



## **Scientific Advice Mechanism**

### **Scoping paper: Food from the oceans**

***2 December, 2016***

Rev. date: 16/12/2016

*Research and  
Innovation*

## Food from the oceans

### 1. ISSUE AT STAKE

A growing human population and the expectations of citizens from an increasingly prosperous developing world will intensify the global demand for food. This will push conversion of land to crops and pasture as well as putting pressure on freshwater resources that are already in many cases over-exploited and threatened by global warming.

The total catch of fish from the sea is uncertain. But whether we look at the official numbers from the United Nations Food and Agriculture Organisation (FAO) or scientific studies<sup>1</sup> that compile information from peer-reviewed research, population surveys and interviews with local communities, there is a consensus that the total catch peaked in the 1990s and has either held steady or decreased ever since. Aquaculture is growing at around 5.8% a year globally<sup>2</sup> but we do not know for how long this growth can be maintained. All of this accounts for less than 2% of human food consumption<sup>3</sup> in terms of energy and less than 16% in terms of animal protein.

In principle the 50% or so of the planet's primary production of organic matter that takes place in the oceans should allow more. The reason that it does not is well known and was highlighted by the 2016 report from the Commission's Joint Research Centre and the European Academies' Science Advisory Council on "Marine sustainability in an age of changing oceans and seas". We mostly eat marine carnivores from the top of the food web, whereas the land offers products from all levels. But that report did not put forward solutions to the question.

This is not about more conventional fishing. Harvesting lower down the food chain could involve looking at other biomass components. Various avenues to follow have been suggested – harvesting krill, mesopelagic fish or marine mammals; fishing out the top predators; expanding shellfish cultivation; increasing vegetable content of farmed fish diet; or processing algae. Understanding the future prospects of each of these requires a systemic life-cycle analysis that is not only scientific but covers engineering, economic, ethical and human behavioural aspects. A combination of measures may be feasible but the coupled nature of the ocean ecosystem means that following one path may also impact on alternatives. There will be competing demands for different components of the food web and there is no consensus on the way forward.

---

<sup>1</sup> Nature "Independent study tallies "true catch of global fishing" 19 January 2016

<sup>2</sup> FAO, "Fishery and Aquaculture Statistics" 2014 Yearbook

<sup>3</sup> Carlos M. Duarte et al. Will the Oceans Help Feed Humanity?, BioScience (2009)

## 2. EU POLICY BACKGROUND

The Commission's 2012 Communication on blue growth<sup>4</sup> recognised that resources from the sea could relieve pressure on finite land and freshwater resources and that progress in aquaculture and biotechnology could contribute. The subsequent 2014 Communication on innovation in the blue economy<sup>5</sup> launched actions on data, skills and research in order to push this ambition forward and the Communication on strategic guidelines for the sustainable development of EU aquaculture<sup>6</sup> identified priorities for the development of this sector. Further impetus has come from the circular economy initiative of 2014 that aims to optimise the use of natural resources.

Some support to implementing this blue economy agenda is provided through the European Maritime and Fisheries Fund<sup>7</sup> which, inter alia, aims to foster environmentally sustainable, resource-efficient, innovative, competitive and knowledge-based aquaculture. Material is now being gathered for the impact assessment of the post-2020 follow-up to the Fund.

Furthermore, the resources of the ocean, whether inside or outside waters that are under the jurisdiction of individual sovereign states, are connected to one another. What happens to one component of the food web in one part of the ocean affects the whole system. The issues impact on EU policies for trade, development and health. Accordingly the Commission and the High Representative of the Union for Foreign Affairs and Security have defined their priorities for better international ocean governance<sup>8</sup>. With the oceans becoming warmer and more acidic, with the planet's population growing and moving out of poverty, the global community needs to act together to ensure that future generations' birthright to healthy and productive seas and oceans is not compromised by what we do today.

### **Request to Scientific Advice Mechanism**

The question to be answered by the Scientific Advice Mechanism is:

*"How can more food and biomass be obtained from the oceans in a way that does not deprive future generations of their benefits?"*

---

<sup>4</sup> COM(2012) 494

<sup>5</sup> COM(2014) 254

<sup>6</sup> COM(2013) 229

<sup>7</sup> Regulation (EU) No 508/2014

<sup>8</sup> JOIN(2016) 49 final

The feasibility, ecosystem impact, consumer acceptance and social impact on coastal communities of the different pathways should be taken into account as well as the implications of increasing production through one process on alternative routes.

In order to follow-up the Ocean Governance initiative, and to provide material for the impact assessment for the successor to the European Maritime and Fisheries Fund, the Commission would need an answer by the end of 2017.

Commissioner Vella would be available to participate in any events set up to gather opinions on proposed solutions.