Ref : EFARO/315

IJmuiden, April, 2016

To: DG Research & Innovation
Directotrate F – Bioeconomy
Unit F.4: Marine Resources
Attn. HoU Mrs Sieglinde Gruber
Cc: Nikos Zampoukas, Jaques Fuchs
B-1049 Brussels – Belgium

Subject : EFARO's view on research priorities for H2020 SC2 2018 and beyond

Dear Mrs Sieglinde Gruber,

We are aware that currently the contours of the work programme of H2020 SC2 for the period 2018-2020 are being shaped. We would like to take this opportunity and share with you some of the issues we feel should be prioritised in this programme as they have not been addressed up to today and do constitute a major challenge to the management of our seas and oceans.
We consider the topics below to be of prime importance. More details on the issues presented can be found in the annex.

Regional Cooperation

- Optimisation Scientific Surveys in: We propose a CSA for optimising collaboration at the regional sea level of Member States, research institutes and institutions like the Advisory Councils, Regional Sea Conventions, ICES and GFCM, focussing on the optimization of scientific surveys, (shared) use of survey vessels and alternative and novel survey techniques: Evaluation of sampling options under different priorities and surveys with multiple objectives.
- Strategies for an optimal use of the large amount of fisheries/ocean data gathered in European programs including the use of new technologies based on big data approaches.
- User-friendly fisheries models and monitoring programmes
- Innovating the Ecosystem approach

BLUE Growth

- Breeding: Development of breeding programmes for SME's.
- Seaweed Production and Value Chains: Innovation and optimization of seaweed products and processes towards economic viable business cases, with a focus on breeding & selection, cultivation in seaworthy installations, harvesting, processing and marketing.
- Building with Nature: Innovation of integrated multi-use of seas and oceans and 'building with nature' for Blue Growth. Examples include multi-use of offshore/inshore windmill and other platforms parks including high seas and deep oceans, for food and feed production and harvesting and innovative coastal defence systems that allow for food/feed production beyond safety from flooding alone.
- Socio-Economic Impacts of Blue Growth: With an ambitious strategy of Blue Growth more changes in aquatic production are envisaged. More needs to be known of the processes of reliance and resilience of coastal communities and the social and economic impacts of development and innovation of novel production sectors using the seas and oceans.

We hope our thoughts do assist you in developing the upcoming H2020 work programme. And of course we are always willing to discuss with you these priorities and any other issues you may wish to discuss.

With kind regards,

on behalf of EFARO

Tammo Bult
President

ANNEX: Research priorities

Regional Cooperation

With increasing desire for regionalisation there is the need to facilitate regional cooperation. In the light of the recent letter send to the commission jointly by ICES and EFARO on pilots for the incorporation of survey requests under the CFP and MSFD it could be considered to initiate a concerted action with a focus on regional cooperation, optimisation of surveying the ecosystem and optimising the collaboration at the regional sea level of Member States, research institutes, institutions like the Advisory Councils and Regional Sea Conventions and for example ICES and GFCM.

Optimizing survey strategies in surveys with multiple objectives

Under different policy responsibilities (for example CFP and MSFD) data is being collected for the management of seas and oceans. Evaluation of sampling options under different priorities is to be considered in order to arrive at an optimal effective and efficient strategy for surveys. Strategies for an optimal use of the data including the use of new technologies based on big data approaches should be considered.

User-friendly fisheries models and monitoring programmes

For the appropriate management of the ecosystem it will remain necessary to develop long term integrated management plans for resource use. Especially in the field of fisheries this will require models that can reliably predict the dynamics of ecosystems and activities undertaken in the ecosystem. In addition, it will require user-friendly monitoring programs or techniques that result in reliable assessments of exploited marine resources/populations which clearly assess the impact of (alternative) fishery management programs on sustainable use of shared resources. The development and use of technology to improve monitoring and surveillance will be required in addition to continued improvements in monitoring and data collection. Added to this is the need to develop a strategy for sampling and monitoring, based on the essential questions of what do we really need to know to develop policy and implement management in an effective and efficient way. Crucial in this development is the operationalization of the concept of ‘reversal of burden of proof’ and inclusion of stakeholders in the assessment and management process.

Innovating the Ecosystem approach

New observation approaches

For a successful implementation of the EAM we need a better and more complete mechanistic understanding of ecosystem functioning and how ecosystems change under variable forcing. This goal can only be achieved by increasing the efficiency of science, monitoring and related advisory systems, assuming that resources available for science underpinning the EAM will not increase over the next decade, but rather decrease. We need to develop new, efficient and non- invasive technology for obtaining and analysing data to address the right temporal and spatial scales with great efficiency. Over the last decades observation technology advanced at tremendous rates in physical oceanography, marine chemistry and marine geosciences. Glider fleets autonomously measure and report physical data, remotely operated or autonomous vehicles sample and observe the deep sea, lander systems carry various instruments to the seabed and connect arrays of instruments to swarms. Now is the time to make use of such developments and adapt technology and methodology for application in fisheries science. First steps have been made by coupling optic and acoustic sensors using stationary underwater observatories, but these new devices have to developed further to become mobile and be able to survey large areas and generate species specific quantitative information to substitute the traditional living resource monitoring methods.

Including the deep ocean in the ecosystem approach. The deep ocean remain largely unknown and recent research indicates that the biomass in the mesopelagic layers may have been underestimated by one order of magnitude. Mesopelagic fish are an important prey for species of high commercial value such as tuna, but at the same time, through vertical migration and the trophic ladder, they might be diverting a significant fraction of the primary production to deep ecosystems. It is important to obtain an accurate estimate of the role of the mesopelagic ecosystem in order to have realistic carrying capacities in an ecosystem approach.

BLUE Growth

Breeding and competitiveness in Aquaculture

In the field of aquaculture of course the main challenge lies in stabilising and increasing production to enable a transition of Europe from being a net importer to become exporter of marine produce. In this realm there are two main features that we believe are of importance. The first is to lower barriers for SME's to start selective breeding programs through optimisation of breeding programs by e.g. reduction of scale and costs, including cost-effective hatching and breeding methods to facilitate genetic improvement. A key element to overcome the decrease in competitiveness of the European aquaculture sector is to improve market integration in the sector, valorise the quality of products and improve sustainability, resilience and transparency in the supply chain, to allow a true B2B cooperation and to increase the attractiveness for European aquaculture products.

Seaweed production

The challenge is to develop sustainable use of the oceans in order to capture their potential for products derived from natural marine sources. Seaweed can be used for both human food, for animal feed, for cosmetic application, for bio-based products (plastics), for sustainable energy production and other valuable applications as marine algal ingredients. Research is needed for innovation and optimization of products and processes focussing on economic viable business cases which will tackle the multidisciplinary challenge of breeding, cultivation in seaworthy installations, harvesting, processing, marketing and communication to reduce the bottlenecks that hamper the creation of an European Blue Growth sector.

Innovation of integrated multi-use of seas and oceans and 'building with nature'

Novel and traditional aquaculture solutions, such as for example seaweed farming, but also nursery functions for fish and fisheries activities on crabs, shellfish and lobsters could be integral part of an integrated multi-use of seas and oceans. For example integration of uses in parks for renewable energy production need to be further developed. Also the concept of 'building with nature' with integration of marine activities should be further explored focusing on the combination of activities in the coastal zone realising that worldwide, low-lying delta areas are increasingly confronted with challenges associated with urbanisation, economic development, accelerated sea level rise, subsidence and climate change. At the same time, people increasingly realise that environmentally sustainable development is crucial to long-term survival. This demands an innovative approach, aligning the interests of economic development and care for the environment.

Social and economic adaptation processes in aquatic food production – focus on the Blue Growth strategy

Through changes in the outside world, be it for example climate change or policy changes such as the introduction of the landing obligation, aquatic food production is changing. This affects both directly the individual producers but also the ancillary and processing sectors and the wider coastal communities. With an ambitious strategy of Blue Growth more changes in aquatic production are envisaged. More needs to be known of the processes of reliance and resilience of coastal communities and the social and economic impacts of development and innovation of novel production sectors using the seas and oceans.