



Coordination and Support Action

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Report of BLUEMED Conference: A basin of research and innovation for sustainable growth held in Malta on 18-19 April 2017

<u>Authors:</u>

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EXECUTIVE SUMMARY / ABSTRACT

BLUEMED aims at creating the conditions for extending and sharing initiatives to the non-EU countries, and organising their involvement in the work. To do that, a policy dialogue on BLUEMED vision and challenges need to be activated from the outset of the project with non-EU Mediterranean countries (eastern Adriatic, eastern, western and southern Mediterranean).

The BLUEMED CSA together with the European Commission and the Maltese Presidency of the European Council organised in Sliema, Malta on 18-19 April 2017 a Conference entitled: *Bluemed – A basin for Research and Innovation for Sustainable Growth.* This Conference was aimed at giving the BLUEMED Initiative a new dimension by opening it up for the first time to non-EU Countries of the Mediterranean.

120 delegates attended, 20 projects that implement the BLUEMED Initiative showcased, and three panel discussions were held.

This document seeks to highlight the main discussions held in Malta at this conference as a means of a report outlining the main key messages coming out.

Introduction and Opening Session

This session was composed of high level representatives who open the event by setting the scene for discussions from a political perspective through political key messages.

Ian Gauci Borda, Malta Council for Science and technology highlighted the importance of the initiative and why this event was an important milestone for the Maltese Presidency and for the initiative itself.

Chris Aguis, Maltese Parliamentary Secretary for Research, Innovation, Youth and Sport, explained that Malta is at the heart of the Mediterranean – the island tries to act as a catalyst in the region despite its small size. With this Conference, Malta shows its willingness to support initiatives such as the BLUEMED, to promote growth, job and prosperity in the region. It is an exciting moment for R&I in the Mediterranean to ensure we maintain a strong partnership in the region and between the Med countries. Malta thanked the 2004 Italian Presidency which had originally started rolling the ball on Bluemed and Malta was willing to walk in its footsteps to strenghten it.

John Bell – EC (Director for Bioeconomy, DG R&I), highlighted three main elements:

- 1) Put the Mediterranean Sea at the center to address the issue faced by the citizens. He referred to the Blue enlightenment: defining the air we breathe, the food chain, tourism, etc. The Malta presidency has put the Mediterranean at the center of Europe.
- 2) How to give policy makers, researchers the tools we need to face those challenges? BLUEMED could be a game changer: it is an opportunity to get organized, to get an alignment of our agendas and to integrate people doing research at all levels.
- 3) Work across departments, and conduct research across disciplines. The Med is a commonly owned resource and space. The EC is very committed to support the work of the Union of the Mediterranean in this regard, as well as the PRIMA initiative and build a shared future based society on shared knowledge.

Miguel Garcia Herraiz, Union for the Mediterranean (UFM), in charge of the division on water and environment explained that the Blue economy, and therefore BLUEMED, is one of the most important features of the UfM. The UFM has a political mandate provided by its Members States. It has a role to play in extending the BLUEMED initiative to the Med Southern partners, by promoting an agenda of policy dialogue and establishing a long term common work programme.

The UfM focus on 3 main tasks:

- Promoting regional integration;
- Human development: youth, unemployment, risks caused by migration (create new sources of employment);
- Sustainable development: CC, future growth, sustainability of our society.

Mr Herraiz referred to an upcoming event: the UFM Ministerial meeting on water, being organised in Malta on 27th April 2017.

Labelling projects: Mr Herraiz explained that it has the political backing by 43 Members States: projects which are replicable to another country, or of interest at the regional level. BLUEMED may eventually become a UfM-labelled initiative.

Mr Herraiz stated that the UFM has alot to offer to BLUEMED, ranging from using a common methodology, ensuring full ownership for southern countries, etc. He appealed the importance to make sure it is a "bottom-up" initiative for the southern countries to allow challenges to be tackled really from the base of the challenge. He referred to the Euro-med conference on R&I being held in Malta on 3 and 4 May 2017 which will be an occasion to discuss this initiative at the highest political levels. One of the most important aspects is the knowledge and policy connectivity (transport infrastructure) interconnectivity in the sharing of knowledge and policy

Showcase projects which implement the BLUEMED Initiative: How Research and Innovation can be drivers for sustainable blue growth

Chair: Sigi Gruber, Head of Marine Resources Unit, Directorate-General for Research and Innovation, European Commission

Rapporteur: Jean-Francois Cadiou, IFREMER

ODYSSEA - Operating a network of integrated observing systems in the Mediterranean Sea - Georgios Sylaios (coordinator), Democritus University of Thrace, Greece

Georgios Sylaios stated that the project is funded through H2020 and consists of 28 partners from 14 countries including 6 non-European and runs from 2017-2021. The aim of the project is to make marine data accessible in a homogeneous, interoperable upgraded and integrated system. It aims to develop and deploy new monitoring sensors and models in (currently) 9 pilot areas. It is a project which is open to the participation of North African and Middle-East countries, through capacity building and training initiatives.

MedAID - Mediterranean Aquaculture Integrated Development: José Pérez, Ifremer France / Dunixi Gabiña (coordinator) International Centre for Advanced Mediterranean Agronomic Studies, Spain

Another H2020-funded project with 36 partners, from 12 countries. The aim of the project is to improve the technical performance of aquaculture in the Mediterranean, mainly studies sea bass, and sea bream. It address the technical and economic gaps in a holistic view with a view to improve competitiveness of the fish sector. It develops knowledge and innovative tools through new added value, business plans, etc. and combines socio-economy, biosciences and food technology to increase competitiveness and sustainability. One major milestone would be to simplify procedures and governance which normal hinder the competitiveness and improve market knowledge and developing new products matching the demand.

CMEMS - Copernicus Marine Environment Monitoring Service: Aldo Drago, University of Malta/Cécile Thomas-Courcoux, Mercator-Ocean, France

CMEMS is an observation project using space applications for monitoring. It operates in 3 components: space, in situ observation, and services. It provides a baseline for higher resolution products for coastal sea users (e.g.: monitoring) and develops smart applications for Blue Growth (ex: SeaConditions, smartphone app.). The aim is to develop and make available operational services worldwide, through an on line catalog, ensuring data delivery. The project will seek to prepare data once that can then be used by many as opposed to preparing similar data-sets over and over again. The platform has already 10,000 subscribers and has a rapid growing number of

users. 29 products out of 140 focus on the Mediterranean (which makes it among the most popular). The portal also has a feature to offer courses for maritime professionals training. CMEMS is currently working on a new feature to offer wave data which will soon be added to the portal.

EMSO-ERIC-European Multidisciplinary Seafloor and water-column Observatory: Paolo Favali, Roma, Italy

This observatory operates through 14 different observatories (11 of which are in deep seas and 5 in the Mediterranean Sea).

The objective of this 3-year project is to confirm the regional teams in charge of operating the nodes and 4 service groups with high resolution, and ensuring long-time-series collection of multiple variables. ERIC has been launched in 2016 and thus it is still in the 'growing' stage. Nonetheless, it already comprises of 8 countries and It intends to include other countries

Challenges for the future:

- Interconnectivity, cooperation with other EU infrastructures, Copernicus
- Services for MSFD
- Long term funding
- Long term vision of EOOS (Europe's Ocean Observing System)

EMBRC-ERIC – European Marine Biological Resource Center: Ilaria Nardello, Paris, France

The coordination center, based in Paris, coordinates 30 marine research centres in nine EU and Associated countries. The EMBRC-ERIC mission is to respond to societal challenges through advanced marine biological and ecological research, covering areas as diverse as:

- Health, food, environmental change and mitigation/remediation solutions, and industrial processes.

EMBRC's landscape can offer may examples of co-development initivitatives between Industry and Research (Collaboration of Pierre-Fabre with Observatoire Oceanologique De Banlyus, the Pharma Sea Projects and related spin-offs from Stazione Zoologica A. Dhorn, in Naples; Aquaculture industry with the biological centre at HCMR, in Crete) a Memorandum of Understanding with the Compherence of Peripheral Maritime Regions is neing prepared on reciprocal support to inform the smart specialisation strategies of the maritime regions.

Med-JellyRisk, Alan Deidun, University of Malta

This is an ENPI-CBCMED funded project (cross border cooperation). 2013-2015

5 partners (Malta, Italy, Spain, Tunisia)

The aim is to see the impact of jellyfish blooms on tourism and marine activities. However, further than that, it aims to share this information and collaborate with authorities. Jelly-fish blooms are difficult to identify however, the project uses, Biotechnologies, Bloom modeling and forecasting in 10 coastal zones to monitor the activity. The project also provides training and dissemination activities as well as rainsing Citizen awareness

ProCREW: Ben Stuart, Center for Maritime Studies, Malta

The Project is still new and in the initial stages. It seeks to identify the professionalization of crews in the sector of large yachts and to develop appropriate training courses for high-skilled crew. It is focussed on the Mediterranean as an

important area for shipping (e.g. 1/3 of small ship traffic in Europe). Very large private cruising ships (length > 100 m) operate with advanced technology on board (ROV, helicopters...) and thus requires a highly skilled workforce to operate them. There is a huge demand right now for such crews, especially in the Mediterranean region where 2/3 of superyachts are built.

Following the first set of presentations the floor was opened up for discussions and the main key messages emerged:

- Youth unemployment is a big issue in the region to be urgently tackled;
- Need for high quality data, interoperability and comparability. Capitalize on SeaDataNet, EMODnet;
- For marine observation in Europe, aim at a good balance between European Commission and Member States funding;
- A project can be seen like a "proof of concept" before establishing long term funding mechanisms, which would need to be sustained at national level;
- Key issues we need to share with everyone in the Med. Cross-sector aspects;
- Alignment of agendas and priorities;
- Co-ownership and "bottom-up" working methods;
- True responsibility of all actors;
- Importance to include end-users, citizens and the private sector;
- Sustainability: work sustainably, and at project base "a project is nothing more than a proof of concept";
- Much more structured dialogue, cooperation interface;
- 17 ESFRI related IR with a marine and maritime potential;
- Issue of the data: managing data, interoperability, protocols for data sharing (science cloud initiative "blue cloud" EC; open access to data is indispensable);
- Skills development: empowering the existing workforce.

Concluding remarks by Sigi Gruber, EU Commission:

John Bell stressed some key issues that we need to share with everyone in the Med., i.e.: the cross-sectorial aspect needed for any new initiative; and the alignment of agendas of the various Mediterrean Countries. He mentioned co-ownership through a bottom-up approach – it is a call for responsibility. He also mentioned the importance of inter-connectivity and working together of policy-makers with producers and citizens, from the start of a project. We have to work sustainably to create more jobs sustainability also at project level – a project is nothing more than a proof of concept at different levels, again bringing the importance of alignment of agendas into play. EU Research Infrastructures such as EMSO and EMBRC have the potential to drive research but also to become home to many of the research activities. They are equally important for generating services and fostering innovation. We need more structured dialogue cooperation interface for projects as well as the infrastructures. We have 17 EU ESFRI infrastructures that have potential for maritime research, so let's use them. Issue of managing data, quality of data, common protocols for data sharing important issues for the future - the Commission is also looking at the Open Science Cloud initiative where a pilot project is being proposed for a Blue Cloud (eg. Blue Bridge or Sea Data-net Cloud) - the cloud will ensure that people have access to data - we need access otherwise we cannot shed light on all those unknowns. Skills development - how are we empowering the future and existing work force to deal with the challenges the Med Sea holds for us. It is very important that we do care for youth - we tackle the whole issue of unemployment. The latter two issues will be addressed on day 2 of the conference. She emphasized that in no way did she expect

her comments to be a summary of what was discussed in length throughout the day. The outcome following the discussions to be held on day 2 is expected to inform a roadmap for the future.

PANEL DISCUSSION: A LITTER-FREE MEDITERRANEAN SEA: UTOPIA OR REALITY?

Chair: Fabio Fava, BLUEMED Initiative Strategic Board Rapporteur: Stephen Micallef, Malta Council for Science and Technology

Fabio Fava: Marine litter is quite a complex multi-faceted problem with consequences and is a reality in most seas. It is even more crucial in the Mediterranean due to its nature as an enclosed basin with heavy marine traffic, highly developed tourism, etc. We need to implement measures to reduce marine litter in the Mediterranean in all countries in the area. Marine pollution knows no border. Pollution by one country affects all other countries in the area. Urgent actions addressed to remove marine litter components already on place are required. We also urgently need integrated measures for lowering/preventing new releases of litter components in the Med, these from both the European and the non-EU countries of the area. These actions require reliable information of current status of marine litter and of its ecological and socio economical impacts in the whole MED as such data are essential for developing more effective and robust regulations, R&I actions, education and communication plans.

Laura Giuliano, Marine Biologist, CIESM, The Mediterranean Science Commission, Principality of Monaco, provided a general picture of where we are with microplastics in the Mediterranean Sea. They are resulting from voluntary additions to our environment as a result of abrasion of larger plastic components like textiles and tyres. The microplastics are impacting (this is from recent knowledge) - they absorb pollutants, leech additives that are toxic (eg. phthalates), they serve as habitats for alien/invasive species. They are classified as micro because of their size of less than 5mm, being easily ingested by Plankton, and hence easily cross the food chain. They present 92% of plastic litter and are dangerous. Reference was made to a diagram from IUCN (2007) showing a comparative global map of source regions of the plastic waste. Another diagram showing the distribution of plastics by size all around the global oceans (with part zoomed on Mediterranean Sea) was published in PLoS ONE in 2015. Ms. Giuliano added that micro-plastics are carried by currents. The diagram shows that larger particles are found in the Mediterranean. A year later (2016) another diagram was published in Nature showing that the Med is actually richest in micro-plastics (with a concentration in the Western part of the basin). We need to know the composition of the polymers - to know which are more dangerous and how to deal with each. Some articles are proposing some standard methods. Some conclusions have already been taken into account.

Gaby Gorsky, TARA Foundation Expeditions, introduced as a marine geochemist in oceanography who took part in 38 oceanographic courses. The TARA Mediterranean expedition was held in 2014 by TARA Foundation, partner of his University for the past 10 years. They were collecting (together with TARA), different plastics from the Mediterranean. He clarified that he was referring to floating plastic only, which is

easily accessed by birds, plankton, and fish. There is active transport of the plastic when organisms eat the plastic at the surface, move to the bottom of the sea and excrete. The Mediterranean is extremely dynamic. Particles are a perfect habitat for organisms such as bacteria, phytoplankton, mollusks, and crustations among others. In 2014 there was an average surface concentration of 200,000 micro-plastic particles per square kilometer. A litter-free Med Sea: utopia or reality? He expressed concern with Europe, seeing what is going on around us. Good propositions exist (by UN and EU Commission among others), but are weakly implemented. Bottom-up pressure can catalyse top-down decisions. Citizens must be involved. The plastic matter is very relevant to citizens. Public media keeps showing a positive picture of improvement, however this is false. Regulations will be a result of solutions coming from citizen participation. When the fruit is ripe, it falls – it will fall to happy citizens and without plastic in the Mediterranean.

Ralph Schneider, PlasticsEurope, Senior Environmental Affairs Manager. He has been working for PlasticsEurope for the past 4 years. As an association it represents plastics raw material producers in and from the EU, CH, NO and TK. Plastics raw materials are mainly sold as granules used by plastics converting companies to make plastic products of everyday life. One of their ongoing projects addresses the prevention of marine litter in Europe and also at a global level. In 2011, together with other organisations, it recognized the presence of marine litter and committed to address this. It is one of the founding members of the Global Declaration on Marine Litter Solutions. It is contributing to various networks like the Regional Seas Commissions. It welcomed the G7 declaration. To further strengthen global involvement of the plastics industry on global level, it supported the creation of the World Plastics Council (formed in 2014), a global plastics companies platform focusing mainly on supporting marine litter prevention actions. Proper waste management, people's behaviour, mindful product design, and pellet loss prevention were among some of the mentioned factors to be addressed. Concerning product design, he gave an example with two different plastic bottle caps. The first one had no secured connection to the bottle neck and could escape into the environment easier if not handled right. The second bottle-cap example remained attached to the neck of the bottle once opened and by that reducing the likeliness that bottle-caps could get lost. Improving the system (waste management, people behaviour or product design) is in most cases much better than banning. If you ban something you are losing a value without improving the system – for example if we take away all plastic bags it does not improve lacking waste management or conscious consumer behavior (they are quickly replaced by things like paper bags or plastic crates). He mentioned an innovative approach implemented by Ireland which have put a levy on their bags, reduced consumption and increased financial capacity, used to improve collection system and education programmes. Innovative business models are possible for such situations. The input of data from different sources is important foundation and has helped a lot to convince others - for example GESAMP is an important and trustworthy source.

Francesco Degli Innocenti, Novamont S.p.A, introduced as Biologist, was involved in the development of standards. Littering is very easy; restoring is a complex matter. We wanted to carry out an exercise – it is very difficult to use the life-cycle assessment. We used a 9g bag and broke it into 1.8mg per piece (5,000 fragments), distributed into 8,700sq m (0.6 plastic fragments per cubic metre) of sea water (equivalent to the concentration currently measured in the Mediterranean Sea). The energy needed to restore the water is impossible because the energy required is very

high. When I litter something I cause damage and the risk for the environment is caused by stress or concentration in the residence time (time the bag is around). By using available materials I do not reduce concentration but reduce residence. This is achieved through the use of biodegradable products. Biodegradability can be used wherever plastic is already in the marine environment and the risk of dispersion is inevitable. Strategic investment is necessary in the development of applications involving complex market chains (mentioning a number of limiting factors, such as the need to update plant in order to produce biodegradable products). He mentioned its use (biodegradable plastic) by mussel farmers using new nets instead of traditional ones.

Nicolas Kalogerakis, School of Environmental Engineering, Technical University of Crete, started with the "big picture" showing sources of marine litter (eg. marine accidents, fishery and marine transportation, etc.). Some actions in place and other potential ones are litter fishing, trawlers encouraged to collect plastics in return for payment, regular beach cleanups, "filtering" of urban highway and urban runoff, flash floods (small gates that collect litter in rivers - in the Mediterranean we have many temporary rivers), port cleanups, biodegradation of plastics (if sufficiently weathered), and the introduction of incentives for recycling. Land- and sea-based sources must be identified and controlled in order to see a long-term reduction. We should address removal of litter from the marine environment from the coastal zone. seawater floating litter (there are methods for collection but not financially viable), and from the seabed (not much hope seen for this type). Naturally weathered PE & PS films bio-degrade "fast" - indigenous populations can do the job. PE & PS film become biodegradable before fragmentation occurs. Plastic films - if you wait until it becomes micro-plastic and then goes into the sea it biodegrades fairly soon (in 4 months they are gone).

Maria Cristina Fossi, Plastic Busters Project, Biomarker Laboratory University of Siena asked how can we better asses the marine litter problem and impact in the whole Med Sea? This is a crucial aspect underlined by the Barcelona Convention within the Regional Plan for Marine Litter. The SDSN-MED flagship project was born in 2013 under the umbrella of the UN framework by the University of Siena. Potential solutions can be found if we have a correct diagnosis of the problem. What is the impact on biodiversity, on fisheries, and on human health? A model-based prediction approach is needed to identify plastic debris accumulation areas to design sampling activities, using information mapping. Monitoring the presence and effects of plastic debris in marine ecosystems can be carried out using bio-indicators. The following studies were mentioned: GIS Mapping of hot-spots; detecting the effects of marine litter on marine trophic webs and fishery resources; and investigating the impact on human health due to the presence of plastic in commercial fish species. Mitigation of marine litter through the project Plastic Busters: WP3 of Plastic Busters has tried to list some actions with the aim to reduce input and impacts of marine litter. Some partners in the consortium are manufacturers of plastic products. One specific use of biodegradable (bio) plastic was made reference to is mussels' fishing in ports.

Mr Chokri Mansour, Marine Biologist, Head of Ass. Pinna and Project Manager, Tunisia is working on the ECOMEL Project, which focuses on the development of marine and coastal areas. He described what his NGO is doing in Tunisia to address marine litter. Activities mainly consist of capacity building programmes developed by Pinna association in the field of environmental education. One project in particular is OCEANS, which is designed for students aged 13-16. Extra-curricular activities such as outdoor workshops are also organised for educators after working hours. They

have set up an awareness tool consisting of an underwater trail at Melloula Bay with informative underwater panels and guides.

Audience

Hedel Serati, NE: stated that there are plenty of solutions. The problem will not vanish unless we do something about it. In order to decide on what kind of solution to pursue, he asked whether awareness raising or legislation is most effective.

Ralph Schneider: This kind of policy is rarely used. Each country right now has selected one or the other. Another issue related to legislation is enforcement. Policy has not been raised as an effective measure.

Laura Giuliano: One can have a European regulation but not all countries will follow. If you have a regulation you easily have people who are not applying it. My instinct is that education is more effective.

Gaby Gorsky: With regards to regulations I was surprised how the no-smoking policy in enclosed places actually was effectively implemented – it worked. I tell my students not to throw away the plastic but to put it on their food plate and eat it directly, because it will come back anyway through the food chain.

Nicolas Kalogerakis: If you want success you must introduce incentives

Chokri Mansour: in Tunisia we do have policies related to marine littering, but not well respected, therefore we focus on education, which is a very powerful tool. If we limit ourselves to policies and legal framework it will take long to be implemented.

Saloua Sadok, Tunisia: there is also work, but few dealing with nano-plastics in relation to organisms and human health, what are their adverse effects on human health? Certainly negative, it is a reality that is coming soon.

Maria Cristina Fossi: Toxicity of plastic items is strictly related to dimensions – there is greater toxicity in smaller scales, and therefore a focus on nano is important.

Gaby Gorsky: Small particles don't sediment. Due to the existence of the food chain we don't need pumps, since each will only pump 1 litre per hour. The nature is doing the work. If we don't add, the nature will deal with it. I am pessimistic about human-kind.

Scientist, FR: How much has been done on the vertical distribution of plastics?

Gaby Gorsky: One study was carried out on the effect of turbulence on vertical distribution – when sea is turbulent the plastic tends to go deeper, and once it becomes less turbulent it comes closer to the surface. But the food chain also plays a role. The different experts do not collaborate – there is no knowledge transfer, so no multi-disciplinary studies have been carried out.

Chokri Mansour: Art is a good tool to raise awareness and involve youth – he mentioned some workshops his association organized for collection of litter for the creation of installations.

Ralph Schneider: mentioned current research in material development (e.g. PUMA) and said it is always a case of economics vs pathogens and bacteria.

Laura Giuliano: Recycling is always interesting but I am still cautious on enlarging the market of plastics. I would rather base on science before.

Nicolas: you need proper receiving facilities in the port. We are in discussion with companies that receive waste from the boats.

Claudio Bogliotti, CIHEAM: interdisciplinarity between experts is not enough. We must also include social sciences including political and social aspects. We need to get more deeply linked to politics, social sciences, and to the people throwing the plastic



in the sea. If there is no plastic, there is no need for research or for interdisciplinarity.

Gaby Gorsky: clarified that in his presentation he did emphasise these aspects as well. He added that we cannot live without plastics, but let's go for vegetal plastics, not bioplastics.

The panel continued to discuss biodegradation, with Nicolas Kalogerakis.

Fabio Degli Innocenti added that biodegradable plastics are more expensive than polyurethane, meaning that you need a good reason to use biodegradable plastics. It cannot be just a replacement of traditional plastics because it will not work for economic reasons. But where there is a need, like nets for fish farmers, then there is a demand for the material directly from the users.

Fabio Fava, stated that Marine litter is a major societal challenge for the Mediterranean basin given its remarkable environmental, economic, social, political and cultural implications. It is adversely affecting the healthy status and the productivity of the sea and related activities of the area.

We need to better define, characterize and address the problem. For some areas of the MED we have fragmented or inconsistent info on the subject with knowledge gaps on the litter composition, amounts, fate and actual impacts on the local ecosystems. Thus, we need to cover such gaps by : a) building a denser marine sampling network in collaboration with scientists and citizens scientists of the area; b) better identify the local land based sources of litter and monitoring rivers and continental runoff waters; c) build a Mediterranean data base hosted in a well-known data depository with a curator service; d) annual reporting of the statistics through EU or the database curator services. Here we need the full engagement of scientists and citizens coming from all countries across both the Southern and Northern Mediterranean.

Then, we need site specific strategies for removing/ lowering the marine litter already existing in the basin. Its removal from the surface, the water column, the seafloor and the shore requires the cooperation of pelagic and benthic trawlers. Regular removal of beached debris from the beaches as well as the removal of plastics from rivers, watercourses and continental runoff waters has to be also guaranteed. The involvement of fishermen and citizen in these actions is essential. In situ biodegradation of marine litter components might have a role, even if very limited.

We need then to develop treatments/strategies for valorizing the collected materials, such as:

- dry and burn, to produce energy;
- fractionation and use of plastic fractions for the production of art products or, after chemical and/or biological valorization, useful chemical building blocks.

The prevention of marine litter is the most relevant measure to put on place. It can be implemented by combining different actions:

- a) collect selectively and efficiently recycle the different plastics used in our every day life, thus reducing plastics dumped in landfills
- b)eliminate the land-based open and open-air dumps,
- c) remove (via filtration) plastics and tire fragments from highway and urban runoff, wastewater treatment effluents;
- d) ban non-essential plastic products and restrict the use of plastic microgranules in commercial products;



- e) gradually adopt biodegradable (bio)plastics, by starting from those used in marine habitats for preparing fishing gears, tubular net for marine aquaculture, mussel-culture socks or additives for painting and maintenance of ships and leisure boats...

These actions require effective and robust regulations/legislation, tailored incentives (for recovering plastics from the sea, for recycling plastics, etc), R&I actions, education and communication plans as well as robust partnerships between academia, industry, public institutions, regulatory bodies and the society, essential for developing and implementing such actions and plans, R&I agendas by trying at the same time to create environmental and economical benefits along with new jobs and social cohesion. This also requires a long-term coordination of European and non-EU countries of the area, the mobilization of local trans-national synergies and complementarities, providing added value to regional, national and EU investments and efforts. This is what BLUEMED strategic board and CSA are trying to do in close cooperation with UfM and the other initiatives active in the area (EUSAIR, WESTMED, etc)

Ian Gauci Borda, MCST, highlighted the need to work together, adding that as things stand today, the framework exists. The CION has provided a number of financing instruments to finance projects, and we (MT) as the current Presidency, are putting all efforts to make such discussions possible. He added that Bluemed will feature very prominently in another very high level conference on the 3rd and 4th of May 2017. He thanked all present for their participation.

SHOWCASE OF PROJECTS WHICH IMPLEMENT THE BLUEMED INITIATIVE (CONTINUATION)

Chair: Luca Marangoni, DG Mare, European Commission

Rapporteur: Laura Sedaine, Cellule Europe et International, CNRS – Institut National des Sciences de l'Univers

Luca Marangoni introduced the session and stated that he is happy to collaborate with DG Research in the area of Blue Economy, Blue Growth etc and that BLUEMED is an important means through which the messages can be effective to attain a means to our goals. There are a number of different projects, all with different points of view, and at different stages of implementation, however they have one common element, that is, an example of how we tried to mainstream the implementation of blue growth

Biodivalue, Audrey Zammit, University of Malta

(2012-2015)

8 partners, universities, public sector, entities working on marine protected areas Biodiversity and sustainable shipping

Traffic in the Med, especially in the sea between Sicily and Malta

Study the effect of traffic in harbours, creation of a tool for policy makers

Some results: track marine traffic around Sicily and Malta, located in 5 locations (real time info on Malta) all kinds of ships (cargo, cruise, etc.) quite a useful tool (also info in writing)

Monitoring pollution and effect on biodiversity

Work on the sediments (picked up and analysed in harbor areas, pullants like plastics, fauna on sediments) high level of heavy metals

Clearly, human activities involving movement of ships have an impact on the environment

More info: <u>http://www.um.edu.mt/eng/mec/research/projects/biodivalue</u>

SUPREME and SIMWESTMED, Pier Paolo Campostrini, CORILA, Italy

Agency EASME (DG Mare funding)

SIMWESTMED: Supporting maritime spatial planning in the West Med

Maritime spatial planning (EU Parliament 2014 directive)

How to articulate a good environmental status in the Med and the Blue Growth

Domain of co-benefits: MSP Strategy

In the Med in particular (small space concentrating a lot of activity), we need an efficient maritime planning strategy

We need to improve the knowledge, the land-sea nexus, develop new tools to assess the cumulative impact of human activities, understand better the multi stakeholders' processes.

Theses 2 projects are responding to some of needs identified by the SRIA (concrete cross-border initiative between MS)

SUPREME: eastern Med (strong link with EUSAIR strategy) involving research institutions, ministries, in Italy, Greece, Croatia, Slovenia, etc. as well as international organizations (Barcelona convention)

SIMEWESTMED: western side (transboundary) based on the ADRIPLAN heritage

Challenges have to be addressed at both scales:

- Basin scale
- Scale of marine areas under National responsibility

ARCHEOSUB, Chiara Petrioli, Sapienza University of Rome, Italy

Surveying conservation, protection and valorization of underwater cultural heritage Funded by the EU maritime and fishing fund (+ link to DG Connect)

Multidisciplinary approach: bring innovative technologies to the BLUEMED SRIA

Using technologies developed in 2 FP7 projects: "internet of underwater things"

Came up with an enabler: every sensor, every robotic platform, any kind of drifter or divers can be interconnected and exchange information, check the quality of data

Complicated to communicate underwater: specific application

Bring technologies to the market, valorization for the touristic sector (develop touristic itineries)

Very strong interest (UNESCO, ministries)

Want to develop low cost underwater connection (AUV pilots)

Real-time communication to exchange sensor, video information

Joint effort is needed: innovative technologies, new paradigms to exploit these new technologies enabling to put the Med at the core of our economy and future

BlueNET, Vedran Slapnicar, Croatian Maritime Industry Competitiveness Cluster, University of Zagreb

Maritime cluster network for Blue Growth

Maritime and Fishers Fund and EASME Funding – DG Mare



Med, Adriatic and Black Sea

Expected Results: Empowered maritime clusters and regional centers, enhance intensive networking among SMEs

A state of the art report has been elaborated: main maritime sectors developed in the territories (maritime policies, and initiatives, identification of stakeholders, etc.)

Sectors involved: maritime transport, leisure, working and living, Shipbuilding and boat building, Energy and raw materials,, food, nutrition and health services.

BlueNET will **enhance the maritime clusters' capacity to develop networking among SMEs** in the Mediterranean, in particular in the area from the Adriatic – Ionian Seas to the Black Sea in order to **diffuse innovation and achieve an added value in relation to the maritime policy** of the target area.

FiDaCaMs, Jackie Chetcuti, Loqus fleet Ltd

Fisheries Data Capture Management System – H2020 funding

3 beneficiaries with extensive knowledge of the fishing sector

Innovative solutions to the problems faced by the fishing industry

Main issue is that there are a number of applications but there is not one complete solution for the fishing vessels and tools for the scientific communities

Maritime special planning, integrated maritime surveillance

Central hub of data collected on board of vessels, with satellite communication capacity (water temperature, salinity, etc.)

- Monitoring and control
- Reporting requirement
- Data for the scientific community

Benefits: save time for fishermen, visibility to anticipate sales, secure benefits, marine planning, visibility of the supply chain

Very positive feedback from the departments of fisheries of Malta and Wales

All in one solution for the fishing industry – being discussed with a lot of potential partners

BIOVecQ and SecurAqua, Saloua Sadok, Coordinator of both projects Institut National des Sciences et Technologies de la Mer, Tunisia. Funding Cross border ENPI-Italy-Tunisia program

Contributing to blue growth within Tunisian-Sicilian cross border area Objectives:

- Contribute to ensuring food security, improve the quality of seafood and farmed fish/shellfish products, valorise the by-products generated by fisheries and seafood industry
- Extracte and purify bioactive substances with application in various fields including agro-food, cosmetic, health; etc
- Contribute to job creation in various sectors such as food health, cosmetics, energy etc
- Produce data and research activities to support SMEs including analytical procedures
- Creation of start-ups
- provide decision support to policy makers



Results of BIOVecQ: 6 start-ups created, 13 conventions with SMEs, 2 patents and more than 30 scientific papers, new lab build and equipped in INSTM

Results of SecurAqua: 1 project pilot for farmed fish and shellfish processing (smoking/Vacuum and MAP packaging), 4 conventions with SMEs, more than 10 scientific papers, contribute to the creation of a new department in INSTM, creation of a platform

Q&A

Marine Science (UK):

AIS picture, tackle the vessels non using it (often pollutors)

Draft of international standards on underwater?

A. Zammit: no results published yet

C. Petrioli: standards have to be discussed. Standards to which we participate that was just published by NATO, but it does support networking. Workshops have been organized to speak about standardization.

Lab are analyzing the data to where the ships are passing through, now rick analyzing (ballast water)

University of Malta: Is the government giving funding to the fishermen who require the monitoring systems: yes! But its is going to be expired in 2 years

Commercialization of products: yes, one pilot project in Sicily and Tunisia

French government: different ways of funding, IMFM, H2020

What are the relations to the BLUEMED CSA?

Cross-border maritime programme (Italy-Malta)

Labelling projects with BLUEMED (coherent with a SRIA) should give the possibility for the projects to be more coherent, less fragmented

One of the task of the CSA has the duty of engaging these projects together (a lot of them have just started)

Key words:

Monitor and mitigate human activities effects on the Med

Implementation of the BLUEMED SRIA, together with the Maritime spatial planning (EU Parliament 2014 directive)

Technology development to make available to all data on marine traffic, underwater cultural heritage, fisheries monitoring

Connecting stakeholders together (cross-border, different types of actors working together)

Wrap-up: Luca Marangoni, EC, DG Mare

Challenges are very much present at project level. The projects presented showed that new technologies helped breach gaps. The projects expressed the need for partnership combining partners from different sectors. Several initiatives that are complementing each other and there is a cleat need for a concerted coordination to ensure that we don't duplicate. We can join forces, different calls and make sure that the SRIA priorities are present in the Framework programme calls. Finally we need to make sure that the topics are also present at national level

PANEL DISCUSSION: LEARNING FROM PARTNERSHIPS – UNLOCKING INNOVATION THROUGH COLLABORATION – CAN DIFFERENT SECTORS BETTER COLLABORATE TO DEVELOP NEW VALUE CHAINS?

Moderator: Laura Yuste, BLUEMED Initiative Strategic Board Rapporteur: Margherita Cappelletto, Department of Earth System Science and Environmental Technologies, National Research Council, Italy

Vedran Slapničar, Croatian Maritime Industry Competitiveness Cluster – Established through a Government Initiative by the Minister, oriented to the following goals: networking for improving business (B2G (Government) meetings), apply to EU funding, lobbying at national level, development of smart specialization, labelling projects of national interest, promoting international activities, reflecting companies' needs.

Nikos Papandroulakis, Hellenic Center for Marine Research – Multipurpose platforms for aquaculture and windfarm offshore tackle two important challenges at the same time, fish production and wind energy harvesting. As case example, the TROPOS project demonstrates the integration of discipline, including satellite, and modelling.

José de Lara, Clúster Marítimo Español – Representing 80% private companies, 3% ES GDP, 7% of employment. Favouring debate among all members (e.g. through working groups) and awareness (through awards). Developing strategies for implementing a blue reindustrialization and innovation plan. Working as an Ocean lab, simulation center to test main ideas.

Mario Dogliani, Technical Director, SEA Europe – Representing shipbuilders and equipment industry. Aiming at developing high technology passengers' ships towards the decarbonization challenge – 50% cut of consumption while growing. Developing the skills for the future. Methodology: clear target and winning team, then planning including interfaces (e.g. the case of LNG).

Gustavo Larrazábal, Chair, European Aquaculture Technology Platform – The reprioritization of the Strategic Research and Innovation Agenda and plan of action reviewed in 2017, favouring engagement with other sectors, also through mirror platforms and international cooperation, buying-in from local communities.

Jesus Medina, University of Cadiz – International global campus for excellence of the Sea (CEI-Mar) –Science-technology-business system interdisciplinary approach on key thematic areas to develop and obtain new projects together, connecting different experiences.

Shane A. Hunter, AquaBiotech ltd. – Local SME, multidisciplinary company with a strong research department and a marine research facility. Core competences: developing aquatic vaccines, aquatic ecotoxicology.

Discussion/Key messages

General inputs

- Managing the Ocean is complex, many different interests have to be coordinated and actions developed at different intensity according to different level of implementation (including regional and national).
- Collaboration and networking shall be enhanced all along the value chain to solve different common problems.
- Clusters represent a voice policy makers have to hear.
- Membership has the advantage of gathering best people.
- Technology platforms have to be led by industry with the support of scientists.
- Maritime technology sectors have the potential to make blue growth, providing that some barriers are removed. Since technology needs to reach the market, costs of infrastructures need to be anticipated and technology transfer improved after the end of projects.
- Knowing that few breakthrough technologies will change our future, to plan the future is key, sharing common agenda for a common success.

Sector related inputs

- To tackle the unbalance on aquaculture production between north and south Europe, information and statistics has to be improved in southern Europe.
- Are offshore platforms sustainable? Two sectors, aquaculture and energy, can work together and in a more sustainable way depending on the space/place where they are built. For their economic feasibility, commissioning & decommissioning has to be taken into account.
- Shipping industry is ready for maritime safety? Bearing in mind that a ship is a country in terms of power capacity, implementing actions requires interoperability of data, digitalization of the ships, cyber security, harbour development.

SHOWCASING PROJECTS WHICH IMPLEMENT THE BLUEMED INITIATIVE - CONTINUATION

Chair: V. Papathanassiou – Vice-Chair, BLUEMED Initiative Strategic Board

Seaofskills, Alain Deidun, University of Malta

Seaofskills is an ERASMUS+ funded project and has a mix of partners: ranging from universities, vocational training, cooperatives, etc. It aims to prepare training materials for fishermen (without patronizing). Fishermen were asked what were their competencies and their need for training. The main challenge is to find the formula to attract the fishers (accreditations, access to EU funds, creation of company). The website has an E-learning platform and 5 themes are tackled:

- Safety at sea;
- Technology used in fishing vessels;
- Cold chain quality management;
- Ecosystem approach to fisheries;
- Entrepreneurship.

More info: http://seaofskills.eu/

UNIMED, Marcello Scalisi, Mediterranean Universities Union

Network of universities and research centers, active in promoting Euro-Med academic cooperation. It is an Independent organization but works with the EC on capacity building and Research. It comprises of 98 universities from 24 countries, North and South of the Mediterranean. UNIMED will promote through its members the creation of a Sub-Network on the Bluemed priorities to improve the cooperation in this specific area between Universities of the two shores of the Mediterranean.

For more information: www.uni-med.net

ASSESS, Martina Rossi, MareFVG, Italy

Advanced Skills in Safety, Environment and Security at Sea, funding is given through DG Mare and aim is to establish training adapted to students to prepare them to the maritime industry sector in terms of safety and environment. It has a full Italian partnership and provides three different paths, from high-level professional master dedicated to young graduate as well as to employed people, to an upskilling programme for people employed and, finally, to high school teachers to transfer concepts to high-school students

More info: <u>https://ec.europa.eu/easme/en/advanced-skills-safety-environment-and-security-sea</u>

MENTOR, G. Georgiou, University of Cyprus

Blue career center in the Eastern Med and Black Sea aimed at identifying existing skill gaps and solutions to fill in those gaps. Aim is to create a platform for stakeholders to make blue careers more attractive to young people and tackle unemployment and to develop training seminars, visit to high-schools, train professionals, establish e-learning materials, etc.

More info: <u>https://ec.europa.eu/easme/en/blue-career-centre-eastern-</u> mediterranean-and-black-sea

PerformFISH, Katerina Moutou, University of Thessaly, Greece

It is a consumer-driven production: integrating innovative approaches for competitive and sustainable Performance across the Mediterranean Aquaculture Value Chain. This project is a H2020 (SFS call) funded project and aims at increasing the competitiveness of Med aquaculture while contributing to Blue Growth. It is an Industry-led consortium. The results are expected at 3 levels: industry, policy and environment and society

eAIROOS, Aldo Drago, University of Malta

Aim is to develop a Sustainable Ocean Observing System in the extended Adriatic-Ionian macroRegion. It is a project based on the EUSAIR model and tackles the issue of managing the Med space - "Data is the language for our relationship with the environment"

Association Pinna, Chokri Mansour, Tunisia

Project ECOMEL on eco-tourism in marine coastal areas, in Tabarka, Tunisia. It is Funded by the MAVA foundation and the EFEM and aims to enhance the marine knowledge and improve educational activities. One of the objectives is to develop a network of snorkeling in North Africa. Upcoming project, linked to ECOMEL, meant to attract yoga practitioners to Tunisia, while supporting the local economy and communities



Open Discussions

How can the BLUEMED Initiative be involved in these projects? Maybe invite CSA partners to project board?

Organizing a meeting in the Southern Med could help both at research and policy level.

J.F. Cadiou: Connecting BLUEMED with the touristic sector could be particularly interesting.

The Tunisian ecotourism example could be duplicated in other countries.

At BLUEMED level, we need to ensure the bottom-up/top-down balance when it comes to involving Med Southern countries

C. Bogliotti: Southern countries are already involved: they are polluting the Med; they face the same problems

We have to seek the involvement of Southern countries at different levels: the UfM is ok but there are many other actors.

M. Bernal (General Fishery Commission for the Mediterranean): need to involve, not just invite the southern countries.

PANEL DISCUSSION: CONNECTING THE MEDITERRANEAN SEA

Chair: Sigi Gruber - Head of Marine Resources Unit, DG Research & Innovation, European Commission

Rapporteur: Andrea Barbanti National Research Council, Institute of Marine Sciences, Italy

Laura Giuliano, CIESM: pointed out the importance of promoting networking initiatives in the Mediterranean, and in particular offered CIESM – with its consolidated (100 yrs long) experience in making research a tool to facilitate dialogue among Mediterranean and Black sea Countries- as a support to the BLUEMED Initiative in building consensus on key topics, addressing policy actions, preparing guidelines, involving the civil society.

Raffaele Mancini, UfM: recalled the effort UfM is doing in promoting Blue Growth at the Mediterranean scale, through specific working groups, initiatives, actions (e.g. the management of the Virtual Knowledge Center that is starting now at UfM) and confirmed the will for a joint work with BLUEMED.

Roberto Montanari, Bologna Charter Initiative: stressed the need for concrete results and mentioned a number of topics of direct interest of his Administration and of other Regional Administrations that signed the Bologna Charter. Their focus is on climate change adaptation in coastal areas and coastal erosion. He wished for a close contact between Bluemed and Regional Administrations, possibly through the creation of Regional Ambassadors (similar to the Bluemed Ambassadors foreseen in the CSA workplan for non-EU countries).

Biagio di Terlizzi, CIHEAM: recommended a constant dialogue with non-EU countries, through proper formal channels, to promote the Bluemed Initiative and, on the other side, use Bluemed as "science diplomacy".

Miguel Bernal, GFCM: recalled the importance of R&I to address policies, plans and management measures for sustainable fisheries and anticipated a GFCM initiative (Conference) to discuss research priorities. Such initiative can directly feed the next update of the Bluemed SRIA.

Davide Strangis, CRPM: stressed the importance of a sound alignment of strategies, initiatives and fundings. He mentioned in particular the new WESTMED strategy and the regional Smart Specialization Strategies. Moreover, he mentioned the Interreg MED Programme and projects (modular, horizontal, top-down axes 4) as a good example of cross-fertilization and capitalization of results.

Pierpaolo Campostrini, JPI-Oceans: recalled the role of Joint Programming Initiatives, and JPI-Oceans in particular for marine sciences, in promoting the mainstreaming of Member States countries R&I efforts.

CONCLUSIONS

Luca Marangoni: The initiative has reached a high level of maturity since 2014. All the work that we have done, all those efforts have already paid. It is important to show politicians that the money is creating sustainable wealth.

Sigi Gruber: This kind of meeting is a unique opportunity to share what is being done by all partners to policy makers. There is a lot of passion for the work that we do and we do it for the Mediterranean. What we need to do now is to capitalize on those projects, capitalize also on the rich discussions and organise a series of follow up meetings to keep the momentum. Follow-up by sending a message to ask participants for an expression of interest for engaging in activities which will contribute to a successful implementation of the BLUEMED Initiative This expression of interest will be collected by the CSA partners.

Hon. Chris Agius, Malta's Parliamentary Secretary for Research, Innovation, Youth and Sport thanked the speakers and the Commission for its works. He highlighted the BLUEMED achievements towards a more sustainable approach to the management of the Med sea and promised to pass on the key messages to a number of high-level (ministerial) discussions to come on 20th April and the 4th May.