

Newsletter

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A note from the President

BLUE ITALIAN GROWTH TECHNOLOGY CLUSTER: a Crossroad for Innovation in the Euro-Mediterranean Area

With this first number of our freshly released biannual newsletter, the Blue Italian Growth Technology Cluster (BIG TC) presents a series of initiatives we believe can be of interest for potential international partners.

The BIG TC has been established in 2017 and it is recognized and co-funded by the Italian Ministry of Research with the mission of becoming the national locus (for Research and Innovation in the area of the Blue Economy.

The BIG TC, which is a Private Public Partnership in the legal form of an Association, displays now 85 members, including 22 Universities, all the major Italian Research Organizations, large enterprise, SMEs, Business Consortia as well Regional Hubs and has become in its first 3 years of activity the national entity of reference for any R&I initiative in the Blue Economy.

The technology trajectories of the BIG TC include marine habitat & coastal zone, biotic and abiotic resources, shipbuilding & marine robotics, blue renewables and biotechnologies, but the interests spans sustainable & economic uses of the sea, skills and jobs, research infrastructures.

Among our strategic guidelines, embodied in our Plan of Action, internationalization is one of the cornerstones of our activity, since we believe that only from the cooperation and exchange of ideas the acceleration of the transition to a more sustainable future can be achieved.

BIG TC has recently signed an agreement with the Cluster Maritime Tunisie, is partner of Interreg Projects, cooperates with several Mediterranean Blue Clusters- in the framework of Bluemed and Westmed initiatives-

and has also undertaken a Memorandum of Understanding with the Municipality of Haiyang (PRC) as an entry point to one of the world's economic gravitational pole.

In addition, we cooperate with OECD – through Stazione Zoologica Dohrn the national contact point- on the theme of sustainable economic use of marine resources.

Finally, we have recently launched a call for ideas among our members to solicitate proposal aiming at contributing to the Blue and Green Recovery after COVID-19 pandemics, in line with the objectives of the European Green Deal: 55 proposal have been submitted and we are working to streamline the portfolio, encouraging aggregations and fostering partnerships, also in view of the new Horizon Europe and Next Generation EU Programs.

I encourage the readers to take a look at every single contribution of this newsletter and if you find any topic of your interest or simply want to get in touch with the Blue Italian Community, do not hesitate to contact us: emails are available at the bottom of this page.

Roberto Cimino

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ITEM and BIG, two faces of the same medal

By **Ferdinando Boero**, University of Naples Federico II, CoNISMa, CNR-IAS, Stazione Zoologica Anton Dohrn

Andrea Barbanti, CNR-ISMAR (coordinator of ITEM)

The EU marine policy calls for a Blue Growth and Ursula von der Leyen, as President of the European Commission, launched the Green New Deal to attain sustainability in the EU production and consumption systems. However, economists measure sustainability with the growth of economic indicators, whereas ecologists recognize sustainability when the growth of the economic capital does not erode the natural capital. The Green New Deal considers both biodiversity and ecosystems as inalienable: they cannot be destroyed for economic aims because when the natural capital is dilapidated, also the economic systems collapse.

The Italian Ministry of University and Research financed ITEM (Innovative Marine Ecosystems) as a complement with the Blue Italian Growth Technology Cluster (BIG TC), gathering public and private representatives of the Italian marine and maritime research: CNR, CONISMA, INGV, OGS, SZN, ENI, eGeos, Italbiotec.

BIG TC explores the opportunities of economic growth that the marine environment has to offer, whereas ITEM represents the ecological check of the sustainability of human initiatives. The recurrent crises that affect our systems depend on of natural resources.

Our economy was not developed while fully respecting the integrity of the natural capital: hence we must change our systems of production and consumption radically.

The European Union embraced this vision with the Marine Strategy Framework Directive and the objective of attaining Good Environmental Status (GES) in all EU waters. The 11 descriptors of GES are based on two pillars: Biodiversity and Ecosystem Functioning. Biodiversity must be maintained, and all possible human impacts must not alter the functioning of ecosystems. There is no better definition of sustainability: if our actions are conducive to GES they are sustainable; if they hinder GES, they are not. The redesign of our production and consumption systems is an unprecedented occasion for innovation. In caves, we produced energy by burning wood, and we still produce energy by burning combustibles. We must abandon the era of combustion, without creating further problems when the alternative systems will be dismissed.

The environmental sphere has the role that it always played but that was never acknowledged: its laws govern the functioning of the social and economic spheres. The economic sphere cannot impose laws that are against ecological laws: the consequences are the collapse of both economic and social systems.

We do not know the species that make up the ecosystems and we measure ecosystem functioning in a rudimentary fashion. We need new technologies to produce goods and services, but also to observe the environment properly. And we need a new eco-culture that gathers ecology and economy.

ITEM proposes this ecosystemic vision and aims at producing a roadmap towards a different future, as all EU Directives prescribe.

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TEOREMA: the technological proposal of BIG TC

Blue Italian Growth Technology Cluster

By Claudio Lugni CNR - National Research Council Institute for Studies and Experiences of Naval Architecture

“For the generation of my children, Europe is a unique aspiration. [...] To match this aspiration with action, we must rediscover our unity and inner strength.” [...] “We will be a world leader in circular economy and clean technologies.”

Thus the President of the European Commission Ursula von der Leyen introduced the European Green Deal, the new EU agreement to lead Europe into the first "climate-neutral" continent of the world: the impact of anthropogenic global warming on the environment is a common belief, as confirmed by the increase of the intensity and the number of extreme events occurred in recent years. It becomes then a priority for each member state to facilitate a rapid transition towards a completely eco-sustainable energy production, through an acceleration of the transformation process of the European industry which is leader in the sector of new technologies for "clean" energy through a strong and strategic energy, economic and social policy, both at national and community level.

A fundamental role in the environmental strategy proposed by the European Commission emerges from both the sea economy and the energy policy on marine renewable energies.

The sea is definitely a huge energy basin, so far only minimally exploited. The different marine energy sources can be briefly classified into: wind, solar, sea currents, wave motion, salt gradient (osmotic energy), temperature gradient (thalassothermic energy); it can be extended to all the energy sources connected with biological processes of bacteria (such as algae, microbial fuel cell, etc).

However the sea is not just a resource, nor a resource like any other. The growth of sea economy (Blue Growth) is an opportunity that EU cannot fail to seize to create new jobs, support competitiveness and strengthen social cohesion. The BIG TC - Blue Italian Growth Technology Cluster, is one of our Country's proposals to answer the EU request on the eco-sustainable growth of the sea economy. This takes on a peculiar connotation in the Mediterranean basin, where the eco-sustainable exploitation of marine resources cannot fail to disregard an integrated and socially shared use of technologies for marine renewable energy.

"Integrated use" implies the sustainable and effective coexistence of technologies for the exploitation of different energy resources from the sea (for example: wind, sun, waves and currents); "Socially shared" implies the ability to involve social and business local activities that have always considered the sea as a life and culture site, essential for human survival.

"System integration" and "social sharing" are also the keywords recognized in the European strategic technological plan (Set-PLAN) at least as regards the possible expansion of offshore wind in the Mediterranean Sea.

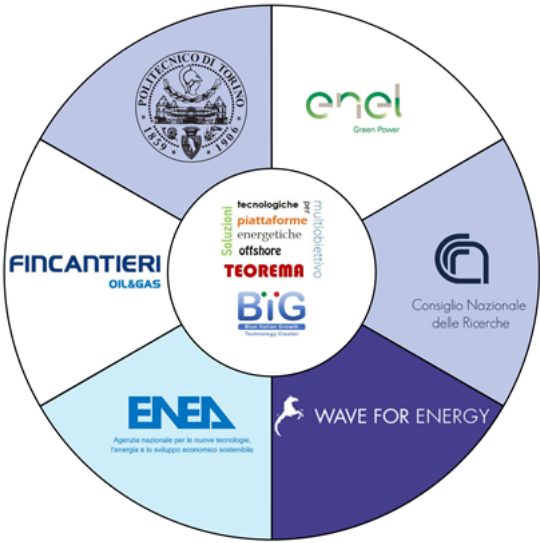
Teorema, one of the two leading projects (jointly with the ITEM project) of the BIG TC, aims to propose innovative technological solutions for a multi-objective offshore energy platform suitable for the Mediterranean Sea. Born from the cooperation between CNR (lead partner), ENEA, Politecnico di Torino and the two major stakeholders in marine technologies, Fincantieri Oil & Gas and Enel Green Power, the project makes use of the skills of the young SME "Wave for Energy, W4E", one of the first university spin-off that designs and manufactures devices for the conversion of energy from the sea. TEOREMA is divided into 6 workpackages mainly oriented to industrial research. The main objective of the project is to define the concept of two technologically advanced types of offshore platforms for the production of wind, solar, wave energy and MFC (Microbial Fuel Cell) technologies, taking into account the main factors affecting their feasibility and sustainability and implementing adequate support tools for business planning.

The climatic data connected with the availability of energy resources and the environmental data relevant for the design of the structures, will be integrated into the engineering design, cost analysis and economic sustainability tools. It will enable the definition of effective indices for the identification of promising areas for the MRE devices and the creation of a spatial mapping actually useful for the design and definition of business models. The integration of different technologies for the production of energy from the sea, besides to guarantee a minimum quantity of energy, independent of the weather conditions, useful for the survival of the safety and data transmission

systems, will increase the service factor of the platforms. This strategy will have a positive effects both for their application and for the financial and insurance aspects of investment projects in the sector, increasing the interest of potential stakeholders.

Trade-offs and possible synergies with other economic sectors interested in the exploitation of marine resources, such as aquaculture, maritime transport, both seaside and environmental tourism, and biotechnology productions will also be evaluated.

By sharing project participants skills, Teorema will constitute, together with the ITEM project, an unprecedented coordinated effort of the major scientific and technological institutions operating in the Blue Growth sector. This activity answers the request for the integration and mutual support between management policies and development in the marine and maritime sectors recommended by the European directives, and combines sustainable economic growth and environmental protection.



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Blue economy, university and excellence: the Sea Study Centre of the University of Genoa

*By Michele Viviani, Univerity of Genoa
Director of the Center of the Sea*

The Sea Study Centre, established in April 2019 and recently consolidated, is the first strategic centre of the University of Genoa. Through the establishment of these centers, the University of Genoa has started a process of making more systemic consolidated teaching and research skills in areas which are considered to be of strategic interest and of great cultural, social and economic impact for the local community and the country. The aim is to strengthen already existing activities in cooperation with companies / organizations, amplifying and making easier cooperation, promoting the Community as a reference point on a national scale. The theme of the Sea was the natural forerunner of this project, considering the peculiarities of the University and of the territory with which it interacts. In UniGe, over 400 teachers and researchers carry out teaching and research activities on the sea. The University of Genoa ranks among the best universities in the world on maritime issues, covering a large variety of cultural fields, starting from the technological contexts, typical of engineering, architecture and design, transport systems, continuing with logistics, maritime and port economics, maritime law, biological, ecological and environmental issues, tourism and sea sports, concluding the list with the history and culture of the sea.

All these topics, apparently distant from each other, are united by the common object of study: All these topics, apparently distant from each other, are united by the common object of study: **the sea** problems to be addressed for innovation in all sectors.

The University of Genoa proposes 5 BSc courses and 8 MSc courses entirely dedicated to the sea; in addition to this, the sea is the subject of many other lectures in other courses, with an overall offer of more than 200 lectures on marine science and technology. These, together with the PhD course, constitute the richest training offer in Italy dedicated to the sea. In particular, the PhD in "Sciences and Technologies of the Sea", with its 6 curricula and a total of more than 20 scholarships per year, is the largest PhD course related to the sea topic in Italy. The area in which the University of Genoa operates, Liguria, is the Italian region in which the economy of the sea has the highest importance: it offers the most important shipbuilding companies in the world, ports, companies and professional companies, marine protected areas, cruises, tourism. Therefore, the University of Genoa and Liguria are the ideal place to study and experience the sea in various fields. The interaction between the various thematic areas at different levels can allow

to favor and make all activities increasingly competitive; this starts directly within the University, then it enlarges at the regional level with the interaction between the University, the Companies and Local Authorities, in strong collaboration with the regional Districts, in particular with the Ligurian Marine Technology District (Distretto Ligure delle Tecnologie Marine, DLTM); at national level this results in the cooperation with Companies and Research bodies through the National Technological Clusters, in particular the Blue Italian Growth Technology Cluster (BIG TC) and the Transport Cluster.

All these activities are aimed at "blue growth" in its various forms, environmental, productive, recreational and social, growth that must be characterized by constant attention to environmental sustainability.

BSc courses:

- *Product and nautical design*
- *Maritime, Logistics and Transport Economics and Business*
- *Pleasure Craft Engineering*
- *Naval Architecture and Marine Engineering*
- *Maritime science and technology (in English)*

MSc courses:

- *Marine biology and ecology*
- *Vessel and yacht design*
- *Maritime and port management*
- *Environmental Engineering (in English)*
- *Hydrography and oceanography (in English)*
- *Naval Architecture and Marine Engineering*

- *Safety Engineering for Transport Logistics and Production (in English)*
- *Yacht Design (in English)*

PhD in Marine Science and

Technology:

- *Logistics and transport*
- *Marine ecosystem science*
- *Marine and Nautical Design*
- *Energy machinery and systems for the sea*
- *Engineering for Marine and Coastal Environments*
- *Marine and Nautical Engineering/ Marine technologies*



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Strategic cooperation agreement between Italian and Tunisian national maritime clusters: a comprehensive vision

By Leonardo Manzari
Westmed National Hub for Italy

On 9 June, the two national maritime clusters of Italy and Tunisia signed, as part of the networking activities promoted by the Westmed Assistance Mechanism, the cooperation protocol bilateral.

This is an extremely important agreement, considering Blue Italian Growth Technology Cluster (BIG TC) and CMT as implementing bodies of the respective national strategies in the field of Blue Economy and Blue Growth, therefore capable of including and also promote initiatives between individual organizations of the two countries (eg regional clusters, universities, institutes research, SMEs, etc.), as part of a systemic action.

In fact, although in digital and remote mode, they testified their support for the initiative the Italian Ambassador to Tunis, H.E. Lorenzo Fanara; the Director General for Fisheries and Aquaculture of the Ministry of Agriculture, Fisheries e Water resources of Tunisia, Ridha Mrabet; Isabelle Viallon of the European Commission DG MARE; Daniele Bosio and Bourhim Aomar, Co-chairs Westmed and national coordinators for Italy and the Morocco. In fact, the agreement comes after a process that has begun with the start of the two-year Italian co-presidency (in 2020 with Morocco, in 2021 with Tunisia) of the Westmed Initiative, which places the strengthening of the co-operation among Mediterranean clusters

(especially on the north-south route), in first place of its priorities, also in compliance with the provisions of the programmatic document Framework for Action.

Italy and Tunisia, in particular, wanted thus seal a long and fruitful tradition of co-operation, which sees the presence in the Tunisian capital of the headquarters regional agency of the Italian Cooperation Agency to Development; the strong partnership of CIHEAM IAM Bari with institutions and organizations in the north country African; the consolidated success of the networking initiatives of the Sicilian Fishing and Blue Growth District; the existence of a European funding program ENI CT Italie-Tunisie (previously INTERREG), with a budget of 33 million Euros in the 2014-2020 EU funds programming period.

BIG TC and CMT certainly did not wait for the signing of the agreement to start concrete cooperation actions, providing for:

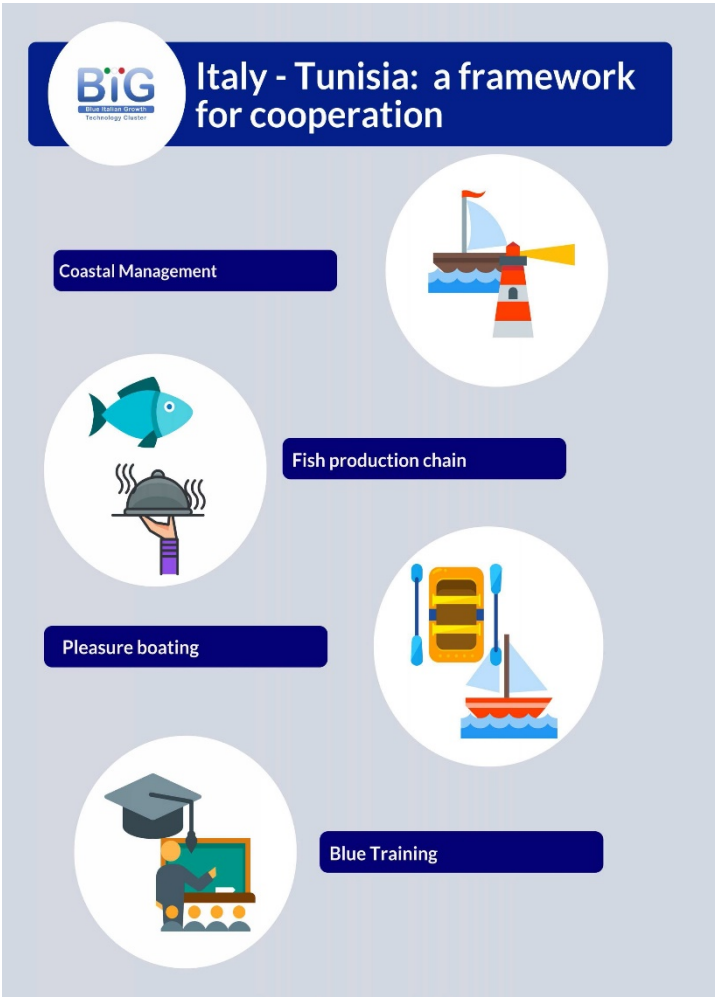
- a dedicated b2b during the Westmed national event for Italy (June 26th);
- an Italy-Tunisia networking event, to be held in 2021 in Tunisia;
- an exchange of business missions, as soon as the COVID emergency will allow it.

Professional training and higher university education, Nautical/Recreational Boating (shipbuilding and management of tourist ports), Fishing and Aquaculture, Surveillance of the Maritime Spaces represent the priority areas for immediate co-operation between operators.

Participation in existing partnerships or creation of new ones, for the presentation of project proposals, in the context of tenders and European funding programs, represents the way to encourage research initiatives and Innovation.

However, also a possible matching activity between companies, for new commercial and/or industrial collaborations, represents one solution to strengthen the economic and entrepreneurial ecosystem of the two countries, in a strategic sector such as Blue Economy.

To Presidents Kacem and Cimino and their staff, architects of the agreement, with the support of the Westmed National Hubs of the two countries, a wish of good work!



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