REPORT

UN DECADE OF OCEAN SCIENCE FOR SUSTAINABLE DEVELOPMENT
MEDITERRANEAN WORKSHOP

'The Mediterranean Sea We Need for the Future We Want'

21-23 January 2020 | Venice (Italy)

Authors:
Anna **Capasso**[1], Margherita **Cappelletto**[2], Lorenza **Evangelista**[3], Angela **Pomaro**[4], Rosalia **Santoleri**[4], National Research Council of Italy (CNR)

1. CNR - Press Office
2. CNR – Department of Earth System Science and Environmental Technologies
3. CNR - Programming and Grant Office
4. CNR – Institute of Marine Sciences

April 2020 ISSN: 2239-5172 n. DTA/30-2020

INDEX

INTRODUCTION

The present report outlines the main results of the Mediterranean Workshop preparing the UN-Decade of Ocean Science for Sustainable Development hosted by the Italian Oceanographic Commission and organized in Venice at IOC/UNESCO premises on 21st-23rd January 2020.

The United Nations proclaimed the 2021-2030 the 'Decade of Ocean Science for Sustainable Development (2021-2030)' (https://oceandecade.org/), giving mandate to the UNESCO Intergovernmental Oceanographic Commission (UNESCO/IOC) to coordinate the preparatory activities and implementation through: the establishment of an 'Expert Planning Group' (EPG), a Stakeholder Forum and the organization of a series of planning/preparatory meetings at global and regional level.

In order to take into consideration regional emerging environmental and ecosystem developments, new policy requirements, latest scientific and data advances, technological breakthroughs and evolving societal demands, regional workshops have been organized around the world. The Workshop entitled “The Mediterranean Sea We Need for the Future We Want” allowed to decline the specific priorities identified to meet the Decade's societal objectives in the perspective of the Mediterranean Sea uniqueness, proving the added value of alignment and coordination among key stakeholders to raise the voice of the Basin at the global level.

Extensively based on the outputs of the discussion collected at this link www.cnr.it/it/news/9212/un-decade-of-ocean-science-for-sustainable-development-2021-2030-mediterranean-workshop-the-mediterranean-sea-we-need-for-the-future-we-want, this report provides also a brief insight on the process and the methodology that brought to the Med Workshop and its follow-up so far. This last includes feeding outcomes report at global level and consultations on the development of the Decade Implementation Plan.

BACKGROUND PROCESS AND METHODOLOGY

The following steps and relevant time-span led to the execution of the Workshop (**Figure 1**). They were inspired by other Regional Workshops and with IOC/UNESCO Ocean Decade Unit.

- December 2017: United Nation proclaims the UN-Decade of Ocean Science;
- June-November 2018: the UN-Decade of Ocean Science roadmap is launched, and the EPG established. At the Executive Committee held in Paris in July, the President of the Italian Oceanographic Commission as country representative addresses the Italian candidacy to host a regional workshop for the Mediterranean region;
- July 2019: “Italy intends to contribute effectively to the implementation plan of the Decade by promoting a regional workshop on the Mediterranean”; official proposal at the 30th Session of the IOC Assembly;
- September 2019: At the meeting of the Italian Oceanographic Commission, the item 'Preparation of the Mediterranean Regional Workshop for the Ocean Decade' is addressed;
- October 2019: Setting-up of the Steering Committee composed by the IOC/UNESCO, the European Commission (EC-DG Research and Innovation), the Scientific Commission for the Mediterranean (CIESM), the United Nations Environment Programme - Action Plan for the Mediterranean (UNEP/MAP) and identification of facilitators to work in sub-groups;
- November 2019-January 2020: iterative definition of the outline and the Agenda (see **Annex I**);
- November 2019-January 2020: two-steps registration: (1) call for expression of interest by 17 December 2019 and (2) final registration by 8 January 2020
- December 2019: Arrangements definition (see **Annex II**);
- December 2019-January 2020: Finalization of the logistics;
- January 2020: 3-days event: 5 plenary sessions; 6 working groups including presentations, participatory sharing of inputs (i.e. on canvas as from the ‘Arrangements’) and discussion, co-conveners and rapporteurs’ digestion work; 5 coffee-breaks; 3 lunches; 2 social dinners;
- January-March 2020: Follow-up: release of preliminary communication outputs, short report and final outcomes;
- 2021: Decade kick-off.

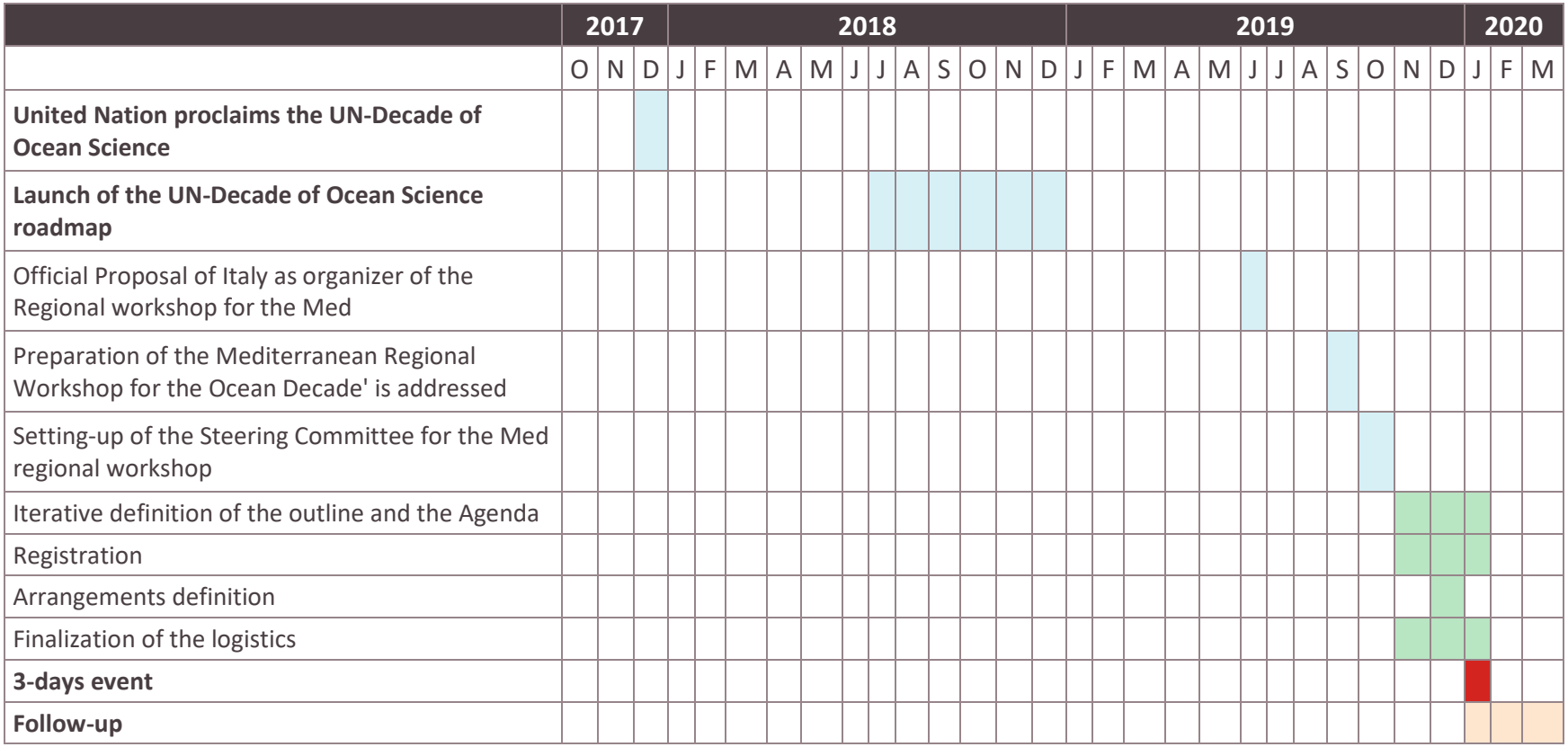


Figure 1: Mediterranean Workshop Organization - Gantt chart

Supporting tools for process management:

- Shared check-list;
- Weekly calls;
- WhatsApp group among core organizers;
- On-site collaborator.

Communication and engagement measures:

- Participatory approach, Q&A sessions and collections of inputs from the audience via post-it on canvas (see arrangements and **Figure 2**);
- CNR press-office on-board;
- Streaming of the plenary sessions;
- Press-releases, radio/TV interviews (see **Annex III**);
- Social networks (i.e. Facebook and twitter, see **Figure 3**)
- Launch of #OceanDecadeMed

Figure 2: Results of Q&A sessions and collections of inputs from the audience via post-it on canvas

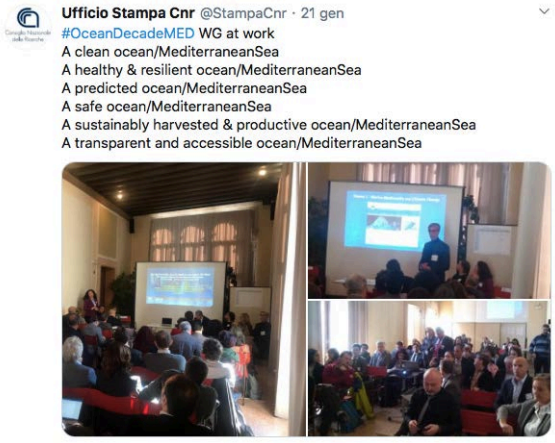


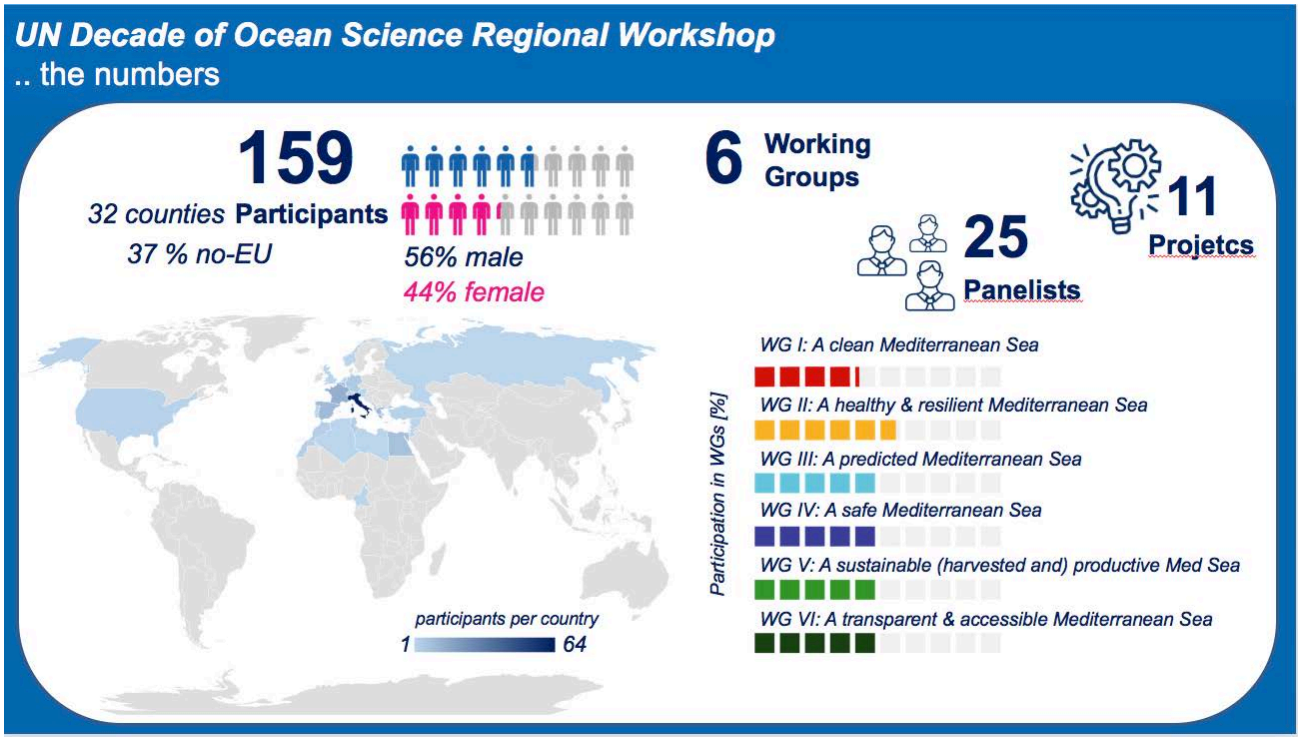
Figure 3: Workshop discussion on twitter

FACTS AND FIGURES

Context (address, dates, organisers):

- Venue: UNESCO-IOC Office, Palazzo Zorzi, Venice, Italy
- Dates: 21-23 January 2020
- Co-organisers: Italian Oceanographic Commission (COI), Intergovernmental Oceanographic Commission (UNESCO/IOC), European Commission (EC), United Nations Environment/Mediterranean Action Plan (UNEP/MAP), Mediterranean Science Commission (CIESM), in collaboration with the BlueMed Initiative
- Sponsors: National Research Council of Italy (CNR), Euro-Mediterranean Center on Climate Change (CMCC), National Institute of Geophysics and Volcanology (INGV), Stazione Zoologica Anton Dohrn (SZN), BlueMed CSA, EC, UNESCO/IOC

Workshop key figures and highlights (number of participants, geographical representation, priorities for the region)



Number of participants: 159 (89 male and 70 female)

Good geographical representation: participants from 4 continents and 32 countries (20 EU and 12 non-EU countries): 131 European experts (Albania, Austria, Belgium, Croatia, Cyprus, France, Germany, Greece, Italy, Malta, Monaco, Montenegro, Norway, Portugal, Slovenia, Spain, Switzerland, The Netherlands, UK) and 1 expert from Russian Federation, 18 African experts (Algeria, Cameroon, Egypt, Turkey, Libya, Morocco and Tunisia), 2 experts from Israel, 1 expert from Jordan and 1 from Lebanon, 1 expert form Syria, 2 from Turkey and 2 experts from USA.

Fair sectoral balance:
15 academics, 14 governments' representatives, 76 experts from research institution, 1 private sector, 53 regional and international organizations and initiatives.

To be noted: Plastic free event and youth participation (4 BlueMed Young Ambassadors).

Specific priorities for the Mediterranean: enhance observing and predicting capabilities; Build a laboratory for Climate Change; Set up efficient adaptive/mitigating strategies to react to the accelerated paths of change: Carry out test case actions focusing on socio-ecological systems; Science-policy integration; North-South and East-West collaboration aligning BlueMed, IOC, UNEP-MAP, EC, CIESM, ESA, UfM, GFCM; Structured partnerships to overcome political constraints; Cross-shared educational strategy for Sustainable Development.

Specific key words: endemism, land-sea connection, cultural heritage, socio-ecological systems, multi-scale multidisciplinary observation, data ecosystem, exotic species, culture of adaptation, local knowledge sharing capacity.

Website: www.cnr.it/en/event/16651/mediterranean-un-decade-of-ocean-science-for-sustainable-development-2021-2030 & www.cnr.it/it/news/9212/un-decade-of-ocean-science-for-sustainable-development-2021-2030-mediterranean-workshop-the-mediterranean-sea-we-need-for-the-future-we-want.

Quotes:

M. Riccardo - Enthusiasm and competence, awareness of working together and willingness to share

F. Trincardi - Share a view of the seascape, be aware of our historical impacts, improve our ability to forecast extreme events

S. Kholeif - Ocean Science is our Champion and is a source of innovation, we all have to bring it about, but we all stand to gain in the end

F. Fava - The Mediterranean is a shared sea, any best practice will have an extra value to address policy and decisions in the future**.**

R. Santoleri - Coastal urbanization and climate change exacerbates the need for advanced monitoring and predictions of coastal inundation, of coastal pollution, of coastal habitat health and multi-hazards. The Mediterranean Sea is launching a proposal for a program on global coastal observation and prediction for the Decade.

G. Leone - The Decade needs to go beyond scientific capacity development, by creating a new awareness at the policy and civil society level, identifying alternative funding and increasing international collaboration. The effective use of unprecedented achievements in science and technology, is indispensable to ensure that growing development demands, and a healthy ocean co-exist in harmony.

For each Working Group, the Co-conveners and Rapporteurs contributed to the outcomes reported in the next sections.

WG I: A CLEAN MEDITERRANEAN SEA

Co-Conveners:
Suzan Kholeif, NIOF & EPG, IOC/UNESCO
Francois Galgani, IFREMER & Expert BlueMed Pilot Action

Panelists:
Tatjana Hema, UNEP/MAP
Micheal Scoullos, MIO-ECSDE, GWP-Med & UNESCO Chair of the UoA
Tosca Ballerini, Expedition Med

Projects' pitch:
GoJelly – George Triantafyllou, HCMR
CLAIM – Ana Rotter, NIB

Rapporteurs:
Goed Devonne, IOC/UNESCO
Fedra Francocci, CNR

The aim of this group for the Decade is fostering new ideas for integrated research to assess the human and environmental risks on the Mediterranean Sea; to provide innovative knowledge base for mitigation and remediation; and to address impacts on key economy drivers in the Mediterranean Area. To this end, it is recommended to:

- **strengthen Regional assessments and monitoring plans of marine litter**, eutrophication and chemical contaminants in the Mediterranean Sea by consideration of ocean science and innovative approaches;
- harmonizing the methodology;
- enhancing governance for ocean science and management; and enhancing capacity development, shared knowledge and technologies;
- promote the concept of data sharing, education for sustainable development and active involvement of civil society and blue economy;
- promote and implement regional cooperation, common laboratory facilities and centres in the Mediterranean Region;
- integrate coastal and deep sea research promoting regional marine spatial planning in the Med area, and **upscaling clean Ocean regional initiatives**;
- **acknowledge the Integrated Monitoring and Assessment Programme** adopted in the framework of the Barcelona Convention as the minimum common base for monitoring activities and assessment of marine and coastal environment status in the Med.

WG II: A HEALTHY & RESILIENT MEDITERRANEAN SEA

Co-Conveners:

Laura Giuliano, CIESM
Cherif Sammari, INSTM & BlueMed GSO WG

Panelists:

Maria Snoussi, MedECC & BlueMed GSO WG
Jelena Knezevic, MED POL, UNEP/MAP
Giovanni Coppini, CMCC
Jann Martinsohn, EC-JRC
Souha El Asmi, SPA/RAC

Projects' pitch:

JPI Oceans – Katherine Angell-Hansen, JPI Oceans
Marine Strategy Framework Directive – Leonardo Tunesi, ISPRA

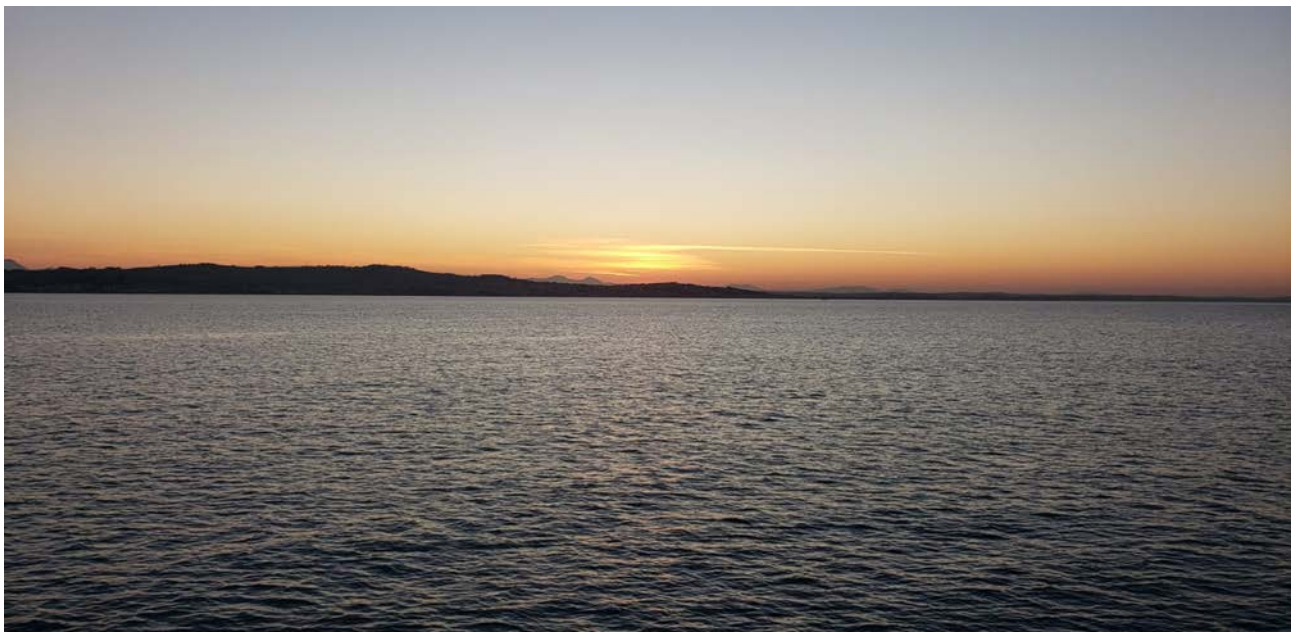
Rapporteur:

Domenico D'Alelio, SZN
Mauro Celussi, OGS

The accelerated paths of change of the Mediterranean Sea and the possibility to work on a high number of diversified ecosystems at a quite accessible spatial scale provide unique opportunities to **test ecological theories** in the region. On the other side, innovative management strategies based on **'socio-ecological systems'** could benefit of test-case studies in the Mediterranean multi-cultural, socio-economic diversified regional setting.

The renowned expertise of Mediterranean scientific community in operational oceanography and forecasting represents a remarkable strength to build on for future **modelling exercises to improve spatial resolution**, and integrate new variables (benefiting of local knowledge, inter alia) and scale-up so as to better deal with complex systems.

WG III: A PREDICTED MEDITERRANEAN SEA



Credit: Javier A. Concha

Co-Conveners:
Barak Herut, IOLR
Rosalia Santoleri, CNR & COI

Panelists:
Nadia Pinardi, UNIBO & CONISMA
Joaquin Tintoré, SOCIB & IMEDEA
Vanessa Cardin, MONGOOS
Marie-Helen Rio, ESA
Mohamed Said, IOC Africa

Projects' pitch:
ODYSSEA Marco Zavatarelli, University of Bologna
EuroArgo - Pierre-Marie Poulain, OGS
EuroSEA – Emma Heslop, EuroSEA
EMSO-ERIC – Laura Beranzoli, EMSO-ERIC & INGV
GOOS-Ocean Gliders – Victor Turpin, UNESCO-IOC-JCOMMOPS

Rapporteurs:
Gianmaria Sannino, ENEA
Donata Canu, OGS

A predicted ocean whereby society has the capacity to understand current and future marine conditions, forecast their change and impact on human well-being and livelihoods is a priority of the Ocean Decade. In the last 30 years, the Mediterranean scientific community developed an observing and forecasting capacity on the basis of best practices in monitoring and modelling. Now, **the Mediterranean multi-platform observing and forecasting system**, constituting the European and national contribution to the GOOS, can serve **as** the starting **basis to achieve the Decade goals**. During the Decade the lack of sustained in situ observations for several Essential Ocean Variables (EOVs), particularly biological variable and gaps in observation on Central-Eastern Mediterranean and on the Northern African coasts, should be filled. The opportunity to extend the range of observables from space should be exploited as well as the synergy between space and in situ observation and new technology and methodologies should be expended to improve predictive capabilities of ecosystems state and functions. The Mediterranean Sea could be a laboratory for Early Warning Observations and predictive capabilities for the assessment of the impacts of climate change and multi-stressors on the marine ecosystem and in the coastal environment. In the multi-cultural context and the geo-political diversity of Mediterranean countries, to promote and implement regional cooperation, and develop capacity building and ocean literacy programs will play crucial. During the Decade, we will promote the collaboration among science community, UNEP/MAP Barcelona Convention, the BlueMed Initiative and national policy makers in order to address policy requirements and contribute to UN SDGs.

In this framework, a call for c**ontributions for the proposal of a UN-Decade of the Ocean Programme entitled 'Predicting the global coastal ocean: toward a more resilient society'** has been launched: **www.coastspredict.org**.

WG IV: A SAFE MEDITERRANEAN SEA

Credit: Jordi Camp (ICM-CSIC)

Co-Conveners:
Stefano Lorito, INGV & NEAMTWS
Esther Garcés, CSIC

Panelists:
Adriana Zingone, SZN
Georg Umgiesser, CNR
Denis Chang Seng, IOC
Andrey Babeyko, GFZ

Projects' pitch:
HAB STATUS REPORT & DATABASE- Marie-Yasmine Dechraoui Bottein, UNESCO
DANUBIUS-RI – Sina Bold, DANUBIUS-RI
ARISTOTLE & EPOS-ERIC – Alberto Michelini, INGV

Rapporteurs:
Angela Pomaro, CNR
Margarita Segou, BGS

Impact-based forecasting of marine multi-hazard early warning systems represents a major knowledge and implementation gap. These impacts affect not only marine life but also human health. The influence of climate change on hazard and risk should also be addressed. Full uncertainty quantification and communication is of utmost importance. This requires a **multi-disciplinary approach, including social sciences**, and involvement of politics and the private sector. It is also recommended to improve coastal and deep sea observational systems and to fully integrate and exploit existing networks in a sustainable way as well as strive for capacity building based on common risk understanding for risk managers, together with the development of a self-protection culture.

WG V: A SUSTAINABLE (HARVESTED AND) PRODUCTIVE MEDITERRANEAN SEA

Credit: Javier A. Concha

Co-Conveners:
Fabio Fava, University of Bologna & BlueMed GSO WG
Karim Hilmi, Group V, IOC/UNESCO

Panelists:
Andrea Barbanti, CNR
Abdellah Srour, FAO-GFCM
Ernesto Azzurro, CIEMS
Amel Chaffai, University of Sfax
Vassiliki Vassilopoulou, HCMR

Projects' pitch:
PerformFish – Katerina Moutou, University of Thessaly
BlueGrowthFarm – Fabrizio Lagasco, RINA Consulting
SeafoodTomorrow – Marta Santos, IPMA
Summer – XabierIrigoien, AZTI

Rapporteurs:
Mónica Campillos Llanos, IEO
Emanuele Organelli, CNR

Ensuring a sustainably harvested and productive Mediterranean Sea will depend on the development of a sustainable economy, management of resources, and on the integration of marine spatial planning with coastal management. **Define science-based safe and sustainable thresholds for economic operations in the Mediterranean Sea** driving the sustainable exploitation of non-renewable resources and the resources based on the Mediterranean Sea natural and cultural heritage. Encompass sustainable food production and the links between tourism and the environment in the perspective of the circular and inclusive blue economy. During the Decade, we will **promote the development of new innovative technological solutions** for harvesting including blue biotechnology, the consolidation of our knowledge on existing living and non-renewable resources, the definition of science-based baselines and thresholds of sustainability, and the identification of the trade-offs between ecological dynamics and socio-economics needs. **Local communities** will be strongly **involved into the decision process** and synergies between tourisms and other productive, public and private, sectors will be promoted. Tourisms should also be sustainable and connected with our cultural heritage and protected areas. During the Decade, the community should move towards a **Mediterranean Sea as a shared sea**, where any best practice will have an extra value to address policy and decisions in the future.

WG VI: A TRANSPARENT & ACCESSIBLE MEDITERRANEAN SEA

Co-Conveners:
Alessandra Giorgetti, OGS & IODE
Sergey Belov, IODE

Panelists:
Melita Mokos, EMSEA-MED
Magdalena-Andreea Strachinescu, EC, DG- MARE
Taco de Bruin, IODE & ODIS

Projects' pitch:
SeaDataCloud – Michèle Fichaut, HCMR
EMODnet – Kate Larkin, EMODnet

Rapporteurs:
Simona Simoncelli, INGV
Giordano Giorgi, ISPRA

Maximize the sharing of knowledge about the health, evolution and functioning of Mediterranean marine environment due to its vulnerability; pursue **marine open data approach** to fill present gaps and boost advancement in scientific knowledge and innovation; **understand the future links with economy and societal needs** by ensuring the complete openness of scientific knowledge and supporting the formulation of environmental policy and management plans, unlocking ideas and innovation. **Enhance the "Mediterranean Sea literacy"**, and participatory research, improve connection and collaboration with existing Mediterranean networks and organizations that work on science communication and outreach, harmonized among the riparian countries.

SYNTHESIS OF MED SPECIFIC OUTCOMES FOR EACH WORKING GROUP

The information in collected on the basis of the outline provided at IOC/UNESCO level and includes inputs addressed during the discussion as driven by the arrangements (Annex II).

Working Group	**I**	**II**	**III**	**IV**	**V**	**VI**
Knowledge Gaps and Research Priorities	**Emphasis on controlling sources of pollution rather than cleaning** - implement and enhance harmonization of data collection and management systems from land and sea based. - prevent inputs of plastic with the ultimate aim of eliminating plastic pollution, implement a general ban of single use plastics in Mediterranean countries	**Defining 'restoration' to provide scientific understanding of the future wanted and needed ocean state** - Creating conditions to return the Mediterranean degraded, damaged or destroyed ecosystems to their 'functional historic trajectories'. **Understanding of structure and function of the ecosystems, particularly for**	**Scientific understanding of ocean processes/ecosystems (including future states) and how these processes affect the global climate system is key to prediction** - A Climate Change Laboratory for Early Warning Observations and predictive capabilities for the assessment of the impacts of climate change and multi-stressors on the Med Sea ecosystem. **Mainstreaming discussions on and**	**Impact-based forecasting to better communicate impacts of hazards** - The highest reported issue is Uncertainty quantification and management, more specifically the quantification and its communication and how this influences strategies of hazard/risk reduction - It is necessary to begin considering the time-dependent aspects of the hazards, such as climate change influence on sea	**Ecosystem function and sustainability at the ecosystem level (rather than at the species level) and strengthen research on trophic gaps to better understand the inter-relationships between species** - Better qualify and quantify the concept of "productive MED". - Better knowledge on mesopelagic fauna, to prevent unsustainable exploitation	**Addressing data access, management and use issues** - Unlock marine data, a large percentage of data are still restricted. Establish and adopt a clear data policy in the Med, considering the variety and sensitivity of data types - Many data, both historical and recent, are still missing in the EU data infrastructures. Need to mobilize socio-economic data - Network existing data systems and portals preventing duplicates and providing review

Working Group	I	II	III	IV	V	VI
	Identification of primary sources and pathways and fates of pollution: **Create a global contaminants database** - updated list of priority and emergent chemical pollutants, evaluation of associated risks, integrated assessment of pollutants in the entire water cycle, harmonized assessment criteria. - methods for monitoring and assessments of emerging/important chemical pollutants using DPSIR approaches (distinguishing	**mesopelagic zone and other realms** - The Mediterranean being the "most invaded" sea, there is urgent need to know about links between structure and function with special reference to the impact of exotic species on the functioning of the affected ecosystems. **Understanding interdependencies between ecosystems, particularly for mesopelagic zone, deep sea and open ocean** - Larval dispersal and populations connectivity; migratory patterns and strategies, and their relations to inter-systems connectivity	**strengthening understanding coastal-open ocean exchange:** - role of coastal area in the context of Mediterranean Sea - ecosystem response to multiple stressors including climate change, pollution (also emerging pollutants) - assess the spatial and temporal scales of key ecosystem functions and mesoscale process **Observations for weather and climate forecasts at all scales (higher resolution observations in the upper ocean, better understanding of diurnal variability, air-sea fluxes, and atmosphere-thermocline feedbacks)**	level change and coastal morphology, which influence hazard and risk (e.g. sea level and tsunami hazard) - Integrated coastal planning (including EW last mile) for risk reduction with full consideration of uncertainties and in a multi-hazard framework (e.g. tsunami and storm surges) **Requirement for a Harmful Algal Bloom prediction and warning system – from observation (in situ and remote) to prediction:** Develop a global HAB observation and prediction system, divided into regional systems, and making best use of coastal GOOS infrastructure.	- Develop innovative aquaculture solutions (i.e., IMTA, offshore, multi-use) **Links between ocean health, impacts on resources and Blue Economy sectors** - Identify and exploit blue biotechnology potential in the bioeconomy and circular economy framework. - Promote energy transition towards renewable resources and decarbonization. - Interaction with local communities on risk perception on open sea productive installations, to study and	services as journals in order to grant credit to researchers - Uptake, develop and review ocean best practices for a wider usage to document how data are acquired, collected, managed, shared and validated - Ocean Literacy is crucial to boost and communicate scientific knowledge, continuously updated with the latest scientific findings **Mechanisms to validate that systems and data meet end-users needs and assess impacts on societal outcomes** - continuously assess the observation system gaps according to the emerging societal challenges

Working Group	I	II	III	IV	V	VI
	driving forces, pressures, states, impacts and responses), characterisation of potential impact of pressures from new uses and exploitation of marine resources (i.e. energy, aquaculture, etc.) on marine pollution distribution, measure impacts on biota. - support research on the understanding of transport of litter (models) **Defining what clean means, what is the acceptable level pollution** - Marine Litter Regional Plans implementation,	**Understanding the effects on ecosystem of new and cumulative impacts of climate change, the growing Blue Economy, and geoengineering** - Scale up monitoring actions at the regional scale to collect spatial information on cumulative impacts (incl. on deep sea environments). - Long-term time series (when possible to build on pre-existing historical data sets). **Identifying essential ocean variables and sampling issues to better predict distribution and patterns** - Participatory exercises to set	- Sustain and extend Observations and Forecasting in the Med to cover all the EOVs; - Progressively eliminate the observational gaps of data between north and south of MED; - Inclusion of innovative methodologies to improve predictive capabilities of ecosystems state and functions, including the biological and ecological dimensions (i.e. genomics, new hyperspectral satellite products, autosamplers, ect.); - Exploit the opportunity to extend the range of observables from space;	- In situ real time monitoring for HABs - Better understanding of basic science on biological mechanism for HABs needed **Increase data availability in support of multi-hazard early warning systems and of modelling** including baseline data, real-time dynamic data and data to improve models for tropical cyclones, hurricanes and all extreme events - Complex high resolution modelling based on smarter data assimilation - Need for optimal planning/design of the monitoring networks in a regime of limited	improve the acceptability of MRE projects. Space allocation to MRE within MSP plans. - Promote multi-use, i.e. coexistence and synergies between MRE production and other maritime sectors (e.g. aquaculture, fisheries, tourism, transport). **Improve understanding on how the Blue Economy sectors and climate variability and change impact fisheries** - Understanding and capability to quantify cumulative effects/impacts	- need to assess the environmental pressures in order to make a cost/benefit analysis on measures and predict the future state of the ocean and the ecosystem. Most of the data on drivers and pressures are from the private sector. **Need for clarifying the science-policy interface at national level** - need of national engagement to the Ocean Decade such as commitments from nations to participate to and use the existing data infrastructures **Need for better coordination between UN agencies at regional level** - Need for an Ocean data and information

Working Group	I	II	III	IV	V	VI
	significant reduction of marine litter including microplastics. **Defining ecological boundaries, maximal levels of pollutants, their half-life and rates of bio-degradation for optimal functioning ecosystems** - determine the maximum levels of inputs/pollutants loads of nutrient to areas affected by eutrophication, cumulative an dsynergistic effects/impacts of pollutants. - reduction targets to	priorities for regional mitigation/ adaptation plans. **Impact of hydrological changes on ecosystems functioning and the role of invasive species** **Enlarge the management vision to the 'socio -ecological systems'**	- Exploit synergy of in situ and space observation and the big data technology; - Transfer of Technological and Scientific knowledge from Europe to Africa. **Improving modelling (coupled models, coupling physical and biological models, integrated with a focus on particular timescales: short for hazard warning and operational services, and seasonal to decadal to centennial)** - Improving observing resolution and predictive impact capabilities of multiple stressors (anthropogenic & natural); improve coupling of atmospheric and	funding - Integration of observatories, extension of existing networks with importance behind development of offshore, inclusive of coastal and deep sea, real-time monitoring networks. Developing innovative methodological approaches for monitoring (e.g. GNSS, Earth Observation, cables and smart cables, automatic buoys). These are integrated efforts towards forecast uncertainty reduction.	of anthropogenic pressures on environmental components and resources - Definition of indicators and standards of sustainability - 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 - Importance of Small scale fisheries: new management approach needed and importance of	system designed as an e-environment of existing data portals where users can discover data, data products, data services, information, information products and services

Working Group	I	II	III	IV	V	VI
	limit point and diffuse nutrient inputs/loads affecting or deteriorating the environmental status in the most affected areas. **Demonstrate measurable impacts of pollution on ecosystem and human health** - better assess health related impact of marine pollution, importance of the marine environment for water and food consumption		hydrological-land stressors; Coupling coastal dynamics and erosion - The understanding of the predictability limits of the coupled atmo-hydro-land-ocean system at the coasts and the development of Limited area Coastal Earth System Modelling; - Bridge the gap between operational capacities and the information needs of the end-users community. **The gaps in our understanding and predicting is on the coastal ocean, this is complex zone where most of the human population live and the impacts of climate change will be amplified. The Med Sea**		social and economic issues **Challenging biases** - Need reinforcing structured and long-term partnerships and networks at basin and sub-basin scale, also between public and private sectors. **Understanding the future of food production from the ocean** - Define science-based baselines and thresholds for a sustainable exploitation of the Mediterranean Sea	

Working Group	I	II	III	IV	V	VI
	Determining ways of eliminating, reducing, or mitigating effects of pollution. - circular economy approaches to reduce pressures, also from upstream sources, targets for collection of waste fishing and aquaculture gear. **Address plastic pollution and emissions (SOxs) from ships as critical in the area**		**is launching the idea of UN Decade program on "PREDICTING THE GLOBAL COASTAL OCEAN" in order to contribute with solutions to the Sustainable Development Goals**			
Ocean Literacy and science/ policy interface	Support education, public awareness and the implementation of a Strategy for Education to Sustainable Development - develop early warning systems	Integrating information from data poor areas, local knowledge (test-cases benefiting of the multi-cultural, diversified socio-economic opportunities)	**Data access and sharing:** - Promote data sharing and open data policy.	Education for preparedness and awareness raising could trigger a more thorough risk perception and drive policy makers in risk reduction measures planning	Promote and connect Med maritime clusters (i.e., sectoral and national) to facilitate the exchange of knowledge, communication and best practices between public and private stakeholders	OL as a platform for multi-disciplinary collaboration (i.e. art-science) to fill knowledge gaps (society in general) and a new "language" is necessary build relationship, increase capacity development, increase collaboration between north, south and

Working Group	I	II	III	IV	V	VI
	- integrate citizen science for the monitoring, capitalizing on the marine litter experience				and promote entrepreneurship; Collaboration with the media to reinforce the communication with the general public Support science-based policy processes and their harmonization, through coordination, effective implementation (e.g., financing mechanisms, policy processes), optimal institutional design, monitoring and adaptation of main existing policies (Mediterranean, EU, International). **Data access and sharing:** - Collecting data on productivity	east through common projects OL should include new scientific topics together with art as a mean to communicate better connecting the different disciplines in the Ocean domain Work on science-policy interface to improve the data policy considering the variety of data types especially the very sensitive ones Ocean Decade should be visible in the national agenda

Working Group	I	II	III	IV	V	VI
					limits and availability of marine resources; improving exchange and access to data, including socio-economic data; open- access data.	
Partnerships	Capitalize on the work supported by EU initiatives to further strengthen the collaboration between North and South shores	Platforms for harmonization of national marine strategies of all Med Countries	Reinforce existing partnership in the Med Sea (MONGOO, EuroGOOS, UNEP/MAP, BlueMed), and strengthen the collaboration with CMEMS and European Research Infrastructure, include the Med in global initiatives	Involvement and communication among ALL of the following communities is essential to reach an integrated approach to risk reduction towards a safer ocean: Science / Politics / Private Sector (e.g. telecommunications) / Information Technology (IT) / High Performance Computing (HPC)	Constant dialogue and interconnection among the ongoing streams supporting MSP implementation in the MED.	Find a way to involve the private sector establishing or improving private and public partnerships and Facilitate the data ingestion from the private sector Improve the cooperation between EU and non EU countries
Collaborative and coordina	Promote better interaction and closer collaboration between the research community and the	Trans-boundary governance exercises to tackle complex systems by leveraging on operational	Creation of a dedicated UN IOC Med Committee with representatives of UNEP-MAP & Barcelona	**Regulations and planning**: - Develop common understanding	Promote the coherence between maritime and terrestrial planning; Foster synergies	Reinforce SeaDataNet and EMODnet in the Med Sea, and strengthen the

Working Group	I	II	III	IV	V	VI
ted actions	responsible national authorities in charge of monitoring and assessment of marine and coastal environment as well as the implementation of reduction measures	oceanography and forecasting scientific community and multi-cultural settings for future modelling exercises towards improving spatial resolution, and integrating new variables (benefiting of local knowledge, inter alia) and scaling-up	Convention and IOC members	between scientists and decision makers since low or incomplete/inaccurate risk perception typically leads to lack of specific regulations for (costal) planning towards risk reduction - Linking existing infrastructural initiatives and (intergovernmental) bodies to design a specific roadmap for innovation and sustainable implementation, including a political agenda for prioritisation and funding - Link existing scientific and technological networks and resources (COST Actions, EuroHPC, CoEs, etc.) and	between tourism and other productive activities encouraging networking with other economic sectors, multi-capital and landscape on which tourism is based. **Regulations and planning**: - New spatial management tools to support decision making processes such as e.g. evaluating conflicts and synergies, single and cumulative impacts, scenario building and analysis, evaluating suitability for specific uses; Promoting integration of	collaboration with CMEMS and INFO/RAC Build a global data ecosystem of existing infrastructures which allows distributed resources to interoperate, and where users will have access to any of these resources through the interface of any component Implement an overarching process to assure good quality of data (QA/QC, provenance, transparency, full metadata description and allowing reassessing and reprocessing capabilities) Built up a citation index for data sets (with persistent identifiers) to acknowledge scientists as well as institutes Improve connection and collaboration with existing

Working Group	I	II	III	IV	V	VI
				design new initiatives - Involve decision makers for informed risk management - design approaches tailored to specific communities (also starting from risk perception analysis)	MPA in MSP processes and coastal management	Med networks and organizations that work on science communication and outreach
Capacity-building and TT	Reduce capacity building inequalities, North-South and within Europe. Enhance governance and capacity building for ocean science and management, synergies; informing decision-makers and stakeholders through observation and foresight. Exchanges of best practices, sharing knowledge and	Ad-hoc formation programs on specific mitigation/adaptive strategies addressing urgent, punctual events with high socio-economic impact (ex. building up a regional near real time 'warning' platform' for dangerous invasive species)	In the multi-cultural context and the geo-political diversity of Mediterranean countries, promote and implement regional cooperation, and develop capacity building programs will play crucial.	Scientific networking for multi-hazard and multi-risk approaches Capacity building for risk managers/stakeholders and development of a self-protection culture through raising societal awareness	Involve local communities; Promote and inform the development of science-based regulatory frameworks and policies; Promote emerging technologies including floating turbines, considering the limited extension of the continental shelf in the Med Sea;	Capacity development (cross cutting objective) should be supported in the Med region

Working Group	I	II	III	IV	V	VI
	develop transfer of technology. Optimize and reinforce capacity-building and technical assistance on monitoring for supporting SDG 14.1 (eutrophication, chemical pollution and marine litter).				Raise awareness on evidence-based tourism sustainability and cultural heritage; Establish living labs and involving local communities and local stakeholders; Train the new generation of marine biotechnologists, engineers, economists, touristic operators, journalists, and marine biologists as well.	
Financing and support (investments/resource mobilization)	Financial and alternative management measures for remediation and recovery of marine areas. Education, public awareness.	Dedicated regional funds (ex. EU ENPI, Interreg MED), World Bank, UNDP...	Create needed Programs under IOC and MEDPOL harmonized with EU Initiatives Promote EU Mediterranean projects Interreg-MED National Programmes	Low risk perception and lack of planning also implies lack of funding and then need for sustainable risk management should be stressed Focus on multi-hazard character of instruments to achieve sustainability		Commit to share all data from riparian Med Countries, with multilateral agreements where countries are informed, involved and, at the end, committed

Working Group	I	II	III	IV	V	VI
	Research on the understanding of transport of litter, support to IMO initiatives.					
Innovative technologies/solutions	Bridging the employability gap between advanced sills and markets	Effective use of novel resources (particularly invasive species). Integrating social sciences		Need for an integration of approaches and disciplines exploiting the possibilities offered by AI and HPC (e.g. Exa-scale) tools and resources Enhancement of Data, data products software and service integration, provision and maintenance (e.g. EPOS-ESFRI)		
Social science				Consider and/or quantify the social dimensions of risk involving social scientists	Structured and effective stakeholder engagement processes at national and transnational scale; Towards a Mediterranean Sea as a shared sea, where any best practice will have an extra value to	

Working Group	I	II	III	IV	V	VI
					address policy and decisions in the future; Social science dimension needs to take part into the decision process; Promote sustainable tourism models in connection with SSF, cultural heritage, leisure boating and protected areas.	
Tailored			Integration of existing observational network; Improve sustainability of observing systems; Implementation of a sustainable observation system along the Southern coast; Increase observations of ocean biology and ecosystem data to			Use the stress test approach to assess the adequacy of the present observing system at basin scale to face the prominent and emerging societal challenges (EMODnet Checkpoint approach)

Working Group	I	II	III	IV	V	VI
			evaluate the indicators of SDGs; Monitoring and evaluation;			

SESSION ON CAPACITY DEVELOPMENT AND TRANSFER OF MARINE TECHNOLOGY

Chair:
Margherita Cappelletto, CNR

Panelists:
Aldo Drago, University of Malta
Elen Lemaitre-Curri, Plan-Bleu
Jerneja Penka, EMUNI
Giuseppe Provenzano, UfM
Zacharias Siokouros, CMMI

Sharing capacity, developing entrepreneurship in sustainable ocean economy sectors, designing joint education strategies, mixing art, science and education are among the inputs related to one of the **highest priority topics in the Mediterranean agenda**: capacity building and technology transfer. Tailored university programmes and blue skills actions oriented to bridge employability (40 million full-time equivalent blue jobs estimated worldwide by 2030) are being implemented in the area, meeting the needs of industry and society. The role of relevant partnerships, public-private alliances and university networks shall be recognized as engine of this process, providing the competent work force in a fast changing environment. **Transforming capacity building and marine and maritime technology transfer** to make it even across the Basin as a means of cohesion is the opportunity not to be missed in the Decade, **addressing kids, scientists, decision-makers and stakeholders**. Functional governance frameworks and more openness to innovation and mobility are the needed enablers.

Thematic aspects associated to the outputs of different Working Groups are reported in the table above.

SESSION ON COMMUNICATING THE DECADE

Co-Chairs:
Francesca Santoro, IOC/UNESCO
Alessia Famengo, CNR

Panelists:
Dina Eparkhina, EuroGOOS
Markus Reymann, TBA21–Academy
Claudia Adamo, RAI

The main aim of the UN Decade of Ocean Science is to **move the cutting-edge of ocean science forward**, but also be a major step forward in ocean literacy for various categories of people. The motivation for the Decade itself comes from the realization of the role of ocean for people and planet and from the understanding that we still need to understand and know many processes, and elements of the marine ecosystems. In order to **make everybody aware** of the importance **of the ocean and of ocean science**, in the Mediterranean it will be crucial to **develop a strong communication strategy** that will work in parallel with the science action plan. Communication approaches and tools will have to be adapted to different target groups identified, and use different media from TV, to social media networks. Engagement across a variety of disciplines will be crucial to foster collaborative actions underpinning all Ocean Decade's societal areas. In this context, it will be important to **reach out to art and culture** that are **central in the Mediterranean society**. These approaches will help ensure the Decade's messages are shared and the communication is transparent and inclusive. It will also be important to link and make use of existing initiatives, such as the Mediterranean Group of the European Marine Science Educators Association.

ACKNOWLEDGMENTS

The authors would like to thank the Italian Oceanographic Commission, the Steering Committee, the Co-conveners, the Rapporteurs, the Chairs, all speakers and participants for the joint collaboration before, during and after the Workshop.

LIST OF MAIN INSTITUTIONS AND ORGANIZATIONS

AZTI - Technological Centre specialised in Marine and Food Research
BGS - British Geological Survey
CIESM - Mediterranean Science Commission
CMCC - Euro-Mediterranean Center on Climate Change
CMMI - Cyprus Marine and Maritime Institute
CNR - National Research Council of Italy
COI - Italian Oceanographic Commission
CoNISMa - National Interuniversity Consortium for Marine Sciences
CSIC - State Agency Spanish National Research Council
DANUBIUS-RI - International Center for Advanced Studies on River-Delta-Sea Systems
DG-MARE - Directorate-General for Maritime Affairs and Fisheries
EC-JRC - European Commission - Joint Research Centre
EMODnet - European Marine Observation and Data Network
EMSEA-Med - Mediterranean branch of European Marine Science Educators Association
EMSO-ERIC - European Multidisciplinary Seafloor and water-column Observatory European Research Infrastructure Consortium
EMUNI - Euro-Mediterranean University
ENEA - Italian National Agency for New Technologies, Energy and Sustainable Economic Development
ESA - European Space Agency
EuroGOOS - European Global Ocean Observing System
EuroSEA project - Improving and integrating European ocean observing and forecasting systems for sustainable use of the oceans
Expedition Med - Stop Plastic in the Sea
FAO-GFCM - Food and Agriculture Organization-General Fisheries Commission for the Mediterranean
GFZ - German Research Centre for Geosciences
HCMR - Hellenic Centre for Marine Research
IEO - Spanish Institute of Oceanography
IFREMER - French Research Institute for Exploitation of the Sea
IMEDEA - Mediterranean Institute for Advanced Studies
INGV - National Institute of Geophysics and Volcanology
IOC-UNESCO - Intergovernmental Oceanographic Commission of UNESCO
IODE - International Oceanographic Data and Information Exchange of UNESCO
IOLR - Israel Oceanographic and Limnological Research
IPMA - Portuguese Institute for Sea and Atmosphere
ISPRA - Italian Institute for Environmental Protection and Research
ISTM - National Institute of Marine Sciences and Technology
JCOMMOPS - Joint Technical Commission for Oceanography and Marine Meteorology in situ Observations Programme Support Centre
JPI Oceans - Healthy and Productive Seas and Oceans
MED POL - Programme for the Assessment and Control of Marine Pollution
MedECC - Mediterranean Experts on Climate and Environmental Change
MIO-ECSDE - Mediterranean Information Office for the Environment, Culture and Sustainable Development
MONGOOS - Mediterranean Operational Network for the Global Ocean Observing System

NEAMTWS - North-Eastern Atlantic and Mediterranean Tsunami Warning System
NIB - National Institute of Biology (Slovenia)
NIOF - National Institute of Oceanography and Fisheries
OGS - National Institute of Oceanography and Applied Geophysics
Plan-Bleu - UNEP/MAP Regional Activity Centre
RAC/SPA - Regional Activity Centre for Specially Protected Areas
RAI - Radiotelevisione Italiana
RINA Consulting - Registro Navale Italiano
SOCIB - Balearic Islands Coastal Observing and Forecasting System
SZN - Stazione Zoologica Anton Dohrn
TBA21 Academy - Ocean Space
UfM - Union for the Mediterranean
UNEP/MAP - United Nations Environment Programme / Mediterranean Action Plan
UNIBO - Alma Mater Studiorum University of Bologna
University of Malta
University of Sfax
University of Thessaly

ANNEX I – AGENDA

Day 0: Monday, 20 January 2020 **BlueMed Pilot Action event @ ISMAR-CNR & Masterclass on Communication @IOC/UNESCO**		
Day 1: Tuesday, 21 January 2020 **The vision for the Decade - The Mediterranean Sea We Need for the Future We Want**		
08:30-09:30	**Registration**	
Plenary – Chairperson: Francesca Santoro, IOC/UNESCO		
09:30-10:15	**Welcome message**	• **Massimiliano De Martin**, Councilor for the Environment, Venice Municipal Administration • **Andrea Romani**, Marina Militare, Venezia • **Jonathan Baker**, UNESCO Regional Bureau for Science and Culture in Europe
	Opening remarks	• **Rosalia Santoleri**, President, Italian Oceanographic Commission • **Vladimir Ryabinin**, IOC-UNESCO Executive Secretary (video message) • **Sigi Gruber**, Head of Unit, EC-DG RTD & Co-chair, BlueMed GSO WG • **Gaetano Leone**, Coordinator, UNEP-MAP • **Alessandro Bratti**, Director General, ISPRA & Vice-President, European Environmental Agency • **Laura Giuliano,** CIESM
10:15-10:30	**Keynote presentation**	• **Fabio Trincardi**, Director, CNR
10:30-10:45	**Setting a vision for the Workshop**	• **Suzan Kholeif**, Chair WG I, EPG, IOC/UNESCO • **Julian Barbière**, IOC Secretariat (remote connection)
10:45-11:00	**How the Regional Workshop works**	• **Rosalia Santoleri**, President, Italian Oceanographic Commission • **Karim Hilmi**, Vice-Chair Group V, IOC/UNESCO
11:00-11:30	**Coffee break**	
11:30-11:45	**Introduction to Sli.do**	• **Francesca Santoro**, UNESCO/IOC
11:45-12:00	**Perspectives**	• Video messages from Young Scientists around the world, UNESCO/IOC

Parallel sessions		
12:00-13:00	**Working Group I:** **A clean Mediterranean Sea** *A clean ocean whereby sources of pollution are identified, quantified and reduced and pollutants removed from the ocean.* Fostering new ideas for integrated research to assess the human and environmental risks of ongoing and future types of pollution in the Mediterranean Sea. Generate innovative approaches to understand the fate of pollutants and provide innovative knowledge base for mitigation and remediation. Address impacts on key economy drivers in the Mediterranean Area.	**Co-Conveners:** **Suzan Kholeif**, NIOF & EPG, IOC/UNESCO **Francois Galgani**, IFREMER & Expert BlueMed Pilot Action **Panelists:** **Tatjana Hema**, UNEP/MAP **Micheal Scoullos**, MIO-ECSDE, GWP-Med & UNESCO Chair of the UoA **Tosca Ballerini,** Expedition Med **Projects' pitch:** GoJelly CLAIM **Rapporteurs**: Goed Devonne, IOC/UNESCO Fedra Francocci, CNR
	Working Group II: **A healthy & resilient Mediterranean Sea** *A healthy and resilient ocean whereby marine ecosystems are mapped and protected, multiple impacts, including climate change, are measured and reduced, and provision of ocean ecosystem services is maintained.* Generate useful knowledge of the Mediterranean system physical, biogeochemical and biodiversity dynamics on climate time scales. Understand the effect of long-term cumulative stressors in order to define the Basin vulnerability and support sustainable and effective Mediterranean Sea planning and management.	**Co-Conveners:** **Laura Giuliano**, CIESM **Cherif Sammari**, INSTM & BlueMed GSO WG **Panelists:** **Maria Snoussi**, MedECC & BlueMed GSO WG **Jelena Knezevic**, MED POL, UNEP/MAP **Giovanni Coppini**, CMCC **Jann Martinsohn**, EC-JRC **Souha El Asmi**, SPA/RAC **Projects' pitch:** JPI Oceans Marine Strategy Framework Directive **Rapporteur**: Domenico D'Alelio, SZN Mauro Celussi, OGS
13:00-14:00	**Lunch**	

Parallel sessions continue		
14:00-16:00	**Working Group I:** **A clean Mediterranean Sea**	**Working Group II:** **A healthy & resilient Mediterranean Sea**

16:00-16:30	**Tea break**
16:30-17:15	**WG I and WG II preliminary wrap-up** *Chaired by Co-conveners, presented by Rapporteurs* *(20 minutes per group for report back and questions)*
20:00-22:00	**Reception Dinner @ Palazzo Marin** **S. Marco, 2541, Venezia**

Day 2: Wednesday, 22 January 2020		
Parallel Sessions		
09.00-10.30	**Working Group VI:** **A transparent & accessible Mediterranean Sea** *A transparent and accessible ocean whereby all nations, stakeholders and citizens have access to ocean data and information, technologies and have the capacities to inform their decisions.* Maximize the sharing of knowledge about the health, evolution and functioning of Mediterranean marine environment; understand the future links with economy and societal needs by ensuring the complete openness of scientific knowledge in order to support the formulation of environmental policy and management plans, unlocking ideas and innovation. Improve the "Mediterranean Sea literacy" and participatory research.	**Co-Conveners:** **Alessandra Giorgetti,** OGS & IODE **Sergey Belov**, IODE **Panelists:** **Melita Mokos**, EMSEA-MED **Magdalena-Andreea Strachinescu**, EC, DG-MARE **Taco de Bruin**, IODE & ODIS **Projects' pitch:** SeaDataCloud EmodNet **Rapporteurs:** Simona Simoncelli, INGV Giordano Giorgi, ISPRA
	Working Group IV: **A safe Mediterranean Sea** *A safe ocean whereby human communities are protected from ocean hazards and where the safety of operations at sea and on the coast is ensured.* Marine hazards such as storm surges, tsunamis, harmful algal blooms, or coastline erosion can be devastating for coastal communities. Foster the generation of dedicated research towards the definition of integrated multi-hazard early warning systems, to improve preparedness to emergencies, supporting plans for adaptation and mitigation to climate change in the Region thus reducing the coastal risks, safeguarding population and activities at sea.	**Co-Conveners:** **Stefano Lorito**, INGV & NEAMTWS **Esther Garcés**, CSIC **Panelists:** **Adriana Zingone**, SZN **Georg Umgiesser**, CNR **Denis Chang Seng**, IOC **Andrey Babeyko**, GFZ **Projects' pitch:** HAB STATUS REPORT & DATABASE DANUBIUS-RI ARISTOTLE & EPOS-ERIC **Rapporteurs:** **Angela Pomaro**, CNR

		Margarita Segou, BGS
10:30-11:00	**Coffee break**	
Parallel Sessions continue		
11:00-12:30	**Working Group VI:** **A transparent & accessible Mediterranean Sea**	**Working Group IV:** **A safe Mediterranean Sea**
12:30-13:30	**Lunch**	
13:30-14:15	**WG VI and WG IV preliminary wrap-up** *Chaired by Co-conveners, presented by Rapporteurs* *(20 minutes per group for report back and questions)*	
14:15-15:45	**Working Group V:** **A sustainable (harvested and) productive Mediterranean Sea** *A sustainably harvested and productive ocean ensuring the provision of food supply and alternative livelihoods.* Define science-based safe and sustainable thresholds for economic operations in the Mediterranean Sea driving the sustainable exploitation of non-renewable resources and the resources based on the Mediterranean Sea natural and cultural heritage, in the framework of effective Mediterranean spatial planning. Encompass sustainable food production and the links between tourism and the environment in the perspective of the circular, responsible, and inclusive blue economy.	**Co-Conveners:** **Fabio Fava,** University of Bologna & BlueMed GSO WG **Karim Hilmi**, Group V, IOC/UNESCO **Panelists:** **Andrea Barbanti**, CNR **Abdellah Srour**, FAO-GFCM **Ernesto Azzurro**, CIEMS **Amel Chaffai**, University of Sfax **Vassiliki Vassilopoulou**, HCMR **Projects' pitch:** PerformFish BlueGrowthFarm SeafoodTomorrow Summer **Rapporteurs:** Mónica Campillos Llanos, IEO Emanuele Organelli, CNR

	Working Group III: **A predicted Mediterranean Sea** *A predicted ocean whereby society has the capacity to understand current and future ocean conditions, forecast their change and impact on human well-being and livelihoods.* How to keep the Mediterranean Sea environment under review, including its complexity and non-linearities. Provide integrated in situ and satellite observation and modelling systems by harmonizing and enhancing the current systems state on the basis of new knowledge and technological developments in observational and modelling tools, to enhance predictability.	**Co-Conveners:** **Barak Herut**, IOLR **Rosalia Santoleri**, CNR & COI **Panelists:** **Nadia Pinardi**, UNIBO & CONISMA **Joaquin Tintoré**, SOCIB & IMEDEA **Vanessa Cardin**, MONGOOS **Marie-Helen Rio**, ESA **Mohamed Said**, IOC Africa **Projects' pitch:** ODYSSEA EuroArgo EUROSEA EMSO-ERIC GOOS-Ocean Gliders **Rapporteurs:** Gianmaria Sannino, ENEA Donata Canu, OGS
15:45-16:15	**Tea break**	
Parallel Sessions continue		
16:15-17:45	**Working Group V:** **A sustainable (harvested and) productive Mediterranean Sea**	**Working Group III:** **A predicted Mediterranean Sea**
17:45-18:30	**WG V and WG III preliminary wrap-up** *Chaired by Co-conveners, presented by Rapporteurs* *(20 minutes per group for report back and questions)*	
20:00-22:00	**Dinner @ Circolo Ufficiali Marina "Adriano FOSCARI"** **Calle Seconda de la Fava, Castello 2168, Venezia**	

Day 3: Thursday, 23 January 2020		
Plenary		
08:45-09:00	Welcome message	**Massimo Riccardo**, Italian Ambassador to UNESCO
09:00-09:45	Working Groups I, III and V report back & recommendations	Chair: Rapporteurs Presentations from working groups *10 minutes per group for report back by Co-conveners of*

		each group and questions
09:45-10:30	Working Groups II, IV, and VI report back & recommendations	Chair: Rapporteurs Presentations from working groups *10 minutes per group for report back by Co-conveners of each group and questions*
10:30-11:00	**Coffee break**	
11:00-11:30	Panel on cross-cutting issues: Capacity development and transfer of marine technology	Chair: **Margherita Cappelletto**, CNR Panelists: ● **Jerneja Penka**, EMUNI ● **Giuseppe Provenzano**, UfMS ● **Elen Lemaitre-Curri**, Plan Bleu ● **Zacharias Siokouros**, CMMI ● **Aldo Drago**, BlueMed GSO WG & SEA-EU
11:30-12:00	Communicating the Decade	Co-chairs: **Francesca Santoro**, IOC/UNESCO **Alessia Famengo**, CNR Panelists: ● **Dina Eparkhina**, EuroGOOS ● **Markus Reymann**, Ocean Space ● **Claudia Adamo**, RAI
12:00-13:00	Closing remarks' roundtable, messages for the Decade	Chair: **Rosalia Santoleri**, CNR & COI ● **Fabio Fava**, University of Bologna & BlueMed GSO WG ● **Miguel Lizaso**, EC ● **Gaetano Leone**, UNEP-MAP ● **Suzan Kholeif**, EPG, IOC/UNESCO ● **Marie Helen Rio**, ESA-ESRIN ● **Dirk Schories**, Agency Juelich (on behalf of the Federal Ministry of Education and Research, Germany);
13:00	**End of the Workshop** **Lunch & Group Photo**	

ANNEX II - ARRANGEMENTS

Adopting participative tools to co-design the Decade for impact

Day 1 Afternoon 3 hours	Co-Conveners: • Suzan Kholeif, Chair WG I, EPG, IOC/UNESCO • Francois Galgani, IFREMER&Expert BlueMed Pilot	**Working Group 1**	**A Clean Ocean** A clean ocean where sources of pollution are identified and removed
	Co-Conveners: • Laura Giuliano, CIESM • Cherif Sammari, INSTM & BlueMed	**Working Group 2**	**A Healthy & Resilient Ocean** A healthy and resilient ocean where marine ecosystems are mapped and protected
Day 2 Morning 3 hours	Co-Conveners: • Alessandra Giorgetti, OGS & IODE • Sergey Belov, IODE	**Working Group 6**	**A Transparent & Accessible Ocean** A transparent ocean with open access to data, information and technologies current and future ocean conditions
	Co-Conveners: • Stefano Lorito, INGV, NEAMTWS • Esther Garcés, CSIC	**Working Group 4**	**A Safe Ocean** A safe ocean where people are protected from ocean hazards
Day 2 Afternoon 3 hours	Co-Conveners: • Fabio Fava, University of Bologna, BlueMed delegate • Karim Hilmi, IOC/UNESCO	**Working Group 5**	**A Sustainable Productive Ocean** A sustainably harvested ocean ensuring the provision of food supply
	Co-Conveners: • Barak Herut, IOLR • Rosalia Santoleri, COI, CNR	**Working Group 3**	**A Predicted Ocean** A predictable ocean where society has the capacity to understand

These instructions guide the co-chairs of the Working Groups (WGs) in their discussions with the participants. The outputs of the WGs should **inform** the following **three areas for each of the societal outcomes**:

1. *What are the knowledge gaps and what are the key science questions relating to the R&D priority areas identified in the Decade roadmap that should be addressed through the Decade in order to achieve [the Societal Outcome]? Refer to the PPT presentations in the folder 'Collected outputs' at this link https://cloud.cnr.it/owncloud/index.php/s/qFFoD26tJrxZ9D0, addressing the Roadmap and GPM definition and listing other regional WGs outcomes to highlight commonalities and Mediterranean specificities.*

2. What are the existing initiatives and mechanisms active in the area that the Decade can build on to deliver outputs (e.g. partnerships, programs)?

3. What are the roles of following cross-cutting themes to address the science questions:

- *Capacity building and technology transfer*
- *Partnerships and financing*
- *Access to information, data and knowledge*
- *Communication and awareness raising*

Please keep in mind that the planning phase of the Decade has similar workshops in other regions of the globe all of which inform the same areas under each of the societal outcomes. **Note that the aim of each WG is to hear perspectives of different Regional experts and stakeholder groups regarding the overarching vision for the Decade of Ocean Science for Sustainable Development to achieve the [Societal Outcome]**.

The approach that is outlined here is to use a participatory, co-creative design process. This is a strengths-based, positive approach to development and change. For example, **rather than jumping into listing knowledge gaps, first identify what has worked well and why, e.g. by capitalizing on projects' results (projects' pitch presentations)**.

As to inform the above listed three areas for each of the societal outcomes, each WG is expected to contribute to the UN Decade on Ocean Science for Sustainable Development by providing regional inputs related to **the priority issues**, considering also below listed **initially recognized issues** in order to facilitate discussion in the framework of each WG:

[add a preliminary list of recognized thematic issues pertinent to the WG]

In line with the above listed issues defined in pre-consultation process of the regional stakeholders responsible for organization of the Mediterranean Workshop in the framework of the United Nations Decade of Ocean Science for Sustainable Development 2021-2030, the panel and discussion to be held in the scope of each WG is invited to **identify 5 key Mediterranean regional issues** requiring a focus by the Decade, **providing for each of them the following elements as outcomes**:

- **5 key science/information needs (linked to the regional identified issues) and providing pathways to solutions;**
- **3 to 5 main key capacity development needs (and associated pathways for resolving);**
- **3 to 5 main partnerships needed to achieve the above;**
- **3 to 5 main key pathways for improving information and solutions to the region.**

The above specified points to be defined for each of 5 key issues need to be solutions - based. There is a need to carefully **differentiate between issues and impacts**. It is common to see the same thing come up as an issue and impact; therefore, we are invited to think about whether something is an issue or an impact. This opens the opportunity to rethink issues as opportunities, and further discuss how we could turn an issue into an opportunity.

Equipment

You will need flip-charts, a stack of post-it notes for collating responses (two different colours), markers, several large pieces of paper (butcher's paper), blu-tack, and printed copies of these instructions. This will be provided to each WG. Ask if you don't have your materials.

SYNTHESIS OF THE STEPS AND ROLES
• **STEP 0.** GET ORGANIZED (MAX 15') • **STEP 1.** GET STARTED WITH AN INITIAL PANEL CONVERSATION ON THE SOCIETAL OUTCOME (MAX 1H • **STEP 2.** FACILITATED DISCUSSION: IT'S TIME FOR PARTICIPANTS TO CO-DESIGN THE CONVERSATION, SP SUB-GROUPS (MAX 30') • **STEP 3.** PARTICIPATORY PAINT A CANVAS MOMENT, SPLIT INTO TWO SUB-GROUPS (MAX 30') • **STEP 4.** TIME TO SHARE AND PITCH YOUR DECADE (MAX 15') • **STEP 5.** COLLATE ALL THE INFORMATION AND REPORT BACK TO PLENARY (15-30', FOR CO RAPPORTEURS, FACILITATORS ONLY)
CO-CONVENERS >> CHAIR THE SESSION BY: (I) ADDRESSING THE DEFINITION OF THE WORKING GROUP, LINK GENERAL OBJECTIVE OF THE DECADE; (II) GIVING THE FLOOR TO PANELLISTS, INCLUDING BY ADDRESSING TH AND PROJECTS' PITCHERS; (III) FACILITATING THE INTERVENTION FROM THE AUDIENCE WHILE (IV) KEEPIN CONVERSATION ON TRACK; (V) ENSURING THAT THE DISCUSSION IS INFORMING THE THREE AREAS (SEE A DETAILS ARE PROVIDED BELOW; **PANELLISTS >>** ADDRESS A PRESENTATIONS ANSWERING THE QUESTIONS OF THE AND CONTRIBUTION T FROM THE MED PERSPECTIVE; **PROJECTS' PITCHERS >>** ADDS ON THE KNOWLEDGE GAPS, EXPERIENCES, CAPITALIZATION; **RAPPORTEURS >>** REPORT THE OUTPUTS, INCLUDING OF THE PARTICIPATORY PROCESS; **SUPPORTERS >>** PROVIDE HELP WITH PARTICULAR REFERENCE TO THE SUB-GROUPS DURING THE P PROCESS, INCLUDING LOGISTICS.

Step 0. Get organized
(Allocate 10-15 minutes for this step. Stop at 0h15m into your allocated WG time.)

- Each WG will have 40-50 participants that will after the panel session split into two sub-groups, explain the arrangements to the whole WG, as also anticipated via email previous to the Workshop
- Co-conveners open the works, outlining the Societal Outcome to the WG. Use the background information provided to you and that has been also share previous to the Workshop.

Step 1. Get started with an initial panel conversation on the societal outcome
(Allocate 1h-1h15m for this step. Stop at 1h15m into your allocated WG time.)

Tip: Avoid re-defining or changing the societal outcomes. Try not to get stuck on barriers such as funding or resources in the first few steps. The initial conversation is about harvesting limitless creative ideas and possible solutions, no matter how wild they are. If limitations and barriers are raised, acknowledge and capture them (or 'park items') so that these assumptions can be tested with follow-up questions later.

Co-conveners, what they do
- Self-introduction
- Sentences in context of Decade
- Introduce shortly the aim of Panel topic
- Address a sentence of opening comments regarding the importance of achieving the [Societal Outcome] and the vision for the future (according to her/his experience), i.e. replying to the question *What are the Mediterranean key challenges and opportunities to consider in the Decade, to achieve the vision?*

- Introduce the panelists and projects' pitch (1 or 2 sentences per panelist, bios to be provided)

Panel discussion – Questions to be addressed by Co-conveners to panelist according to the background and sector they represent, tailoring the discussion on the specific Societal Outcome of the WG.
Suggestions at general level are reported below.

- What are the key challenges of the Mediterranean Sea that the Decade should be addressing in order to achieve this vision?
- How can science inform efforts to achieve the [Societal Outcome]?
- What is your vision to achieve the [Societal Outcome]?
- What are the potential roles of different communities in addressing the [Societal Outcome]?
- How do we set priorities in our efforts to achieve the [Societal Outcome]?
- What are the roles of data sharing/knowledge transfer to address the [Societal Outcome]
- How can the private sector private sector help to bring about a cleaner ocean?
- What are the barriers that prevent the private sector being as effective as it could be?
- What are the role of capacity building and technology transfer to address the science questions; the potential of public-private partnership (successes and warnings); leveraging funding from private sector; convincing politicians of the economic benefits of investment in improved waste management;
- Issues around awareness, technology transfer, gender and education;
- What are the challenge of achieving balance between economic and social development with environmental objectives?
- What is the ultimate impact of pursuing a specific action? And the suitable timeframe?
- What gets us excited about this?
- Other thematic questions, including from the audience **(allow if relevant questions to the panellists and inputs to the discussion from the audience)**.

Projects' pitch (3 minutes each) – Introduced by Co-conveners
- What were/are the knowledge gaps?
- How did/are you contribute/ing to fill them?
- What has worked well and why?

Step 2. Facilitated discussion: it's time for participants, split into two sub-groups (Allocate 20-30 minutes for this step. Stop at 1h45m into your allocated WG time.)

This step is governed by co-conveners who decide how to shape the discussion. The aim is to get feedback from the audience through Q&A on the panel conversation to further collect useful scientific information and recommendations. **This slot shall revolve around the Q1, Q2 and Q3 questions** (see above). Other possible points to raise might encompass:
- Dealing with Med Sea experience;
- The importance of an effective mechanism (Conventions/programs/COP…etc.) to coordinate science and use to advance policy across multiple jurisdictions;
- How can ocean science be energised and utilised during the Decade (i.e. seizing the opportunity).

Rapporteurs will try to collect inputs organizing the information in Q1/Q2/Q3 outcomes + additional outcomes.

Step 3. Participatory Paint a canvas moment, split into two sub-groups (Allocate 20-30 minutes for this step. Stop at 2h15m into your allocated WG time.)

- Break into two informal groups of about 25 people. Everyone should be encouraged to participate.
- Each sub-group self-organises with the following roles:
    - Facilitator - the person asking questions
    - Harvester/Rapporteur - using post-it notes and the marker the harvester will capture key words in the conversation (can also be facilitator)
    - Time keeper - remember, the steps will make the group focus and ensure something tangible is discovered in the co-design process. This means that you also need a timekeeper to keep track of time.
    - Photo taker of the final collated canvas.

With reference back to the post-it notes on the co-design map, you can start to fill in the blanks on the 'co-design canvas'. This is a simple on-page canvas, where you can start to flesh out more details and the Decade starts to take more concrete shape. It is now time to paint a masterpiece and fill in the canvas blanks on the 'co-design canvas'.

Question to ask	**Existing initiatives and networks that line up with what we want?**	**What are the recommended research priorities for our region?**	**Investigate opportunities, collaborations, funding, resource pools, equipment, potential teams**	**What do we need? Recommendations for action.**	**Identify barriers or limits that we have in our region.**
What is it?	*E.g. organisations, projects, groups?*	*Perhaps programs?*	*Who has resources? Capacity?*	*Teams, resources, funding to kick start the idea?*	*Time Knowledge Skills Passion Networks*
Where to follow up?				*Map resources, organisations, places of significance, opportunities*	
When will this be done?					
Who will be responsible for this?					

Step 4. Time to share and pitch your Decade
(Allocate 10-15 minutes for each group to share their co-design canvas, try to stay under 30 minutes in total. Stop at 2h45m into your allocated WG time.)

With plenty of time to spare, it is now time for the entire WG to come back together. Nominate 3 people from each group (one to be the spokesperson, and the other to hold up the co-design map).

Tip: The spokesperson (ideally the co-convener) might want to reference back to either the map or canvas, it is up to you. Do what work for you. Play fair and do not go overtime.

Check your time to allow for very brief discussions and questions if needed for refinement.

Please keep in mind to explore and capture these cross-cutting issues:

- Capacity development and transfer of marine technology
- Partnerships and financing
- From data to information on knowledge sharing: how to include traditional knowledge.

Step 5. Collate all the information and report back to plenary (For co-conveners, rapporteur, facilitators and panelists if needed. Allocate the remaining 30+ minutes for this. Stop at 3h30m into your allocated WG time.) For co-conveners, rapporteur, facilitators only + panelists if needed. Allocate the remaining 30+ minutes for this. Stop at 3h30m into your allocated WG time.)

Please remember that the output from your WG will feed into the meeting report and the planning phase of the Decade. Outcomes will be organized according to the table reported below. Every morsel of information is therefore precious. Each WG will also have to report back to plenary on Day 3.

You may wish to task the spokespeople from each group to come together with a few additional helpers (including the co-chairs) to collect all the information and to prepare the presentation for Day

3. This can also be done as homework during breaks or in the evening.

5 key regional issues requiring a focus by the Decade	5 key science/information needs (linked to the regional identified issues) and providing pathways to solutions	3 to 5 main key capacity development needs (and associated pathways for resolving)	3 to 5 main partnerships needed to achieve the above	3 to 5 main key pathways for improving information and solutions to the region	Comments
1.	1.	1.	1.	1.	
2.	2.	2.	2.	2.	
3.	3.	3.	3.	3.	
4.	4.	4.	4.	4.	
5.	5.	5.	5.	5.	

ANNEX III - PRESS REVIEW

The following list of references, the majority of which from Italian networks, is updated at the date of the publication of the present report.

Tv broadcast

Rai3 Veneto TGR VENETO
https://www.rainews.it/tgr/veneto/video/2020/01/ven-Venezia-Mediterranean-workshop-1a511640-8271-408f-9c92-79875e56c2f4.html

Salvare il Mediterraneo è possibile con politiche di sistema consapevoli che alcune attività e produzioni vanno bloccate cambiando anche gli stili di vita: Se ne è parlato nel corso di un workshop più internazionale presso la sede Unesco a Venezia Intervista a: Flavio Trincardi, coordinatore progetto BlueMed Cnr Intervista a: Rosalia Santoleri, presidente commissione oceanografica Italiana Intervista a: Gaetano Leone, coordinatore Mediterranean Action Plan Onu

SKY TG 24
https://video.sky.it/news/ambiente/unesco-peggiora-lo-stato-di-salute-del-mediterraneo/v569888.vid?fbclid=IwAR2n7ObzIh6n0UZJFuWjXKi4UlfnWd9cccYDLNVBnqisykcZKu4z0HQz7yg

Venezia, l'incontro sul Mar Mediterraneo organizzato dalla Commissione Oceanografica Italiana, Unesco e Commissione Europea. Intervista a: Rosalia Santoleri, presidente commissione oceanografica Italiana e direttore Cnr-Ismar

Printed Media

Il Gazzettino - Ed. Venezia
Il Comune nei programmi delle scienze marine

Press Agency

Primapaginanews
https://www.primapaginanews.it/articoli/cnr-a-venezia-il-mediterranean-workshop-del-decade-of-ocean-science-for-sustainable-development-468433

Agenzia Nuova Cina
http://www.xinhuanet.com/english/2020-01/23/c_138727458.htm

Web

CNR web tv – video
https://www.cnrweb.tv/lonu-dichiara-il-2021-2030-decennio-delle-scienze-oceaniche/
http://www.cnrweb.tv/allunesco-di-venezia-la-ricerca-al-servizio-del-mare/

CNR

https://www.cnr.it/it/evento/16651/mediterranean-un-decade-of-ocean-science-for-sustainable-development-2021-2030
https://www.cnr.it/it/nota-stampa/e-16694/mediterranean-un-decade-of-ocean-science-for-sustainable-development-2021-2030
https://www.cnr.it/it/news/9212/un-decade-of-ocean-science-for-sustainable-development-2021-2030-mediterranean-workshop-the-mediterranean-sea-we-need-for-the-future-we-want

Ocean Decade Heritage
https://www.oceandecadeheritage.org/the-decade-mediterranean-regional-workshop-venice-italy-january-2020/

UNEP/MAP
https://web.unep.org/unepmap/regional-workshop-articulates-mediterranean-contribution-un-decade-ocean-science-sustainable

MeDECC
https://www.medecc.org/regional-workshop-mediterranean-un-decade-of-ocean-science-for-sustainable-development-2021-2030/

Rina
https://www.rina.org/en/media/events/2020/01/22/mediterranean-workshop

Comune di Venezia
https://live.comune.venezia.it/it/2020/01/decennio-delle-scienze-marine-lo-sviluppo-sostenibile-2021-2030-l-assessore-de-martin-al

Ispra
http://www.isprambiente.gov.it/it/news/the-mediterranean-sea-we-need-for-the-future-we-want

Marina militare
http://www.marina.difesa.it/media-cultura/Notiziario-online/Pagine/20200123_regional_workshops_cnr.aspx

Il Metropolitano.it
https://www.metropolitano.it/oceano-pulito-coi/

Il Giornale della protezione civile
https://www.ilgiornaledellaprotezionecivile.it/t/a-venezia-un-workshop-sul-futuro-del-mediterraneo

I-Talicom
https://www.italicom.net/tech/ricerca-e-sviluppo/a-venezia-il-mediterranean-workshop-del-decade-of-ocean-science-for-sustainable-development/

Pesceinrete
https://www.pesceinrete.com/2020/01/22/a-venezia-the-mediterranean-sea-we-need-for-the-future-we-want/

Vicenza più
https://www.vicenzapiu.com/leggi/decennio-delle-scienze-marine-per-lo-sviluppo-sostenibile-2021-2030-lassessore-de-martin-al-workshop-cnr-e-unesco-per-definire-le-azioni-da-intraprendere/

Danubius-Ri
https://danubius-pp.eu/un-decade-of-ocean-science-regional-workshop-venice/

Mio-Ecsde
https://mio-ecsde.org/the-science-we-need-for-the-ocean-we-want/

Non solo nautica
https://nonsolonautica.it/20/01/2020/localita-di-mare/venezia-tutto-pronto-per-il-il-mediterranean-workshop/

Social Media

Stampa Cnr
https://www.facebook.com/179579767726/videos/713711095826452/
https://www.facebook.com/179579767726/videos/2476899565959199/

https://twitter.com/StampaCnr/status/1220364898510802945?s=20
https://twitter.com/StampaCnr/status/1220289832129351685?s=20
https://twitter.com/StampaCnr/status/1220024482703859712?s=20

INGV
https://twitter.com/INGVambiente/status/1225734771382329344?s=20

Climate-KIC Italy
https://www.facebook.com/ClimateKICItaly/posts/520666065240467