

Global change is evidenced mainly through the temperature increase observed since the pre-industrial period. Yet, it also encompasses other changes, such as perturbations in the biogeochemical cycles of the major (C, O, N, P) and minor (micro-nutrients) elements, in the ecosystem structure and dynamics (*e.g.*, biodiversity loss), or in the related marine resources and services upon which human societies largely depend (*e.g.*, energy, water, land use, fisheries). However, one component rather neglected until recently is the Ocean Acidification, which relates to the anthropogenic increase in atmospheric CO₂ content. It is now under intense scrutiny as it has recently reached some critical thresholds while its impacts on biological, biogeochemical, ecological, economic, social and climatic processes are often not well known or completely unknown, but are expected to be fast emerging and drastic.

Following the approval by the LESC Standing Committee to support a proposal submitted in early fall 2007 by Prof. Jelle Bijma, a strategic workshop has been recently organised, with co-sponsorship by the EUROCORES Programme EuroCLIMATE, to address the issue of the Impacts of Ocean Acidification. The main objectives of this strategic workshop were set as follows:

- Drafting a science policy briefing.
- Drafting a proposal for a new science programme (EUROCORES Theme proposal for 2008)

The participants covered rather adequately the fields of expertise required to achieve successfully those objectives. The 26 participants originated from 11 different countries and included 13 representatives from at least one international organisation or programme.

The Strategic workshop was very productive: It started with an exhaustive review of the current body of knowledge on this topic. Then, ocean acidification and its potential impacts were considered in a comprehensive way, for a wide range of time and space scales, including:

- marine biogeochemistry (*e.g.*, OA chemistry, regional and global marine monitoring, past and present carbon fluxes and pH status and their future evolution, micro-evolution);

- biological response at the organismal and ecosystemic levels (*e.g.*, for viruses, bacteria, phytoplankton, zooplankton, calcifying and non-calcifying invertebrates, corals, fishes, mammals);
- socio-economic drivers & responses (*e.g.*, fisheries, aquaculture, coastal management, tourism, accountability, regulatory matters, adaptation, mitigation, carbon capture & storage).

This examination made it possible for the participants to fully identify what is known well (*e.g.*, marine inorganic carbon chemistry), what is known a little (*e.g.*, biological responses, for a limited number of marine organisms at the lower trophic levels, in a limited number of environments) and what is poorly known (*e.g.*, long-term ecological and socio-economical impacts; possible options for a sustainable adaptation strategy at the global level).

The participants agreed that although research focusing on the Impacts of Ocean Acidification was beginning to emerge through the European Union 7th framework programme and national agencies, the efforts are so far made in a fragmented way and they pointed out that the European Science Foundation could play a major role in joining up the European research effort. A provisional list of future actions and recommendations was also considered taking into account a range of priorities, key areas, target research actors, policy makers, stakeholders and audiences.

It should make it possible to enable resource optimisation, to avoid duplications, overlaps and gaps, to develop and maintain a cost-effective monitoring strategy and research facilities, and to stimulate European (especially taking into account the different marine environments around Europe) and global cooperation and integration: *e.g.*, communication, outreach, capacity building, development of best practices and multi-driver approaches, case studies for an improved process-based understanding, methodological and technical improvements; data and knowledge management, international interdisciplinary coordination, synergy in local and larger contexts.

At this early stage, it seems valuable to further explore the possibility for international organisations to endorse along with the ESF the science policy briefing -- expected to be ready for ESF review in late spring 2008. Further examinations of this matter will be conducted at a later stage in particular with SCOR, IGBP, IHDP, IOC/UNESCO, GEOSS, POGO, ICoMM/CoML, the European Marine Research Stations Network (MARS Network), ICES and GMES. This long, yet provisional list of potential contributors to the study of the "Impacts of Ocean Acidification" demonstrate even further the need for international synergy and cooperation on science, technology development and policy issues. The Science Policy Briefing should play a key role in that matter, by setting clear and operational recommendation for the implantation of such international cooperative efforts.