

Scientific challenges and opportunities in the Mediterranean

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The invention of a Mediterranean union, that would facilitate exchanges of all kinds and in all directions among the countries bordering the Basin, is not just a good idea: it is a logical endpoint, in time, for the populations of Europe, North Africa, and the Middle East. While the realization of a full economic and political union will appear today somewhat distant, if not utopic, the foundations are already well in place for building a common Mediterranean space for science.

In the marine realm we already have a wide range of tools – including legal and institutional – to forge privileged partnerships in the scientific, technological and environmental areas. Given CIESM long experience of north-south exchanges in marine research, we are pleased to take part in this symposium and so share with you the perspectives derived from our programmes and from the collective analyses of our expert networks.

Among the obstacles that need to be overcome:

- those on which the Barcelona process stumbled, due to the historical divisions and overt mistrust that endure among a number of Mediterranean nations. CIESM has a long experience in this domain and our proudest achievement is to have managed, since 1910, to attract scientists from all shores of the Basin to work together on common initiatives and projects. These women, these men have indeed kept open the bridges for dialogue and peace.

- the will to impose a European leadership on Mediterranean research: the Mediterranean Sea is not just a European sea, anymore than it is African. The Mediterranean belongs to all its nations and so its governance must be shared. Likewise the responsibilities and benefits of Mediterranean research must be better divided. To this end it is essential that Europe treats the countries of the south shore as equals, casting aside ancient bilateral habits. Those have run their course in a region where the future now belongs to multi-lateral relations.

- the pressure of certain lobbies (scientific or not), guided by their own self-interest and more active in the corridors of power than in the field or in the laboratory. Funding priorities for marine research in the Mediterranean deserve to be defined in a more objective, transparent manner, with repeated cross-consultations of eminent, representative scientific groups to orient the decision-making process.

- the excess bureaucracy that can still block - particularly in southern countries – the fluxes of qualified personnel and scientific material, too often hindering the physical participation of researchers from these nations to international field programmes. Urgent reforms are needed to get rid of such anachronisms.

The time has come to raise our heads, our scientific horizon and design new projects of world calibre; the Mediterranean offers extraordinary opportunities for marine research of global relevance, as CIESM recently underlined in its response to the EU Green Paper on Maritime Policy. For instance I refer here to the immense prospects opened in the Mediterranean by genomic applications to marine biotechnologies, to the paleo-geo-oceanographic exploration of the Messinian event, to the modelling of ocean-atmosphere exchanges, to the study of deep watermass formation, to the biomagnification of emergent contaminants, or to the ongoing ‘tropicalization’ of marine biodiversity at an unprecedented rate.

Our *Mare Nostrum* is both very well- and very poorly known. Thousands of researchers, with high qualifications but drastic underfunding, are at work to decipher its mysteries, map its seabed, or give sense to the satellite images taken of its surface waters. Thanks to them, our Commission – to cite only one example – was able to produce in the last nine years no less than 33 collective Monographs on the biogeochemical, physical and ecological functioning of the Mediterranean Sea, on its trophic components from marine viruses to whales, on its complex geophysical evolution, or on the latest vectors of contamination. It is essential to integrate such advances, where scientific priorities and major gaps are clearly identified, in the definition of future programmes.

At the same time, substantial unknowns remain. Vast geographical regions are still largely unexplored (e.g. Sea of Libya, deep waters). Likewise certain research sectors, e.g. marine biotechnologies, deserve a major collective investment in view of the huge returns they potentially offer for populations on all Mediterranean shores. Unless one accepts that such research benefits should fall under the monopoly of a few industrial groups.

Among the main priorities for action, I shall recommend to:

- promote fundamental research initiatives, with integrative, trans-disciplinary, multi-scale features, and better anchored on field studies so as to allow the adjustment, improvement and validation of models;
- develop a ‘bartering system’ for the optimal sharing and use of oceanographic vessels operating in the Mediterranean, and accessible to researchers from both shores;
- favour the constitution of national oceanographic commissions regrouping the main stakeholders (universities, agencies/ research institutes, industries) working on the Mediterranean Sea: such a setup would enhance the formulation of national strategies for research and development in the Mediterranean. Relayed by national representatives on the board of European and International Organisations, regional priorities for Mediterranean marine research would emerge more strongly and more clearly at the political level;
- facilitate the development of marine metabases, such as that under construction at CIESM which will integrate the syntheses of millions of data on selected key parameters, together with expert decrypting and interpretation of trends: an insurance against the fast-growing gap between information and true knowledge;
- promote novel, ambitious partnerships between research and relevant industries (e.g. gas and petroleum exploration, maritime transport, pharmacology): their enormous technical and financial means should allow the funding of Basin-scale projects of high calibre, focused among others on identifying warning signals of fast biodiversity changes, developing an alert system for tsunamis, or expanding the scientific exploration and biotechnological exploitation of Mediterranean deep-sea habitats that are among the most complex, least known in the world.

Our Commission is quite active in all these areas. We will be pleased to share our experience with others.