



In the last decade of the old century a number of very important institutional frameworks have been formalised or entered into force that will influence thinking about oceans and indeed aquatic resources and ecosystems in general for the next generations. These are the Law of the Sea, Agenda 21 of the 1992 Rio Earth Summit, the Convention on Biological Diversity and the Code of Conduct for Responsible Fisheries. The breadth of formal subscription to these codes and agreements continues to grow as key principles enshrined therein become reconfirmed in an increasing number of international dialogue fora and organisations.

These positive cognitive and legal developments notwithstanding, the global fisheries crisis has been deepening. Entire ecosystem functionalities have been lost, their productivity and resilience reduced, socio-economic conditions of populations depending on such ecosystems downgraded, and future opportunities severely jeopardised.

Aquaculture has been for some time promoted as a potential alternative to degraded capture fisheries and official FAO statistics report record increments over the last 15 years of rather surprising proportions, much of it determined by reported increases from China. Despite research efforts, there is a continued dependence of culture of carnivorous species on capture fisheries for feeds and market competition between culture and capture fisheries products. The two subsectors are thus best considered together as part of a continuum rather than separately as happens in much of the literature.

Other drivers influencing public perceptions, regulatory frameworks and investments important to aquatic resources are international trade and food safety issues. These are mentioned here only briefly, but not further elaborated upon this time.

International trade has grown over much of the last three decades and had reached more than 40% of global nominal production in the mid-90s, though FAO recently reports a reduction in that percentage. Trade remains, however, a most powerful driver.

Food safety issues are moving constantly up on the public policy agenda. This reflects a series of recent food scandals, which impact on general consumer confidence in the food industry, but also the contribution of seafood to food poisonings. These may impact on demand if not addressed properly.

Why is the gap between the international regulatory framework and continued ecosystem degradation, accelerated species introduction, social conflict, unsustainable use and food safety practices not narrowing? We do not only have a global fisheries crisis, but also a crisis of governance. Is this not a time, where we need to ask questions rather than rush to 'quick solutions'? Possible questions in this context are:

- Do we have the concepts necessary to operationalise the grand principles underlying the international frameworks?
- Which approaches and methods do we have already which are particularly suited to translate these principles into courses of action?
- Which indicators are already available which allow policy and management benchmarking?
- Which areas need priority attention for future conceptual, methodological and indicator research?

Research is rightly expected to provide the inquisitive attitude required in order to deal with the complexity we are faced with. This final issue of the *Bulletin* gives a small selection of questions and initial attempts at answers from the much broader EU Programme of international scientific and technological cooperation (INCO) with developing and emerging economies in the quest for sustainability.

It illustrates efforts to build stronger links from knowledge creation through scientific endeavour to action. Such ambitions aim to bring scholarship again closer to society. This leads to a shift from a supply-driven approach to one that is more demand-driven. A related dimension is the anticipative role of science implying that it is working on time horizons well beyond short-term management imperatives, particularly in publicly funded research. This may pose problems where multiple demands on limited public resources lead to prioritisation of short-term action over long-term preparedness for change, an issue particularly acute in most developing countries, but by no means limited to them.

It will also become increasingly critical to build bridges between different forms of knowledge. Scientific knowledge is particularly important, however, many other codifications of knowledge exist. More effective communication between knowledge systems can support advances in policy formulation and action on the ground.

In this context, the quest for sustainability demands that science becomes more concerned with and takes more responsibility for making scientific knowledge available to the public at large. Likewise, decision making processes need a broader participatory base to confer the legitimacy that engenders desired outcomes.

One example of how to respond to these needs is FishBase on the web. Outgrowing project approaches funding its development over the first 10 years with significant contributions from the EU, FishBase will now be maintained and further developed in the public domain by an open international consortium of museums, research institutes and international organisations with a mandate on living aquatic resources. Partnership approaches like this become role models for the future.

This is the last issue of the *Bulletin*. As the relations between actors in different parts of the world are evolving, the challenge for partnerships creating and sharing knowledge for action towards sustainability will grow and need new expressions. We would like to thank all readers and contributors having enabled that much on this long journey. ■

Cornelia E. Nauen \*

\* European Commission  
Directorate General for Research  
SDME 1/117

1049 Brussels - Belgium  
Tel: +32-2-299 25 73 Fax: +32-2-296 62 52  
E-mail [cornelia.nauen@cec.eu.int](mailto:cornelia.nauen@cec.eu.int)