

The challenges of energy and ecological transition for the Italian ports

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The future of Coasts and Ports in a changing climate: needed actions and opportunities for a Sustainable Blue Economy | 7th November 2023 | Blue Economy room | Ecomondo





The sole National Cluster on Blue Economy recognized and co-financed by the Ministry of University and Research (MUR)

Headquarters: Darwin-Dohrn Museum, Naples, Italy

Associates: 90+ entities from public and private sectors

- Universities
- Research Centres
- Regional Districts
- Large enterprises and SMEs
- Business consortia
- Associations

Active collaboration with governmental regions representatives active in the Blue Economy

OUR MISSION

Step 1: COMMUNITY



To create a national community in the context of the blue marine economy;

Step 2: PARTNERSHIP



To promote an innovation-driven blue growth, by fuelling private-public research partnership

Step 3: INTEGRATION



To favour the integration of infrastructures and skills at the national level

Step 4: ACHIEVEMENT



To achieve an economic growth based on innovation while preserving natural capital (Good Environmental Status)



1

MARINE HABITAT & COASTAL ZONE

Ocean observing systems adapted to the reality of the Mediterranean, with particular reference to coastal & intertidal zones/ sandy & rocky shores; integration of sensor webs, artificial intelligence technologies and digitization. Development of quantitative models for describing good environmental status (GES) through KPIs, environmental certification systems applied to marine environments.



2

BIOTIC MARINE RESOURCES

Fisheries and aquaculture: ICT technologies for food safety and monitoring of fishing activities; digital technologies for the autoapplied to aquaculture plants; new sustainable feeds for aquaculture, multitrophic aquaculture; conversion of wastes from fisheries to high-value products; integration of aquaculture plants into multi-use platforms. Marine ecological restoration.



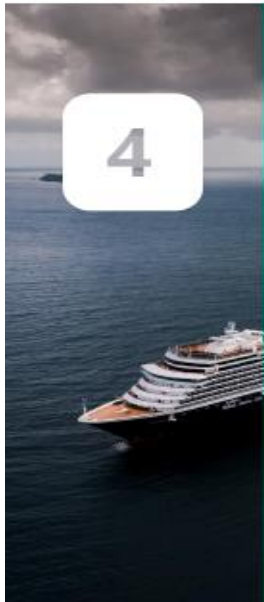
3

ABIOTIC MARINE RESOURCES

New modular offshore platforms aimed at co-location of diverse technologies (renewables, aquaculture, hydrogen production, sea water desalination: multi-use platforms) Reuse of end-of-life offshore platforms (marine research labs, CO2 underground storage, renewables, aquaculture); New exploration technologies for deep-sea mining;



OUR DEVELOPMENT TRAJECTOIRES



4

SHIPBUILDING & MARINE ROBOTIS

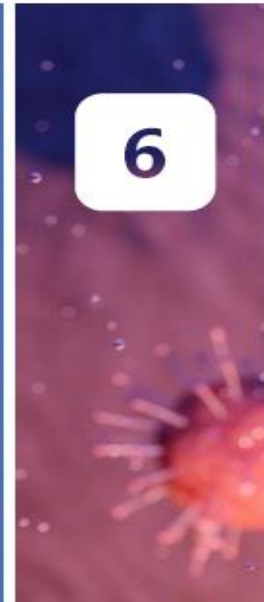
Fuel –efficient, low environmental impact, safer and autonomus ships
Submarine autonomous vehicles for monitoring and operations
Technologies for the reduction of the environmental impact of ports and harbours



5

BLUE RENEWABLES

Development of low-cost marine renewables in terms of life cycle (installation, operations, maintenance and decommissioning)
Exploitation of tidal and wave energy: application to higher-energy cost geographical areas (such as islands)
Integration of renewable power production and desalination technologies



6

BLUE BIOTECHNOLOGIES

Remediation of contaminated soils and seabeds through biotechnologies;
Production of novel pharmaceutical compounds from marine bioactive molecules
Nao-biotechnologies and biomaterials, energy from micro-algae, application of bioha conversion of fisheries waste to high value products



1

Research infrastructures

Research infrastructures are a means of promoting pan-European cooperation and offering scientific communities efficient access to advanced methods and technologies. The roadmap addresses basic and applied research in all the scientific sectors identified in the previous trajectories.



2

Sustainability and economic uses of the sea

This action aims to contribute to the definition of guidelines for the development of analysis models of the environmental and socio-economic aspects related to the use of the marine-coastal environment by identifying adequate tools for proper environmental management (e.g. maritime planning, governance bodies)



3

Skills & Job

Italian system, shows a limited speed of adapting long-term training and learning paths to the needs imposed by the rapid development of technologies and economic and social models. The design, production and use of the technologies developed in BE will be subject of training courses suitable to guarantee the involvement of young people in the world of work, even with the complete application to the new tools.



FOCUS ON TECHNOLOGICAL AREAS

Sustainable, safe, connected and autonomous ship

- New sustainable fuels
- Studies of high performance materials (weight reduction of naval structures)
- Strategies for optimizing ship operation in terms of sustainability
- Increased security
- Development of virtual reality and augmented reality digital technologies

Marine robotics

- Integration of Autonomous Air/Surface/Underwater Vehicles (AxVs) fleets with the ship/submarine system
- Sensors for the characterization of the operating environment, for navigation and monitoring
- Innovative propulsion systems (including biomimetic) integrated with green and renewable energy production, storage and management systems

4.0 Infrastructure

- Creation of intelligent digital platforms for monitoring port logistics activities
- Optimization models of port spaces and internal mobility of vehicles, things and people
- Observational systems for the acquisition of data on the state of health of marine environments inside and surrounding port areas

EUROPEAN PROJECTS

Support to the digital and green transition through cascade funding at 100% rate for services in favour of blue SMEs

Smart ports

Green ports

Resilient ports

Ports and
marinas for
tourism

WORKING GROUP AND THEMATIC FOCUS : MARINE-COASTAL SEDIMENTS

Management and mobilization of marine-coastal and river sediments

Environmental monitoring and environmental effects of cable laying

Impact of aquaculture on the quality of marine sediments

Patents for sediment management in port environments

Regulatory framework for sediment management in portual areas

Thanks for your attention

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