

RITMARE ITALIAN RESEARCH AND INDUSTRY FOR THE SEA

Renata Denaro, Salvatore Mazzola, Michail Yakimov and Laura Giuliano

Institute for Coastal Marine Environment - National Research Council (IAMC-CNR), Spianata S. Raineri, 86 98122 Messina, Italy
E-mail: renata.denaro@iamc.cnr.it

Italy is finally looking ahead towards the Mediterranean Sea, therefore intensifying its exchanges with the neighbouring countries, and investing more and more in activities designed to sustainably exploit the sea. The awareness of the socio-economic and cultural importance of the 8,000 km of coastline have incited the Italian industry and research system to implement a national programme of scientific and technological research for the sea, pluri-annual and open to the participation of all public and private stakeholders. The RITMARE objectives aim at promoting a significant evolution of the national economy of the sea, supporting networking, co-operation and internationalization actions in harmony with the indications of the Blue Book.

Partners of the project are, public research organisations: CNR, INGV, OGS, SZN, ENEA, CONISMA, CINFAL, private sectors, Technology Districts: Sicilia NAVTEC, DLTM, AgroBioPesca, DITENAVE; industries: Fincantieri, CETENA, CONSAR, UNIMAR, RINA and authorities appointed to the management, monitoring and safeguard of marine environment, Ministry of Education, University and Research. A special attention will be paid to support integrated policies for the safeguard of the environment (the health of the sea); to enable sustainable use of resources (the sea as a system of production); to implement a strategy of prevention and mitigation of anthropogenic or natural impacts (the sea as a threatened system; the sea as a potential source of risks for humans).

RITMARE partially overlaps with the Marine Biotechnologies CSA as to the following activities: 1) Bioprospecting for the detection of molecules and biological processes in deep-sea with potential applications in biotechnology (Goods and ecosystem services provided by deep marine environments) 2) Innovation in aquaculture, 3) Development of new green approaches for the recovery of contaminated waters associated with spills of toxic and / or hazardous substances to timely respond to these events.

By means of its network, which includes researchers of various disciplines and industrial partners, RITMARE will facilitate new multi-sector partnerships (i.e. including those concerned by bio-medicals/pharmacology). More particularly, the transfer of knowledge and technology across the various collaborating sectors, relying on the National Research Council facilities, will be carried out by means of a targeted dedicated office. From the very early stage of the project, this office will be responsible for market potential assessments, and will assist researchers in the definition of contracts, in tasks related to the management of intellectual property and for the filing of patent applications. It will also provide support during the phases of prototyping and engineering, and will look for partners potentially interested to acquire the produced patents. The possibility of facilitating the creation of new high-tech companies (spin-off) is also envisaged. This task will be fulfilled via entrepreneurial training programs, business planning and preliminary support to the management and coordination of the business incubator.

While being a national project, RITMARE can integrate (or inspire) other at international (i.e. European) level.

The Italian maritime zones harbour various ecosystems with great potential for bioprospecting. Among various, shallow hydrothermal vents (Panarea, Vulcano, Ischia), submarine volcanoes (Marsili, Palinuro), mud volcanoes (Strait of Sicily, Calabria dorsal), hypersaline anoxic lakes (Ionian sea) offer unique opportunities to study the adaptive mechanisms of micro- and macro fauna to the extreme conditions, and the possible inter-species interactions (including symbioses) allowing their survival in such harsh environments

Bioprospecting activities, especially aiming to search for bioactive molecules and enzymatic reactions with potential industrial applications will be carried out by means of a large set of modern methodologies, including (meta) genomics, (meta) transcriptomics and (meta) proteomics. optimised screening platforms. Once isolated, compounds with biotechnological potential will be characterized chemically. Among the possible applications, bioremediation treatments for the recovery of oil-polluted marine environment will be a priority target.

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