marine environment are collected by countries. The EC needs to commit MSs to run in the long term the national scale services by dedicated secured funding and a targeted plan of action by 2030. The main challenge is to set up a framework able to foster harmonization of data and sharing of knowledge at trans-national level, not only among European countries.

- **<u>CMEMS</u>** Copernicus Marine Environment Monitoring Service;
- Horizon 2020 especially under Pillar 1 'Excellent Science' with Research Infrastructures' thematic and under Pillar 3 'Societal Challenges' with the 'food security, sustainable agriculture, marine and maritime research and the bio-economy' thematic;
- Horizon Europe in particular under Pillar 1 'Research Infrastructures'; Pillar 2 'Global challenges and Industrial Competitiveness' – Cluster 'Food and natural resources', and within the Mission 'Healthy Oceans, Seas, Coastal and Inland Waters';
- Union for the Mediterranean;
- <u>UNEP/MAP;</u>
- JPI Oceans;

## • Private foundations;

- Competent ministries and regional/local authorities through specific calls;
- Maritime cluster:
  - European Network of Maritime Clusters (ENMC) (https://enmc.eu/about-us/).
  - Pole Mer Mediterranee (https://www.polemermediterranee.com/).

Ac	tivities to promote the SRIA Implementation	on			
Examples of activities	Content and objective		How and timeframe		
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]		[Champion countries describe in more detail the content and specific objective of a given activity] [Champion countries expl. the activity can be carried timeframe within the IP (202		npion countries explain how ctivity can be carried out and me within the IP (2020-2023)]
Networking and engagement of	1) Creation of a <b>Mediterranean</b>	How:			
economic sectors and national Blue Growth communities	<ul> <li>European Open Innovation Network in advanced technologies;</li> <li>Use of big data (GAFA, mobile phone companies, AIS data) for extracting socio-economic information, social networks harvesting</li> </ul>	When:			
Alignment and coordination	<ol> <li>Alignment and coordination with EMODnet, Copernicus and national marine core data services. Creation of MedBlueNet – integrated data service providing open access to data layers at different scales (regional and coastal) for both scientific /technical (research, environmental management, surveillance, security, industry) and non-technical (legal, socio- economic, policy) aspects;</li> <li>Alignment and coordination with Eurostat and Medstat to create a Blue Economy Mediterranean Observatory;</li> <li>Alignment, coordination and further connections with other prominent initiatives such as EOSC and ESFRI.</li> </ol>	How: When:	Meetings and activities for the identification of priority topics/ actions and of options for joint implementation. Research to strengthen dialogue and institution capacities. Promote and harmonize legislation to enforce public and private actors (when operating under public contract) to provide open access to collected data. 2020-2023.		
Promotion and possibly implementation of actions coordinated and jointly undertaken by different countries, with a "variable geometry" approach	<ol> <li>Diverse initiatives in the field of marine citizen science (on biodiversity, litters).</li> <li>Encourage Trans Mediterranean</li> </ol>	How:	Supported by BLUEMED cafes-like events on the occasion of conferences, workshops and meetings.		
	political engagement for the labelling and sharing of data, through the development of joint DOI operations for example.	When:	2021-2023.		
Start-Up actions		How:			
		When:			
Assessment and promotion of the		How:			
the BLUEMED umbrella of ongoing and future projects		When:			

[Champion countries must choose those activities that suit best the priority addressed]       [Champion countries describe in more detail the content and specific objective of a given activity]       [Champion countries describe in more detail the content and specific objective of a given activity]       [Champion countries describe in more detail the content and specific objective of a given activity]       [Champion countries describe in more detail the content and specific objective of a given activity]       [Champion countries describe in more detail the content and specific objective of a given activity]       [Champion countries describe in more detail the content and specific objective of a given activity]       [Champion countries describe in more detail the content and specific objective of a given activity]       [Champion countries describe in more detail the content and specific objective of a given activity]       [Champion countries describe in more detail the content and specific objective of a given activity]       [Champion countries describe in more detail the content and specific active of a given activity]       [Champion countries describe in more detail the content and specific active of a given activity]       [Champion countries describe in more detail the content and specific active of a given activity]       [Champion countries describe in more detail the content and specific active of a given active of a given activity]       [Champion countries describe in more detail the content and specific active of a given active of active of active of active of active of acti	<ol> <li>Dedicated meetings and participation to relevant working groups;</li> <li>Relevant actions and discussions to lead with competent national, European and Mediterranean authorities Creation of</li> </ol>
[Champion countries must choose those activities that suit best the priority addressed]       [Champion countries describe in more detail the content and specific objective of a given activity]       [Champion countries describe in more detail the content and specific objective of a given activity]         Lobbying actions       Actions to highlight the importance of open data, open science and open innovation within the Horizon Europe Mission of Healthy Oceans, Seas, Coastal and Inland Waters, and to promote dedicated calls;       How:       1         Training and capacity building initiatives       Mediterranean School of Applied Oceanography.       How:       1         Implementation Working Groups (IWG) on specific sectors       1       Annual Mediterranean Blue       How:       1	<ol> <li>pion countries explain how tivity can be carried out and ne within the IP (2020-2023)]</li> <li>Dedicated meetings and participation to relevant working groups;</li> <li>Relevant actions and discussions to lead with competent national, European and Mediterranean authorities Creation of</li> </ol>
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Training and capacity building initiatives       Mediterranean School of Applied Oceanography.       How:	<ol> <li>2020-2023.</li> <li>2020-2023.</li> </ol>
initiatives     Oceanography.     When:       Implementation Working Groups (IWG) on specific sectors     How::     How::       When:     1     Mhenite	
Implementation Working Groups (IWG) on specific sectors       How:       How:       How:       When:       When:       Implementation         Communication and engagement       1)       Annual Mediterranean Blue       How:       1	
Communication and engagement     1)     Annual Mediterranean Blue     How:     1	
Communication and engagement 1) Annual Mediterranean Blue How: 1	
Conference ;       2)       Blue Mediterranean open Access       2         Journal (open to marine science, environment, socio-economy).       3         When:       1	<ol> <li>Organization of a conference.</li> <li>Publication of an Open Access Journal.</li> <li>Mobilize appropriate communication skills.</li> <li>One conference per year, starting in 2021.</li> <li>Bi-annual publication, starting in 2021.</li> </ol>

# FICHE 11

## BUILDING CAPACITY, BLUE SKILLS AND BLUE PROFESSIONALS

## CO-CHAMPION COUNTRIES GREECE & EGYPT

#### Background

One crucial ingredient to unlock the Med Sea potential is clearly the human element. Human capital constitutes an overarching condition to achieving the region's economic, knowledge and technology priorities, not least in terms of research and innovation.

Many blue economy sectors still find it hard to attract the right employees, mainly due to the skills gap that persists between the education offer and the needs of the labour market, but also as a result of poor cooperation between academia and industry, the relatively low attractiveness of blue careers and a general lack of ocean literacy. With the right deployment of measures – e.g. practice-oriented and flexible training, apprenticeships, e-mentoring, innovation hubs and networks, social enterprises, incentives for SMEs and start-ups – however, considerable improvements can be expected in the short term, matching the European Commission's target of two million new jobs in the sector by 2020.

This goal supports the "New Skills Agenda for Europe" and the European Commission's mission to focus its efforts on **Blue Careers, Blue Labs and grants for the blue economy**. It also reflects the "European Strategy for more Growth and Jobs in Coastal and Maritime Tourism", the Westmed Initiative priorities and a good number of local and regional initiatives. Transboundary cooperation is a prerequisite for developing blue R&I capacity in the Mediterranean region and supporting it with the right skills sets.

The goal could lead to the design and establishment of a "BLUEMED Academy" to further develop "an educational critical mass and regional pool of resources", as clearly addressed by the European Marine Board in the recommendations of the Policy Brief "Training the 21st Century Marine Professionals". This needs to be customized to Mediterranean peculiarities and potential and be closely linked to local communities and their socio-economic needs. It can produce positive effects in a relative short time, in particular within already established blue economy sectors, with direct impact in terms of economic development, jobs and the well-being of citizens.

Fully in line with the UfM BlueSkills activity, supported in high-level fora such as the "Dialogue 5+5", the goal can build and capitalize on the already established network of infrastructures, universities and research institutions. It can also be driven by an economy sector, connecting goals and actions across the different pillars. Networking opportunities involving EU and non-EU countries are offered by existing networks and hubs at national and international level such as by UNIMED, EMUNI, the research infrastructures EMBRC and ASSEMBLE and the IOC-UNESCO Ocean Teacher Global Academy.

Mapping and discussing implementation options and potentials of this priority				
Recent and ongoing relevant projects				
PROJECT	DESCRIPTION		OBJETIVES	
BlueGeneration project	<b>Call</b> : Iceland, Liechtenstein and Norway through the EEA and Norway Grants Fund for Youth Employment	Website: https:// bluegeneration. org/index.php/en/ blue-generation- programme	The objective of the Blue Generation Project is to inspire and engage young people between 15 and 29 years to pursue a sustainable career in one of the following Blue Economy sectors: coastal tourism, aquaculture, ocean energy, marine biotechnology, shipbuilding, maritime transport and fisheries. At the heart of the project lies the Blue Generation Program (BCP). The BCP is an integrated outreach action organised and implemented by the project with the aim to "attract, engage and convert" young people to the vast opportunities of the Blue Economy job market.	
			The Blue Generation Program offers well-documented information about blue career prospects in Greece, Spain, Portugal, Bulgaria and Poland, mentoring programs for those among the young who wish to actively pursue a career in Blue Economy, including skills validation tools to better cope with the needed qualifications, as well as mobility exchanges through study visits for gaining first- hand experience in various Blue economy sectors.	

			To succeed in this, the Blue Generation Project brings together experts from the Blue Economy and Youth organisations to share knowledge about skills needs, career paths, open job positions and existing training.
ResponSEAble project	Call: European Commission's Horizon 2020 program Duration: 01/01/2017 - 31/12/2018	EU Contribution: 3.696.644 € Website: https://www. responseable.eu/	For the last three years, the ResponSEAble project has been looking at ways to help people understand their connection to the sea. Whether they live on the coast or inland, the project's goal has been to figure out how to encourage Europeans to take a more interest in their oceans, improve their understanding and to treat them with greater respect. ResponSEAble is funded by the European Commission's Horizon 2020 program and has 15 partners from around the European Union. This diverse group has been trying to figure out how to connect people to their seas and to help them better understand the complex human-ocean relationship. The reason is simple: if people have better knowledge they will make responsible decisions – in other words, they will become "ocean literate".
BlueSmart Project Blue Education for Sustainable Management of Aquatic Resources	<b>Call:</b> European Maritime and Fisheries Fund <b>Duration:</b> August 2012-July 2016	EU Contribution: 399.493€ Website: https:// bluesmart.hr/ en/blue_smart_ project/about_ the_project/	BlueSmart Project aims to create new skills and competences in blue economy sector and increase the employability of current and future sectors' workers in the County of Zadar.
SEA CHANGE Our ocean/Our health	<b>Call:</b> H2020- BG-2014-1 <b>Duration:</b> 01/03/2015 - 28/02/2018	EU Contribution: 3.494.876 € Website: https://www. seachangeproject. eu/	<ul> <li>Compile an in-depth review of the links between Seas and Ocean and Human health based on latest research knowledge outputs.</li> <li>Help to design and implement successful mobilisation activities focused on education, community, governance actors and directly targeted at citizens.</li> <li>Ensure Knowledge exchange with transatlantic partners to bring about a global approach to protecting the planet's shared seas and ocean.</li> </ul>
Ariel	Call: ADRION - FIRST CALL FOR PROPOSALS Duration: 01/01/2018 - 31/12/2019	EU Contribution: 904,453.12€ Website: https://ariel. adrioninterreg.eu/	Promoting small scale fisheries and aquaculture transnational networking in Adriatic-Ionian macroregion Support the development of a regional Innovation system for the Adriatic-Ionian area ARIEL partners will then develop a Joint Research Agenda for small-scale fishery and aquaculture and a Chart of Innovation Services, a strategic and multidisciplinary action plan defining common priorities and research lines, areas of improvement, knowledge based solutions and actions to successfully address the major challenges linked to innovation and sustainability of fisheries and aquaculture for the coming years in the Adriatic and Ionian Sea region.
FUTURE 4.0 ManuFactUring educaTion and training governance model for IndUstry 4.0 in the Adriatic- Ionian aREa	Call: ADRION - FIRST CALL FOR PROPOSALS Duration: 01/01/2018 - 31/12/2019	EU Contribution: 716,399.08€ Website: https://future4. adrioninterreg.eu/	With specific focus on Blue Economy, the shipyard & nautical logistic supply chain, the project intends to design a shared strategy to innovate companies approach to training through a Smart Learning Model enhancing shipyard competitiveness in Italy (Veneto & Apulia), Croatia, Greece and Albania. The project structure foresees the definition of a Technological Map of the Shipyard & Nautical Logistic supply chain thorough inclusive road mapping and foresight activity on technology and related competences. Results will be the lay for the designing of a knowledge, competence and skills training/learning hub (FUTURE4.0 platform) involving Universities and training orgs., companies and PAs.

FISH-MPA PHASE 2	Call H2020	EU Contribution:	The project aims at providing results and specific guidance
	Duration: 01/11/2016 - 31/10/2019	2.975.000,00€ Website: https://www. iucn.org/regions/ mediterranean/ projects/current- projects/fishing- governance- mpas- potentialities- blue-economy- 2-fishmpablue-2 / https:// fishmpablue-2. interreg-med.eu/	for the management of artisanal fisheries in MPAs through testing the process of a governance toolkit, bringing capacity building for stakeholders (MPAs managers and local fishermen groups) and supporting policy recommendations in order to set up fishery management models.
BOOSTing	Call ADRION -	EU Contribution:	The program aims at unlocking and boosting the potential
The innovation potential of the triple helix of Adriatic- lonian traditional and emerging BLUE growth sectors clusters through an open source/ knowledge sharing and community based approach <b>CLIPPER</b> Creating a leadership for maritime industries - New	FIRST CALL FOR PROPOSALS Duration: 01/01/2016 – 31/10/2019 Call: Regional ERDF / ESF Operational Programme 2014– 2020	<ul> <li>1.138.099.85€</li> <li>Website: https:// blueboost. adrioninterreg.eu/</li> <li>EU Contribution:</li> <li>1.086.023.00€</li> </ul>	of knowledge/technology transfer, transnational and cross- sectoral cooperation of key innovation actors of traditional (primarily fisheries and ship-building) and emerging (primarily Blue technologies-including aquaculture- green shipbuilding, robotics and new materials) Blue Growth sectors by reinforcing the relationships and interactions within and among their clusters according to an open source, knowledge sharing &community based approach. CLIPPER is an innovative interregional cooperation project that brings together seven pro-active regions to address the negative impact the global economic recession has had on Europe's maritime sector. This sector is also suffering from growing competition from emerging countries.
opportunities in	2020	Website:	from growing competition from emerging countries. In particular, the project is supporting the SMEs to develop
Europe	<b>Duration:</b> 01/01/2017 – 30/06/2021	https://www. interregeurope.eu/ CLIPPER/	innovative business strategies focused on diversification and differentiation that help them to create jobs and growth in the Blue Growth sector.
ENTREFISH Entrepreneurship for new employment and new skills in fishery's and aquaculture's SMEs is a project funded under the "Blue Careers" Call, launched by EASME, the Executive Agency for Small and Medium-sized Enterprises of the EU Commission, to promote employment and the development of the "Blue Economy"	Call Blue Careers Call, launched by EASME - EASME/ EMFF/2016/1.2.1.2 - Blue Careers in Europe Duration: 01/03/2017 - 28/02/2019	EU Contribution: 580.000,00€ Website: http://www. entrefish.eu	It supports the skills of entrepreneurs, workers, university students and young graduates to foster the sustainable growth of aquaculture and fishery enterprises, through an approach based on Multidisciplinarity, inter-sectoral approach, and an intergenerational pact.

<b>BRIdges</b> The GAp for Innovations in Disaster resilience	Call: H2020 European Commission Project Duration: 2016-2020	EU Contribution: 5.999.520,50 € Website: www. brigaid.eu	BRIGAID is a 4-year project (2016-2020) under EU Horizon2020, aimed to effectively bridge the gap between innovators and end-users in resilience to floods, droughts and extreme weather.
DEEP BLUE Developing Education and Employment Partnerships for a Sustainable Blue Growth in the Western Mediterranean Region	Call: EASME/ EMFF/2017/1.2.1.12 - Sustainable Blue Economy Duration: July 2009-June 2013	EU Contribution: 475.678,00€ Website: http://mamba. habgor.ac.uk/ media.php	DEEP BLUE will promote collaboration between marine and maritime education, research, and training centres to strengthen relevant skills and increase capacity building for blue career development. The DEEP BLUE project aims at developing skills and building capacities throughout enhancing geopolitical dialogue and international scientific cooperation (Science Diplomacy) in the Western Mediterranean Region.
BLUECloud	Call: H2O2O European Commission Project Duration: 01/09/2019 – 01/09/2022	EU Contribution: 5.999.520,50 € Website: https://www.csc. fi/-/bluecloud / https://www. blue-cloud.org/	The project implements a practical approach to address the potential of cloud based open science to achieve a set of services identifying also longer term challenges to build and demonstrate the Pilot Blue Cloud as a thematic EOSC cloud to support research to better understand & manage the many aspects of ocean sustainability, through a set of five pilot Blue-Cloud demonstrators.
MISTRAL Mediterranean Innovation Strategy for transnational activity of clusters and networks of the Blue Growth	Call: Interreg- MED 2014-2020 Duration: 48 months	EU Contribution: €4.100.000 Website: https:// mistral.interreg- med.eu/	<ul> <li>to promote and make effective a transnational BG ecosystem of innovation where SMEs and corporates, RTOs, higher education institutions, public sector, cooperate to:</li> <li>Develop sustainable innovation actions,</li> <li>Increase their innovation performance,</li> <li>Sustain the development of the entrepreneurial spirit,</li> <li>Increase the access and sharing of the marine knowledge.</li> </ul>

Programmes and initiatives of relevance, including research and data infrastructures

# MENTOR PROGRAM BLUE GROWTH http://www.bluecareers.org/

The proposed Career Centre for the Eastern Mediterranean Sea (EM) and Black Sea (BS), aims to attract young people and experienced workers and fill existing skills' gaps by supporting activities that will increase employability in key Blue sectors of the region: Maritime Transport (shipping, ports, ship-repairs and shipbuilding), cruise and nautical tourism, aquaculture and offshore oil and gas.

## Εναλεια fishing school <u>https://enaleia.com/en/home/</u>

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Enaleia is a social enterprise that aims to make each fisherman fish in a more efficient and eco-friendly way. It is an award-winning youth initiative, aiming to attract more people into the fishing sector, educating them and the same time, creating conditions for sustainable fishing. Our students receive all the necessary knowledge and skills by attending a full specialized and tailor-made training program. The program combines distance learning, lectures, workshops and on-the-field training by professional fishermen.

4helix+ https://4helix-plus.interreg-med.eu/news-events/news/ 4helix+ Knowledge Providers: Callery of MED transnational innovation experts 4helix+ has set up a transnational database of Knowledge Providers, i.e. Cultural and Creative Industries and 'new innovation agents' in view of promoting their innovation skills and expertise within a MED transnational context. A broad gallery of registered Knowledge Providers is already available for consultation, while interested experts are still in time to join (by 31 July 2020).
• Blue Growth Master <a href="http://bluegrowth.inogs.it/advancedmaster/introduction">http://bluegrowth.inogs.it/advancedmaster/introduction</a> The Master in Sustainable Blue Growth is established to bring scientific excellence and technological innovation at the centre of a number of Blue Growth initiatives.

The Master is jointly organized by University of Trieste and OGS to support the creation of stable and attractive blue career pathways throughout strengthening professional skills and enhancing competencies in fields related to sustainable blue growth. It will start in January 2020.

- **Bluegrowth.gr** Blue Growth is aiming to inspire and help young entrepreneurs realize the innovative concepts relating to marine and freshwater resources. Creative disruption in the maritime sector can introduce promising business opportunities, create new jobs, and transform traditional processes into more productive and sustainable activities.
- BlueBRIDGE Building Research environments fostering Innovation, Decision making, Governance and Education to support Blue growth <a href="https://www.bluebridge-vres.eu/about-bluebridge">https://www.bluebridge-vres.eu/about-bluebridge</a> It supports capacity building in interdisciplinary research communities actively involved in increasing scientific knowledge about resource overexploitation, degraded environment and ecosystem with the aim of providing a more solid ground for informed advice to competent authorities and to enlarge the spectrum of growth opportunities as addressed by the Blue Growth Societal Challenge.
- SEA-EU European University of the SEA part of the Erasmus + program (An alliance of 6 universities (3 of which are in Mediterranean regions) with strong marine and maritime expertise.
- Common Fisheries Policy.
- Mediterranean Universities Union.
- Blue Med Initiative.
- Blue Growth Initiative of FAO.
- MSSD 2016-2025 and Regional Action Plan on SCP.
- ICCAT GBYP project on Bluefin Tuna.
- CPMR Inter-Mediterranean Commission.
- IMO World Maritime University.

### Target sectors and groups

- Farmers.
- Fishermen/aquaculture.
- Tourist operators.
- Local population.
- Disaster risk managers.
- Marine Transport sector.
- Health.
- Blue economy (energy, biothech, shipping).
- Territorial planning.
- Water resources managers.
- Scientists.
- Students.
- Small to Medium Enterprises.

# Funding options and agencies

- ENI-CBC.
- Interreg.
- The Interreg IPA CBC Programme.
- Horizon 2020.
- Life European Project (DGENV) and CEPSA (Private company, Spain)(Life blue Natura).
- Interreg IV B Med.
- European Territorial Cooperation Programme.
- European Regional Development Fund.
- DGMARE (EASME).

Activities to promote the SRIA Implementation				
Examples of activities	Content and objective		How and timeframe	
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]	[Champion countries explain how the activity can be carried out and timefrar within the IP (2020-2023)]		
Networking and engagement of economic sectors and national	Creation of clusters for knowledge sharing.	How:	Thematic Workshops and seminars.	
Blue Growth communities	<ul> <li>Registration in the +hellix database (until july 2020).</li> <li>Participation in the Mediterranean Blue Economy Day and the Mediterranean Stakeholder Platform.</li> <li>Goal: Mapping of needs and share experience to increase understanding.</li> </ul>	When:	At least annually.	
Alignment and coordination	<ul> <li>GSO BLUEMED Working Group</li> <li>DGMARE</li> <li>SEA-EU (EU University of the Sea)</li> <li>UFM Blue Skills program</li> <li>BLUECloud Project</li> </ul>	How:	<ol> <li>Meetings, working groups and activities to define and identify needs.</li> <li>Co-organise seminars/training events for professionals / students.</li> <li>Co-organise Blue hackathon event (Blue Cloud).</li> </ol>	
		When:		
Promotion and possibly implementation of actions	<ul> <li>Advisory Groups.</li> <li>Besearch organizations</li> </ul>	How:		
coordinated and jointly undertaken by different countries, with a "variable geometry" approach	<ul> <li>Interact.</li> </ul>	When:		
Start-Up actions	Fishing schools.	How:	Calls.	
	<ul><li>Blue Labs.</li><li>Blue Careers course.</li></ul>	When:	Annually.	
Assessment and promotion	Promotion of the bluemed e-traing	How:	Bluemed Website, Social Media.	
ot the capitalisation and valorisation under the BLUEMED umbrella of ongoing and future projects	activities.	When:	2020.	
Lobbying actions	Actions to highlight the importance of	How:	Workshops and meetings	
	Sustainable blue careers.	When:		

	Content and objective		How and timeframe	
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]	[Champion countries explain how the activity can be carried out and timeframe within the IP (2020-2023)]		
Training and capacity building initiatives	<ol> <li>BlueMed e-training.</li> <li>Blue Labs.</li> <li>Research organizations.</li> </ol>	How:	Foster local dialogue amongst training institutions, businesses, and administrations.	
	<ul> <li>4) Specialized schools (e.g. fishing school, etc).</li> <li>5) Connection with the BlueMed.</li> <li>6) Master Course for capacity.</li> <li>7) SEA-EU.</li> <li>8) UFM Blue Skills Programmes.</li> <li>9) Blue "Hackathon!".</li> </ul>	When:	2021.	
Implementation Working Groups	• GSO BLUEMED Working Group.	How:	Meetings.	
(IWG) on specific sectors	<ul><li>EU Advisory Groups (Aquaculture, Fishing, Seafood).</li><li>Research organizations.</li></ul>	When:		
Communication and engagement	<ul><li>GSO BLUEMED Working Group.</li><li>EU Advisory Groups.</li><li>Research organizations.</li></ul>	How:	Foster local dialogue amongst training institutions, businesses, and administrations.	
	<ul> <li>Local Authorities.</li> <li>Non-governmental organizations.</li> <li>Blue-careers collectives.</li> <li>SEA-EU.</li> </ul>			

The Idea of a Blue-hackathon is taken from the Climate-KIC Climathon it is a day where in many parallel cities individua/speliastits/companies organise to face and propose solutions for specific challenges. This idea expanded might work for other BlueMed Challenges also and could be achieved through the Mediterraneand Stakeholder Platform, or in relation to the Blue Economy Day organised by DGMARE, and maybe lead to different Start ups or further funding ideas BlueCloud is also...

FICHE 12				
STRENGTHEN SYNERGIES AMONG SCIENCE, INDUSTRY, POLICY-MAKERS AND SOCIETY				
CO-CHAMPION COUNTRIES: MALTA & JORDAN				
		Background		
Encouraging networking a pillar' added value as neco considering the geo-polition	mong different sectors to s essary (default?) backgroun cal complexity of the Medite	trengthen synergies, this g d methodology of all scie erranean.	oal is strongly characterized by the 'across- nce-to-policy processes, in particular when	
Indeed, there is a great ne region in order to achieve society, is crucial for social	ed to promote communicat the objectives of the SRIA. proper governance.	tion and dialogue betweer Developing participatory	n different stakeholders in the Mediterranean approaches to take decisions, including civil	
From one side science sho findings should be more i well-being of citizens.	uld know more about challe ncorporated in other sector	nges other sectors of socie rs of society thus impactir	ty are facing, from the other existing research ng in terms of economic development, jobs,	
This goal, for which a realis effect (e.g. convergence of	tic action plan can be establ the BLUEMED priorities wit	lished for the next years, al h other relevant strategies	so opens up the possibility to have a leverage , e.g. Regions).	
Ma	pping and discussing imple	mentation options and pot	entials of this priority	
	Recent and	d ongoing relevant project	s	
PROJECT	DESCRI	PTION	OBJETIVES	
BlueBRIDCE Building Research environments for fostering Innovation, Decision making, Governance and Education to support Blue growth	Call: H2020-EU.1.4.1.3. - Development, deployment and operation of ICT-based e-infrastructures Duration: 2015-2018	EU Contribution: € 5 295 753 Website: https://www. bluebridge-vres.eu/	Innovating current practices in producing & delivering scientific knowledge advice to competent authorities & enlarges the spectrum of growth opportunities in distinctive Blue Growth areas.	
Support Action to initiate cooperation between the Communities of European MARine and MARitime REsearch and Science	Call: SST.2008.6.0.6. - Integration of Marine and Maritime Sciences in Waterborne Transport in support to the European Research Area <b>Duration:</b> 2009-2012	EU Contribution: € 498 085 Website: not available	To identify and establish appropriate mechanisms to strengthen the cross- sectoral and interdisciplinary cooperation, key ferment for innovation, between both research communities.	
MARIBE Marine Investment for the Blue Economy	Call: H2020-EU.3.2 SOCIETAL CHALLENGES - Food security, sustainable agriculture and forestry, marine, maritime and inland water research, and the bioeconomy. Duration: 2015-2016	EU Contribution: € 1 977 951 Website: http://maribe.eu/	Socio-economic study to identify key opportunities for synergistic collaboration between private entities.	

COLUMBUS Monitoring, Managing and Transferring Marine and Maritime Knowledge for Sustainable Blue Growth	Call: H2020-EU.3.2 SOCIETAL CHALLENGES - Food security, sustainable agriculture and forestry, marine, maritime and inland water research, and the bioeconomy Duration:	EU Contribution: € 3 997 488 Website: http://www. columbusproject.eu/	To capitalise on the European Commission's significant investment in marine and maritime research by ensuring accessibility and uptake of research Knowledge Outputs by end-users: policy, industry, science and wider society.
COFASP ERANET (Strengthening cooperation in European research on sustainable exploitation of marine resources in the seafood chains- ERANET)	2015-2018 Call: FP7-KBBE Duration: 2015-2018	EU Contribution: € 2 737 158 Website: not available	To strengthen cooperation and synergies between European research programme owners and managers, focusing on the benefits and needs for the Fisheries, Aquaculture and Seafood Processing sectors.
<b>GAP2</b> Bridging the gap between science, stakeholders and policy makers	<b>Call:</b> FP7–SIS <b>Duration:</b> 2011–2015	EU Contribution: € 5 913 773 Website: http://gap2.eu/	To promote and enable processes for open and effective participation of stakeholders in research and management, and demonstrate through specific examples and critical evaluation, the role and value of stakeholder driven science in the governance of fisheries and the marine environment.
MAESTRALE	Call: Interreg-MED 2014- 2020 Duration: Unknown	EU Contribution : not available Website : https:// maestrale.interreg- med.eu/	10 Blue Energy Labs developed as 40 laboratories involving research institutions, public authorities, SMEs and scientific experts. The intensive collaboration in the form of a participatory process all around the Mediterranean area; enabled the development of 20 pilot projects, for which feasibility and sustainability assessments demonstrated that Marine Renewable Energy technologies in the Mediterranean can be implemented.
4Helix+ Empowering the 4 helix of MED maritime clusters through an open source/ knowledge sharing and community-based approach in favour of MED blue growth	Call: Interreg-MED 2014- 2020 Duration: 01/02/2018 - 31/07/2020	EU Contribution : €2 193 984 Website : https://www. cei.int/projects/4helix	Stimulating, coaching and funding creative innovation within the blue economy in the Mediterranean (MED) area, by improving the gap between the 8 Mediterranean regional maritime clusters and within their four helixes, through an open source, knowledge-sharing, and community-based approach.
MISTRAL Mediterranean Innovation Strategy for transnational activity of clusters and networks of the Blue Growth	Call: Interreg-MED 2014-2020 Duration: 48 months	EU Contribution: €4 100 000 Website: https:// mistral.interreg-med. eu/	<ul> <li>to promote and make effective a transnational BG ecosystem of innovation where SMEs and corporates, RTOs, higher education institutions, public sector, cooperate to:</li> <li>develop sustainable innovation actions.</li> <li>increase their innovation performance.</li> <li>sustain the development of the entrepreneurial spirit.</li> <li>increase the access and sharing of the marine knowledge.</li> </ul>

<b>APPLY</b> Argumentation and Public PoLicY analysis	COST ACTION: CA17132 - European network for argumentation and public policy analysis Duration: Start of Action - 19/10/2018 End of Action - 18/10/2022	Website: https://www.cost.eu/ actions/CA17132/#tabs  Name:overview	<ul> <li>Improves the way European citizens understand, evaluate and contribute to public decision-making on such matters of common concern as climate change or energy policies.</li> <li>A multidisciplinary perspective on argumentation.</li> <li>Identifies gaps between the citizens', policymakers' and scholarly experts' argumentation.</li> <li>Explores ways of treating them.</li> <li>Provides insights into the understanding, evaluation and production of public policy arguments.</li> </ul>
OPP	Call: COST Action: IS1403 - Oceans Past Platform Duration: Start of Action - 17/11/2014 End of Action - 16/11/2018	Website: www.tcd.ie/history/ opp/	<ul> <li>To measure and understand the significance and value to European societies of living marine resource extraction and production to help shape the future of coasts and oceans.</li> <li>Lowers the barriers between human, social and natural sciences.</li> <li>Multiply the learning capacity of research environments; and enable knowledge transfer and co-production among researchers and other societal actors.</li> <li>Integrating historical findings of scale and intensity of resource use into management and policy frameworks.</li> </ul>
MarCons	Call: COST Action: CA15121 - Advancing marine conservation in the European and contiguous seas Duration: Start of Action - 01/06/2016 End of Action - 31/05/2020	Website: www.marcons-cost. eu/	<ul> <li>Consolidate a network of scientists and stakeholders who are involved in marine conservation in European and contiguous seas,</li> <li>Promote collaboration, reduce redundancy of research efforts in conservation science and practice,</li> <li>Developing and promoting novel and relevant concepts, methods, and tools, provide support to the related European policies, and enable effective and informed decision-making for the improvement of marine conservation in the European Seas and adjacent regions,</li> <li>Advancing the science of integrated conservation planning, promoting regional coordination and transboundary conservation, proposing specific conservation actions, accounting for climatic change and biological invasions,</li> <li>Providing guidance for assessing governance issues to make marine spatially managed areas more effective,</li> <li>Bridge the gap between conservation science and policy makers and substantially contribute to the challenge of halting biodiversity loss in the European Seas by 2020.</li> </ul>

OCEANGOV	Call: COST Action: CA15217 - Ocean Governance for Sustainability - challenges, options and the role of science Duration: Start of Action - 28/09/2016 End of Action - 27/09/2020	Website: www.oceangov.eu/	<ul> <li>Strengthening regional and interdisciplinary dialogue, producing scientific output, crosscutting the natural and social sciences.</li> <li>Creates a distinct multi-scalar and cross-sectoral platform for institutional partners across academia, policymaking and civil society, presenting inclusive spaces for transdisciplinary dialogue, capacity development and the advancement of practical toolkits that attend to science-policy gaps inherent within integrated ocean and coastal governance.</li> </ul>	
Progr	ammes and initiatives of rele	evance, including research	and data infrastructures	
UNEP Strategic F <u>ecsde.org/projec</u>	Partnership for the Mediterra ct/project-4/).	nean Sea Large Marine Ec	osystem (MedPartnership) ( <u>https://mio-</u>	
IUCN Mediterrar marine-program	nean Marine Programme ( <u>htt</u> n <u>me</u> ).	ps://www.iucn.org/region	ns/mediterranean/our-work/mediterranean-	
Mediterranean B	lue Economy Stakeholder Pl	atform ( <u>http://www.medk</u>	olueconomyplatform.org).	
WestMED Initiat	ive ( <u>https://www.westmed-</u>	initiative.eu/).		
EUSAIR ( https://www.adriatic-ionian.eu/).				
Marina Stratom	Eramowork Directive (MSED	) ActionMod (https://act	ionmod ou)	
Marine Strategy	Framework Directive (MSFD	) – ActionMed ( <u>https://act</u>	ionmed.eu).	
	Torra	at captors and groups		
Horizon 2020 Sc	Horizon 2020 Science with and for Society (SwafS) Programme Committee.			
Horizon 2020 For the Bioeconomy	• Horizon 2020 Food Security, Sustainable Agriculture and Forestry, Marine, Maritime and Inland Water Research and the Bioeconomy Programme Committee.			
Horizon Europe	Sub-Group on Mission Area	Healthy Oceans, Seas, Coa	astal And Inland Waters.	
Union for Medite	Union for Mediterranean (UfM) ( <u>https://ufmsecretariat.org/</u> ).			
Sea Basin Strateg     maritimeaffairs/	<ul> <li>Sea Basin Strategy – Working Groups for Integrated Maritime Policy in the Mediterranean (<u>https://ec.europa.eu/</u>maritimeaffairs/policy/sea_basins/mediterranean_sea_en).</li> </ul>			
European Neighl <u>eu/diplomatic-n</u>	• European Neighbourhood Policy Project on Integrated Maritime Policy for the Mediterranean ( <u>https://eeas.europa.eu/diplomatic-network/european-neighbourhood-policy-enp_en</u> ).			
UNEPMAP (https://www.intensity.org/linear/inte	UNEPMAP (https://web.unep.org/unepmap/what-we-do/projects).			
IUCN World Cor areas/our-work/	nmission on Protected Areas /marine).	s (https://www.iucn.org/co	ommissions/world-commission-protected-	

- UNESCO Science for Society (https://en.unesco.org/themes/science-society).
- Institute for Advanced Sustainability Studies (https://www.iass-potsdam.de/en).
- European Environmental Agency (<u>https://www.eea.europa.eu/</u>).
- COSCE Science and Society (https://www.cosce.org/science-and-society/).
- Waterborne Technology Platform (https://www.waterborne.eu/).
- International Council for the Exploration of the Sea (ICES) (https://www.ices.dk/Pages/default.aspx).

# Funding options and agencies

- Science with and for Society (SwafS) calls Horizon 2020.
- Blue Growth calls Horizon 2020.
- European Maritime and Fisheries Fund (EMFF).
- JPI Oceans Calls.
- ERA-NET BlueBio Cofund.
- Bio-based Industries Joint Undertaking (BBJU).
- Interreg-Med calls.
- EEA grants.
- COST.

Activities to promote the SRIA Implementation					
Examples of activities	Content and objective	How and timeframe			
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]	[Champion countries explain how the activity can be carried out and timeframe within the IP (2020-2023)]			
Networking and engagement of	• Blue Labs.	How:			
economic sectors and national Blue Growth communities	<ul><li>Regional Maritime Clusters.</li><li>EU Advisory Groups.</li><li>International Symposia.</li></ul>	When:			
Alignment and coordination	BLUEMED GSO Working Group.	How:			
		When:			
Promotion and possibly implementation	BLUMED GSO Working Group	How:			
of actions coordinated and jointly undertaken by different countries, with a "variable geometry" approach	New funding mechanism e.g. JPI Mediterranean'.	When:			
Start-Up actions	Continuation of BLUEMED CSA Start-up Actions bringing together countries from all shores of the Mediterranean	How:			
		When:			
Start-Up actions	Continuation of BLUEMED CSA Start-up Actions bringing together countries from all shores of the Mediterranean	How:			
	all shores of the Mediterranean.				

Examples of activities	Content and objective How and timefra	
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]	[Champion countries explain how the activity can be carried out and timeframe within the IP (2020-2023)]
Assessment and promotion of the		How:
capitalisation and valorisation under the BLUEMED umbrella of ongoing and future projects		When:
Lobbying actions		How:
		When:
Training and capacity building initiatives	Mutual Learning workshops.	How:
	• EU funding calls.	When:
Implementation Working Groups (IWG)		How:
on specific sectors		When:
Communication and engagement	• Continuation of BLUEMED CSA.	How:
	<ul> <li>BLUEMED GSO Working Group.</li> <li>EU Advisory Groups.</li> <li>Social networks.</li> </ul>	When:

FROM TRADITIONAL M			FICHE 13		
FROM TRADITIONAL MARITIME ECONOMIC TO BLUE GROWTH ACTIVITIES RELATED GOALS: E-D2. MEDITERRANEAN BLUE START-UPS					
CO-CHAMPION COUNTRIES: CROATIA - ISRAEL					
		Background			
Detection of Clustering of e proven by the cooperation innovative cooperative pro economic growth and rapi practices between the two	fforts within and across co between their members: ojects, the deployment of d technological developm shores of the Mediterrane	ountries is a precursor to exce the exchange of scientific an products from these project tent in the Mediterranean reg an Sea.	llence and economic growth. Clusters have d technical knowledge, the development of is on international markets, that they allow gion. They also allow the exchange of good		
Although it is imperative tha blue activities seeking posit networks is detected. In par of new maritime activities a stakeholders.	t countries in the Region m tive impact on employmer rticular, this goal is linked to and the establishment of no	ove away from traditional moo nt, clear deficit of clusters in t o all the three pillars of the BLU ew clusters will tighten links b	dels of economic growth to more sustainable ne Mediterranean and lack of structures and JEMED SRIA as stimulating the development between research, economic and innovation		
To facilitate the developmer authorities. While establish found with the European No	nt of maritime clusters, fina ing the action plan, whose etwork of Maritime Cluster	ancial and framework support e development is actually feas rs and with the WestMED Initi	t is required from national, local and regional hible in the short term, convergences can be hative.		
The process that brought to the last update of the BLUEMED SRIA (http://www.bluemed-initiative.eu/wp-content/ uploads/2018/12/BLUEMED-SRIA_Update_2018.pdf), involving CSA partners and national pivots, through the BLUEMED Platforms, identified for Goal E-D1. The following nine Actions (Also related to: E-D2. Mediterranean Blue start-ups).					
E-D1.2 Promote public-pri markets, such as, offshore seas, biotechnologies, coas increasing visibility, interna	ivate partnerships to over wind, greenship, smartshi tal ecological engineering, tional representation.	come the obstacles to the fl ip, smartyard, sustainable co satellite data services, throug	ourishing of new activities e.g. in emerging astal tourism, mineral resources in the high gh federation of actors of research /industry,		
E-D1.3 Develop economic productive and sustainable	studies to identify the sp activities.	pecialization of different area	s and regional clusters and highlight more		
E-D1.4 Establish innovative maritime sectors and econd	e methodologies to assess omy.	s the impacts of different pro	ogrammes and actions on the evolution of		
E-D2.1 Favour incubators a increasing innovative blue e	nd connect start-ups, inv ecosystems.	estors, accelerators, entrepre	eneurs, corporate networks, universities for		
Ma	pping and discussing impl	ementation options and pote	ntials of this priority		
	Recent a	nd ongoing relevant projects			
PROIFCT	DESC	RIPTION	OBIETIVES		
VPSTTG	Call: EASME/	EU Contribution:	VPS for Tidal Turbine Generators VPSTTG		
VPS for Tidal Turbine Generators	EMFF/2017/1.2.1.12 - Sustainable Blue Economy	992.936,00 €	will design, manufacture and test an improved tidal turbine's pitch system – an important component enabling technology for more cost-effective tidal		
	<b>Duration:</b> 01/01/2019- 31/12/2020	Website: https:// ec.europa.eu/easme/en/ vpsttg-vpsttg-vps-tidal- turbine-generators	energy turbines. UK and Spain.		

SpaceTech4Sea Implementing Aerospace Technology on Marine LNG Applications Promoting Sustainable Blue Economy Space	Call: EASME/ EMFF/2017/1.2.1.12 - Sustainable Blue Economy <b>Duration:</b> 01/01/2019- 31/12/2021	EU Contribution: 1.065.706,00 € Website: https://ec.europa.eu/ easme/en/spacetech4sea- implementing-aerospace- technology-marine-lng- applications-promoting- sustainable-blue	Tech4Sea will demonstrate, validate and commercialise an innovative ultralight LNG fuel tank in the maritime sector, by utilising cutting-edge aerospace technologies and novel shipbuilding techniques. Greece and USA.
GREENing the BLUE	Call: EASME/ EMFF/2017/1.2.1.12 - Sustainable Blue Economy Duration: 2015-2016	EU Contribution: 810.151,00 € Website: https://ec.europa.eu/ easme/en/greening-blue- bound4blue-wingsail- demonstration-project	GREENing the BLUE presents the full- scale demonstration of a foldable wing sail solution based on aeronautical design, which reduces fuel use and pollutant emissions in maritime transport through wind energy co-propulsion. Spain and Germany.
ENSAMBLE Expertise and Networking to Sustain Actions in Med through Blue and Local Economy	Call: H2020-ART-2017- Two-Stages Duration: 01/06/2018 - 31/05/2021	EU Contribution: 19.802,512 € Website: https://ec.europa. eu/inea/en/horizon-2020/ projects/h2020-transport/ automated-road- transport/ensemble	ENSAMBLE will promote twinning activities among local coastal communities, and other relevant stakeholders, for the sustainable development of the fishing sector. Italy, France and Tunisia.
EASY FEED: Eco- aquaponics systems – 100% sustainable and profitable EU fish- farming SRIA Action: D2.1 / D2.4	Call: EASME/ EMFF/2017/1.2.1.12 - Sustainable Blue Economy Duration: 01 January 2019 – 01 December 2021	EU Contribution: 438.563,00€ Website: https://easyfeed-project. eu/#	EASY FEED will validate the use of an innovative aquaculture organic feed formula, based on locally grown quinoa and spirulina, to reduce the aquaculture sector's dependence on marine resources.
DEMO- BLUESMARTFEED: Demonstration project of a smart technology for monitoring the delivery of feed for a sustainable aquaculture SRIA Action: D2.4	Call: EASME/ EMFF/2017/1.2.1.12 - Sustainable Blue Economy Duration: 01 January 2019 – 01 December 2021	EU Contribution: 740.615,00€ Website: http://bluesmartfeed.eu/	DEMO-BLUESMARTFEED will validate the SICA technology (Smart System for Feeding Control) to monitor and optimise aquaculture feed supply, hence reducing feed waste. The aim of this proposal is to validate the SICA technology (Smart System for Feeding Control) in two real environments (offshore cages) in Spain and Greece.

AlgaeDemo Demonstration of large-scale seaweed cultivation at open sea and the positive effects thereof on the ocean	<b>Call:</b> EASME/ EMFF/2017/1.2.1.12 - Sustainable Blue Economy <b>Duration:</b> 01/01/2019 - 31/12/2021	EU Contribution : 999.832,00€ Website : https:// ec.europa.eu/easme/ en/algaedemo- demonstration-large- scale-seaweed- cultivation-open-sea-and- positive-effects-thereof- ocean	AlgaeDemo aims to demonstrate the sustainable, large-scale (1.4 ha) industrial cultivation of selected seaweed species at open sea, with automated seeding, harvesting and monitoring. Belgium and The Netherlands {Not in the Mediterranean, but relevant}.
<b>BLUENET</b> Creating new life for discarded fishing and aquaculture gears to prevent marine litter generation	<b>Call:</b> EASME/ EMFF/2017/1.2.1.12 - Sustainable Blue Economy <b>Duration:</b> 01/02/2018 - 31/07/2020	EU Contribution : 550.691,00 € Website : https://www. bluenetproject.eu/	BLUENET will set up a programme for recycling abandoned, lost or discarded fishing and aquaculture gear: recovering gear from the sea and using it as raw material to manufacture new gear. Spain and Italy.
OCEANETS Technological approaches for circular economy solutions in terms of prevention, recover, re-use and recycle of fishing gears to obtain added-value products in the textile industry	<b>Call</b> : EASME/ EMFF/2017/1.2.1.12 - Sustainable Blue Economy <b>Duration:</b> 01/01/2019- 31/12/2020	EU Contribution: 426.060,00€ Website: http://oceanets. eu/	OCEANETS will develop an ICT tool to prevent fishing gear loss and optimise the recycling technologies to produce high- quality fabrics from plastic nets. Spain and Czech Republic.
Cluster ACT Aggregation and Collaboration Tools to enhance cluster network in the maritime sector	COST ACTION: EASME/ EMFF/2017/1.2.1.12 - Sustainable Blue Economy Duration: Start of Action - 19/10/2018 End of Action - 18/10/2022	EU Contribution: 587.533,00 € Website: https://ec.europa.eu/ easme/en/cluster- act-aggregation-and- collaboration-tools- enhance-cluster-network- maritime-sector	Cluster ACT will develop a mechanism for maritime clusters' networking and collaboration with private investors to enhance innovation and business development. Italy, Spain, Greece, Croatia and Egypt. The project involves different types of actors (clusters, research organizations, association of private investors) that will act in the maritime field, with a specific focus on the sub- sectors strongly liked to tourism in the 5 Mediterranean countries (Italy, Spain, Croatia, Egypt, Greece): leisure boating, cruising, ports and marinas.
ArtReefs Innovative, competitive and integrated tools for sustainable coastal tourism and inclusive Blue Growth in the Mediterranean and Black seas	Call: EASME/ EMFF/2015/1.2.1.7 - Projects in the context of the Integrated Maritime Policy in the Black Sea and/or Mediterranean Sea regions Duration: 01/08/2016 - 31/07/2018	EU Contribution: 167.520,00 € Website: http://www.artreefs.eu/	The objective of the ArtReefs project is to pilot a public-private partnership, inviting cross-sectoral stakeholders across the Mediterranean and Black Sea Basins. It aims at promoting and facilitating the use of artificial reefs as effective and affordable tools to boost innovative and sustainable coastal and maritime tourism, while offering inclusive opportunities for transversal Blue Growth across a wide range of compatible activities that combine economic, social and environmental benefits.

	r	1	
MedSkippers	<b>Call</b> : EASME/ EMFF/2017/1.2.1.12 - Sustainable Blue Economy	EU Contribution: 499.910,00 €	Professional skippers in the Mediterranear (MedSkippers) aims to harmonise the training and recognition of professionar skippers of small commercial vessels and expand their skill set to boost the nauticar
		Website:	charter sector. Spain, Cyprus, Greece and
	<b>Duration:</b> 01/12/2018- 31/11/2021	https://medskippers.com/ project	Morocco.
CMES-WestMed	Call: EASME/	EU Contribution:	Developing Education and Employment
	EMFF/2017/1.2.1.12 – Sustainable Blue Economy	499.055,00 €	Partnerships for a Sustainable Blue Growth in the Western Mediterranean Region DEEP BLUE will promote collaboration between
	<b>Duration:</b> 01/01/2019 – 31/12/2020	Website: https:// ec.europa.eu/easme/en/ cmes-westmed-common- maritime-education- standards-west- mediterranean	marine and maritime education, research, and training centres to strengthen relevant skills and increase capacity building for blue career development. Italy, Spain and Tunisia.
DEEP BLUE	Call: EASME/	EU Contribution:	DEEP BLUE will promote collaboration
Developing Education and Employment Partnerships for a Sustainable Blue Growth in the Western Mediterranean Region	EMFF/2017/1.2.1.12 - Sustainable Blue Economy <b>Duration:</b> July 2009- June 2013	475.678,00€ Website: http://mamba.habgor. ac.uk/media.php	between marine and maritime education, research, and training centres to strengthen relevant skills and increase capacity building for blue career development. The DEEP BLUE project aims at developing skills and building capacities throughout enhancing geopolitical dialogue and international scientific cooperation (Science Diplomacy) in the Western Mediterranean Region.
Progr	ammes and initiatives of rel	evance, including research ar	nd data infrastructures

# Marine Data:

The three main relevant EU initiatives are:

- 1. The Copernicus Marine Environment Monitoring Service (CMEMS) which provides space data and oceanographic forecasts.
- 2. The Data Collection Framework which supports the collection and processing of fisheries and aquaculture data. The EU contribution over the seven years of the programme will be EUR 520 million which covers 80% of the total expenditure.
- 3. The European Marine Observation and Data Network (EMODnet) which assembles processes and distributes all other marine data and data products and is funded via EMFF.

Other relevant data networks funded by the EU include:

- SeaDataNet (SDN) a major pan-European infrastructure for ocean and marine data and gives access to high quality multidisciplinary data (physical oceanography, marine chemistry, geology, bathymetry, geophysics, and biology).
- SIMEDD The system developed and maintained by Plan Bleu.
- Fisheries data is managed by GFCM (catch, fleet register), with some relevant projects such as MEDITS (bottom trawl surveys).
- CIESM, the Mediterranean Science Commission runs taxonomy and bio-invasions databases.
- Eionet (European Environment Information and Observation Network) Environmental Data.
- PERSEUS Oceanographic Mediterranean and Black Sea Data Management funded by the EU under FP7 Theme "Oceans for Tomorrow" – Mainly Cast Data Base with vertical profiles of physical, chemical and biological data acquired with Bottle casts (Rosette), CTD casts, and Argo floats.

### Target sectors and groups

Clusters markets objectives can be deduced from the selected priorities of the SRIA and its connected actions. Main markets, either mature or emerging are:

- Naval (greenship, smartship) and nautism: Logistics and shipping focused on intelligent transport, such as energy performance, alternative fuels, security, eco-design, autonomy, multimodal, etc.
- Port infrastructures: Greenyard in order to limit the impact of port activity. Smartyard and digital: automation and process and cyber security.
- Marine energy resources especially innovative technologies for offshore wind turbines and development of coactivities (offshore aquaculture, etc.).
- Marine biological resources: Sustainable fishing, processing and marketing of fishery products, fishing gear and instrumentation and services (pesca-tourism).
- Sustainable aquaculture, formulated food, fish and shellfish hatchery, magnification (cage, basins, monitoring instrumentation).
- Blue biotechnologies: bioresources for humans (cosmetics, pharmaceuticals, agrifood) and for the energy and ecological transition (pollution control, bioremediation, bio-based materials).
- Environment and development of the coast: Ecological engineering, highlight the services provided by marine ecosystems and nature-based solutions, reduction of coastal vulnerability and increase it for resilience to extreme events.
- Sustainable coastal tourism.

Challenges must be grouped around 3 strategic transversal axes: Digital Transformation, Ecological Transition and Energy transition.

A strong recommendation to boost economic growth and competitiveness implemented by marine clusters for blue growth are:

- Each cluster must organize its innovations according to Areas of Strategic Action, ASA, these areas being markets oriented, matures or emerging markets. A number of 5–6 strategic action areas is recommended.
- All maritime clusters should agree to define the same strategic action areas, as this would strengthen collaboration between clusters. There will certainly be different contents or weight in country' cluster because this content depends on the different economic and research contexts in each country.

Clusters could use different process to stimulate innovation:

- In order to stimulate disruptive innovation, it is interesting to favour certain organizations such as cross-fertilization of technological fields and markets, for example by organizing "maritime hackathons", which will allow better integration of new technologies from the sectors to cluster members and their markets.
- A useful process is "open innovation" which is a way for companies to benefit from external ideas/technologies (Outside-In) and valorise internal ideas/technologies with external partners (Inside-Out) to reduce the financial risks associated to innovation, and quickly get a competitive advantage. As such it implies accelerating internal R&D and innovation along value chains through collaboration between the technological supply – and demand – side. Open innovation needs to be operational and this is done possible through networked, multi-collaborative ecosystems involving representative maritime clusters or intermediaries.

### **Maritime Clusters**

- European Network of Maritime Clusters (ENMC) (https://enmc.eu/about-us/).
- Pole Mer Mediterranee (https://www.polemermediterranee.com/).

## Intergovernmental bodies:

- Union for Mediterranean (UfM) (https://ufmsecretariat.org/).
- EC-DG Mare (https://ec.europa.eu/maritimeaffairs/home\_en).
- UNEP/MAP (http://web.unep.org/unepmap/) and its Regional Centers.

- IOC-UNESCO (http://msp.ioc-unesco.org/).
- Organisation for Economic Co-operation and Development (OECD) (http://www.oecd.org/science/).
- FAO Aquaculture (http://www.fao.org/aquaculture/en/).
- FAO Fishing (http://www.fao.org/fisheries/en/).
- FAO Sustainable Food (http://www.fao.org/sustainability/en/).
- World Tourism Organization UNWTO (https://www.unwto.org/).

# Research bodies, businesses and local authorities

- European Environmental Agency (https://www.eea.europa.eu/).
- The European Fisheries Areas Network (FARNET) (https://ec.europa.eu/fisheries/cfp/eff/farnet\_en).
- Mediterranean Advisory Council (http://en.med-ac.eu/index.php).
- European tourism association (https://www.etoa.org/).

#### Thematic platforms

- European Circular Economy Stakeholder Platform, Platform to exchange and interact, and make circular economy happen faster (https://circulareconomy.europa.eu/platform/).
- Blue Bioeconomy Platform (https://webgate.ec.europa.eu/maritimeforum/en/frontpage/1349).
- Tourism Business Portal (https://ec.europa.eu/growth/sectors/tourism/business-portal\_en).
- Enterprise Europe Network: tourism and cultural heritage (https://een.ec.europa.eu/).

#### Funding options and agencies

Relevant funding programs as listed in WestMed:

- BLUEMED Call for Start-up Actions.
- Cross Border Cooperation within the European Neighborhood Instrument Mediterranean Sea Basin Programme 2014-2020.
- European Commission Annual work programme for grants and procurement.
- European Investment Bank.
- European Maritime and Fisheries Fund (EMFF).
- Horizon 2020.
- Interreg Mediterranean (Meeting on 24th October 2019, in Athens the Interreg MED Programme projects' communities will unfold their results).

Activities to promote the SRIA Implementation					
Examples of activities	Content and objective	How and timeframe			
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]	[Champion countries explain how the activity can be carried out and timeframe within the IP (2020-2023)]			
Networking and engagement of economic sectors and national Blue Growth communities	<ul> <li>Attend Sustainable Ocean Summit         <ul> <li>Investing in Ocean Futures: Finance and Innovation for the Blue Economy. Paris, France.</li> </ul> </li> <li>Participation in events organised by marine and maritime clusters/ networks.</li> <li>Business-to-business meetings and research cooperation in the field of marine and maritime economic growth.</li> </ul>	How:	Participating and contributing to the meetings.		
		When:	2020-2023.		

Examples of activities	Content and objective	How and timeframe	
[Champion countries must choose those activities that suit best the priority addressed]	[Champion countries describe in more detail the content and specific objective of a given activity]	[Champion countries explain how the activity can be carried out and timeframe within the IP (2020-2023)]	
Promotion and possibly implementation of actions coordinated and jointly undertaken by different countries, with a "variable geometry" approach	<ul> <li>Promotion in the Med and European levels through national ministries and agencies relevant for marine and maritime economic sectors.</li> <li>Promotion through existing maritime and marine clusters and networks, particularly towards economies in transition.</li> </ul>	How:	Presentations of BLUEMED to the meetings, dedicated round tables, high-level meetings.
		When:	2020-2023.
Start-Up actions	Identification of pathways of trans- national collaboration within the Mediterranean marine and maritime economic sectors.	How:	Joint work on common activities and identification of gaps and opportunities.
		When:	2021-2023.
Assessment and promotion of the capitalisation and valorisation under the BLUEMED umbrella of ongoing and future projects	<ul> <li>Participation of BLUEMED at the high-level Mediterranean and European meeting on blue growth.</li> <li>Participation of BLUEMED at EurOCEAN Conferences.</li> <li>Participation of BLUEMED at the Final Conference of the ADRION programme.</li> <li>Participation of BLUEMED at the Capitalization Phase of the project MED-PHAROS4MPAS (Blue Economy and Marine Conservation: Safeguarding Mediterranean MPAs in order to achieve Good Environmental Status).</li> </ul>	How:	Presentations of BLUEMED to the meetings, dedicated round tables.
		When:	2020-2023.
Lobbying actions	Actions towards regional activities and programmes (e.g. Interreg, PRIMA), for including BLUEMED issues in their	How:	Bilateral meetings with high officials of programmes.
	strategic agendas.	vvnen:	2020-2023.
Training and capacity building initiatives	<ul> <li>Training courses about marine and maritime economic growth for non- EU countries.</li> </ul>	How:	Organising international training activities, workshops and summer schools.
<ul> <li>Initia key a marit</li> </ul>	<ul> <li>Initiating secondments between key and less developed marine and maritime players.</li> </ul>	When:	2020-2023.
Implementation Working Groups (IWG)	Create GSO BLUEMED Working Groups	How:	Meetings.
on specific sectors	and/or EU Advisory Groups.	When:	Annually.
Communication and engagement Thema issues BLUEN annou	Thematic Event on marine and maritime issues in the Mediterranean, at the BLUEMED Final Conference News, announcements, new materials, etc.	How:	Dedicated Session at BLUEMED Final Conference/ Website, social networks (twitter, facebook, instagram, etc.).
		When:	September 2020 / Social media during the whole process.





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