

Research, innovation and higher education to boost cross-border Blue Economy in the Mediterranean Region

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Abstract

The world ocean is the largest existing ecosystem on our planet. Oceans cover over 70% of the Earth's surface, carry out about 50% of global primary production and support the greatest biodiversity. They are also one of the largest carbon reservoirs in the Earth's system, holding up to 54 times more carbon than the atmosphere. The oceans, seas and inland waters are therefore very important to regulate the Earth's system, supply living and non-living resources and provide social and economic goods and services. Water gives life and provides humanity with food, energy, oxygen and regulates climate, but can take life away as well, when its scarcity leads to hunger and poverty and when its excess causes floods, landslides, and extreme hydrogeological instability.

Besides natural risks, anthropogenic activities are damaging the planet by overexploitation, leading to the depletion of natural resources, destruction of ecosystems and pollution, causing socioeconomic and environmental impacts, and therefore it is fundamental to reverse the process and maintain an ecological balance to benefit from the myriad opportunities that emerge from nature and oceans.

As coastal nations, much of Mediterranean countries' social and economic activities rely on marine resources and maritime services. Many countries however are facing severe social problems and suffering economic challenges along with serious threats such as geopolitical instability, economic crises, youth unemployment, climate change and sea-level rise, drought, and floods, amongst others. Youth unemployment is on the rise in the Mediterranean Basin. According to the Union for the Mediterranean (2021), "almost 60% of the regional population is today under the age of 30, and the number of young people under the age of 15 is forecasted to increase over 18%. This represents an asset for the region, and therefore, a positive and action-oriented regional agenda on youth employability is indispensable to unleash the region's human and economic potential capital. As requisite for peace and stability in the region, priority actions must be built on promoting competitiveness and enhancing job opportunities, in particular for youth."

This paper focuses on the role of research, innovation and higher education in facilitating cooperation amongst countries in the blue economy sectors, promoting youth employability, and valorising investment conditions to ease the interconnection between governance, industry and academia.

Governance, industry and science

Interactions between academia (scientific research and university), industry (business and labour market) and governance (policy and state) are important. More overlap between the three components contributes to generating ideas for innovation coming from industries to universities, to feed jobs with required skills according to the labour market needs and creating dedicated financial schemes to respond to the socio-economic requirements.

Government should raise awareness about the potential of the blue economy and learn from the industry on how to develop more innovation to minimize loss of jobs and to ensure viable and lasting solutions for creating new opportunities and should encourage private-public partnership and ease the dialogue between academia and the productive sector.

Today, as in all moments of historical change and because of the drastic economic situation caused by the COVID-19 pandemic, we have the opportunity to steer our future in a better direction to rebuild our economies and societies. To do this, there is a need for building trust in institutions and

government engagement, reducing financial concerns, eliminating emotional distress and preparing new leaders. A new generation will lead the change and introduce a new development model.



Cross-border Sustainable Blue Economy in the Mediterranean Region.

The Mediterranean and youth unemployment

Unemployment affects 67.6 million young women and men, which means 13.6 per cent of the youth labour force (International Labour Office, 2020). Youth unemployment is highest in Northern Africa and in the Arab States, at around 2.2 and 1.7 times the global rate, respectively.

Despite youth in the Southern Mediterranean being the most educated generational group ever, young graduates in the region, especially in North Africa, experience the highest level of unemployment among higher education graduates in the world, around 29.8%.

To improve the current situation characterised by political instability, economic difficulties, social regression and environmental problems, national labour markets in the region need to focus on job creation for youth based on innovation and employability. Thus, universities and research centres are key actors for generating innovation and developing skills that help build vibrant and sustainable development in the Mediterranean and contribute to the knowledge transfer to their societies and economies. The recent pandemic has made the socioeconomic situation more critical and urged quick and strong policy responses.

One of the immediate actions is to look for a way to use available skills to end unemployability by matching skills and jobs (the job I need, needs me). Another remedial action to unemployment is to develop those skills that are needed by the existing labour market (reply to the requested workforce). For a long-term strategic plan, developing specific skills taking into consideration the labour market needs should be applied to both the evolution of the global labour market and the availability of skills, thus responding properly to local economies. By skills, we mean both vocational education and training (VET) and higher education (HE). VET responds to the needs of the economy (productive sector), but also provides learners with skills that are central for personal development and active

citizenship, whereas higher education helps create new profiles such as project managers in the marine and maritime sectors (the leaders of tomorrow).

To consolidate the development of skills, there is a need for partnerships to foster joint education programmes in higher education and facilitate the circulation of talents. This includes joint masters and PhD programmes, as well as themed-short courses and workshops; fostered scientific mobility and international science cooperation to establish joint university departments/labs in the region, including teaching exercises and enhanced curricula that can respond to the labour market at any age.

Skills' development to feed jobs

In line with the EU skills agenda for sustainable competitiveness, social fairness and resilience and the EU strategy for blue growth, the National Institute of Oceanography and Applied Geophysics, in partnership with other partners from public and private sectors (universities, research institutions, governmental bodies, industries), is promoting an articulated training path that aims at overcoming the existing “skill mismatch” in the Mediterranean Region between education and training offer and the labour market needs. This programme has been evolving and a project has been submitted to the national authority (Italian Ministry of University and Research – MUR) and positively evaluated and approved. This project, named Blue Skills, is being labelled by the Union for the Mediterranean to be considered one of the successful best practices and to take part of the Med4Jobs initiative. It is also often included in a number of initiatives such Blue Med, West Med, EUSAIR and the Western Mediterranean Forum (5+5 Dialogue).

This training offer promotes opportunities for “Blue” careers by developing skills, leveraging innovation, exchanging knowledge and valorising research for a more sustainable Mediterranean Sea. It aims at developing new curricula and increasing employability in the marine and maritime sectors. By supporting the Euro-Mediterranean communities of the blue economy stakeholders through higher education, research and innovation, the project enhances shared knowledge of the overall Mediterranean Region.

Besides developing skills and building capacities, the Blue Skills initiative aims at enhancing the geopolitical dialogue in the Western Mediterranean Region through increased international scientific cooperation and science diplomacy.

The 5+5 Dialogue as a Mechanism of Regional Cooperation

In 2015, ten Ministers in charge of Research, Innovation and Higher Education of the 5+5 Dialogue countries of the Western Mediterranean met on the occasion of the Ministerial Conference on Research, Innovation and Higher Education in Madrid in the presence of the European Commission, the Secretariat General of the Arab Maghreb Union, and the Secretariat of the Union for the Mediterranean. The Ministers signed a declaration, which aims at strengthening cooperation in research, innovation and higher education for promoting sustainable economic growth, social inclusion and creating new opportunities for youth in the Western Mediterranean Region.

As a Trans-Mediterranean initiative in the Western Mediterranean, the “raison d'être” of the 5+5 Dialogue is to ensure closer cooperation between the five EU Member countries (France, Italy, Malta, Portugal, Spain) and the five Arab Maghreb countries (Algeria, Mauritania, Morocco, Libya, Tunisia) through political dialogue and cooperation and by encouraging more effective resource management as a means of strengthening interdependence and regional development.

The Declaration underlines the importance of research, innovation and higher education for addressing challenges such as unemployment, economic underdevelopment, environmental degradation, shortage of natural resources, water scarcity and food and energy security. Ministers emphasise the common determination to strengthen collaboration for reinforcing the potential of youth and the access to higher education as fundamental to the development and prosperity of the Mediterranean Region.

From Science to Policy

Today what is needed in the Mediterranean is an overarching framework to address the Sustainable Development Goals of the United Nations (SDGs) of particular importance to the Mediterranean Region such as combating climate change, increasing food security, managing natural resources, reforming health systems, creating opportunities for social inclusion, economic prosperity and human equality, reducing risks for geopolitical instability, etc. This can be done through science to policy dialogue using a multi-stakeholder method, strengthened research cooperation mechanisms, and institutional partnerships, all together in a shared ownership approach.

To stimulate growth and employment, the 5+5 Dialogue countries are deploying more efforts to promote entrepreneurship, a powerful engine of shared prosperity. The creation and growth of enterprises promotes employment and development of new skills, reinforces innovation and increases market potentials.

Many countries are engaged in processes of reforming their political, economic and social systems to stimulate investment, to encourage initiatives and to foster strong economic partnerships that are essential throughout the Western Mediterranean Region.

The 5+5 Dialogue member countries need to revitalize their economies to promote smart, sustainable and inclusive growth to develop disadvantaged regions and enhancing job creation in line with international labour market standards. Research, innovation and higher education play a key role in job creation. There is a need for a framework of cooperation and synergies among the ten countries. Confronted with several challenges, the 5+5 Dialogue member countries are invited to deepen their partnership to further stimulate economic growth and social stability.

Sustainable blue growth initiative: the Italian contribution

Italy as member country of the 5+5 Dialogue has committed to develop, create and maintain a Sustainable Blue Growth platform for the benefit of the Western Mediterranean Countries. This initiative has been expanded to all Mediterranean countries and has been strongly supported by the Union for the Mediterranean (UfM).

The main goal is to create the conditions to promote joint, complementary and concrete actions to maximise the impact of investing in improving existing skills (upskilling) and training new skills (reskilling) in the identified field throughout higher education (university degree such as advanced master and training-of-trainers such as summer schools) and vocational education and training and to bridge the gap between government-industry-academia in the blue economy sector through building strong skills partnerships in the Mediterranean Region with particular focus on youth. Specific goals are:

- promoting capacity building and training offers on Sustainable Blue Growth in the Euro-Mediterranean Region;
- knowledge transfer, citizen science and involvement of stakeholders;
- boosting innovation and leveraging technological innovations, generating transferable skills and promoting youth employability;
- raising awareness on ocean governance, climate change and sea level rise, marine biodiversity and ecosystem functioning, sustainable blue economy and ecosystem-based management, maritime spatial planning (MSP), and all fields related to the marine and maritime sectors; and
- strengthening regional cooperation and networks on blue growth in the Euro-Mediterranean Region (Science Diplomacy).

To reach these objectives, a tailor-made method has been developed and it is articulated in a training path, which includes:

- a yearly summer school in collaboration with the Euro Mediterranean University addressed to young scientists and researchers (45-50 participants) from the Mediterranean countries;

- an advanced master degree in sustainable blue growth jointly organised with the University of Trieste (25 students per year);
- access to research infrastructures, international mobility programme and job shadowing (10-12 fellowship grants per year);
- support of 2-3 scientists and researchers for conducting Ph.D. research studies;
- alternation school-job through internship for the youngest (vocational and education training);
- public outreach, dissemination, and scientific communication for the benefit of local communities.

Throughout this training path, young scientists, researchers and Ph.D. students have benefitted; project managers, economists, engineers and other professionals have updated their skills; policymakers, administrators and the public have been involved, young individuals and children have been reached.



Summer School on Blue Growth in the Euro-Mediterranean Region organized every year by OGS with the financial support of the Ministry of University and Research.



Master in Sustainable Blue Growth organized every year by OGS with the financial support of the Ministry of University and Research.

Boosting cross-border Blue Economy alliance

Aiming at strengthening partnership and scientific and technological cooperation among member countries of the 5+5 Dialogue and the Mediterranean Region as a whole, member countries encourage and support the links between the academia (training and research centres) and the industries of the Northern and Southern shore of the Western Mediterranean. Partner countries believe in Science Diplomacy and thus supporting scientific cooperation as a mean to boost cross-border alliance in the blue economy sector and to contribute to the exchange of knowledge and goods and the circulation of talents between the two shores.

The objective is to encourage researchers of the 5+5 Dialogue member Countries to develop North-South networks dedicated to the public and private research through the formation of panels of experts on skills and disciplines defined according to the theme. These networks will address priority issues with anticipated scientific, technological and societal impact. This enables researchers from both shores of the Mediterranean to formulate European collaborative research projects and submit them successfully.

Blue economy is the sustainable use of ocean resources for economic growth, improved livelihoods, jobs, and ocean ecosystem health. The Blue economy concept was introduced in 2004, by Gunter Pauli, who launched it “based on the ZERI (Zero Emissions Research & Initiative) philosophy, to engage a global network of experts and creative minds to seek solutions inspired by nature’s design principles” (Pauli, 2010). His book - *The Blue Economy: 10 Years – 100 Innovations – 100 Million Jobs* highlights that the "Blue Economy business model" will shift society from scarcity to abundance by using available resources and tackling ecosystems’ issues in an innovative way (Waldegrave, 2017).

Several initiatives fostering the blue economy ecosystem in the EU have seen the light. According to the European Integrated Maritime Policy (European Commission, 2021) macro-regional sea-basin initiatives are being implemented in the seas bordering Europe, promoting growth and development strategies that exploit the strengths and address the weaknesses of each large sea region in the EU.

The cross-border blue economy alliance has been nurtured by some specific bilateral cooperation agreements that strengthen and consolidate integration among partner countries, like the partnership agreement signed between the cluster Blue Italian Growth (BIG) and Cluster Maritime Tunisian (CMT) in June 2020 as drivers to accelerate employability, entrepreneurship and capacity building especially in Southern countries (Gibson, 2020).

The importance of the marine and maritime industries will continue to grow in the Mediterranean region. The blue economy sector is an engine of human and economic development for the entire region. Taking full advantage of this sector’s potential will require a multi-skilled workforce from a wide variety of marine and maritime professional backgrounds, which necessitate new knowledge, skills and innovation. In order to achieve this goal, higher education and vocational education and training (VET) have to innovate and gain in relevance and quality.

Therefore, digital transformation and ecological transition along with the development of skills (higher education and VET), clusters development and marine spatial planning (MSP), represent key tools to “drive” priority actions at national and regional levels and build a conscious governance at local, national, macro-regional and Mediterranean levels, and thus to optimize the skills and improve existing investment mechanisms.

In conclusion, establishing strategic partnerships to foster synergies with the existing platforms for developing blue skills and making available investment tools and financial services beneficial to all Mediterranean countries is the only key to success.

“If you want to go fast, walk alone. If you want to go far, walk with others.” African Proverb.

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