The Future of the Ocean Economy:
Exploring the prospects for emerging ocean industries to 2030

Workshop
Future Prospects of Marine Aquaculture

Bergen, Norway
9-10 September 2014
In a nutshell

As part of the OECD project *The Future of the Ocean Economy*, this workshop addressed some of the main uncertainties surrounding the long-term development of marine aquaculture, and some of the key advances that need to be made with a view to mitigating the risks and loosening the constraints confronting future aquaculture development.

The workshop met in Bergen on 9th and 10th of September 2014 and the 28 participants included ten nationalities. The workshop was co-hosted by Marine Harvest, Ministère de l'Ecologie, du Développement durable et de l'Energie (MEDDE) and the Research Council of Norway.

Amongst the topics covered were:

- Regional perspectives on the future of marine aquaculture
- Prospects for offshore aquaculture technology
- Offshore mariculture and ocean technology
- Aquaculture business models, industrial economics and externalities
- Managing the risk and uncertainty of marine aquaculture
- Aquaculture externalities and the role of the state
- Insights on externality issues and the public sector from Indonesia i) aquaculture production, ii) spatial planning

**Lead Experts:**

<table>
<thead>
<tr>
<th>Arne Fredheim</th>
<th>Torger Reve</th>
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<td>SINTEF Fisheries and Aquaculture</td>
<td>BI Norwegian Business School</td>
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organised within the framework of the OECD project on The Future of the Ocean Economy
9-10 September 2014

Rica Hotel Bergen
Christiesgate 5-7, Bergen, Norway

Agenda
Co-chairs: Torgeir Edvardsen, Arne Friedheim and Torger Reve

Tuesday, 9 September 2014

12.00  Welcome address by Øyvind Oaland (Marine Harvest ASA) and Barrie Stevens (OECD)

12.15  Opening and introduction by Torgeir Edvardsen, Arne Fredheim and Torger Reve

Overview of the Future of the Ocean Economy Project
Objectives of the meeting

13.30  Session 1. Setting the Scene

a) What are the long term challenges and opportunities driving marine aquaculture development by Patrick Sorgeloos, Ghent University, Belgium

This presentation will provide an overview of the state of the art in aquaculture, with focus on differences in farming approaches between East and West, and addressing challenges and opportunities for future developments. The presentation covers finfish, molluscs, crustaceans and algae.

b) Regional Perspectives on the Future of Marine Aquaculture: Overview by Neil Ridler, the University of New Brunswick, Canada

The presentation will show the localisation and knowledge dependent perspectives of offshore marine aquaculture with cases and discussants from Africa, Asia, South America and Europe.

Presentations, followed by roundtable discussion

15.30  Session 2. Prospects for Offshore Aquaculture Technology

Offshore mariculture and ocean technology, by Arne Fredheim, SINTEF, and Asgeir Sørensen, NTNU, Norway

Presentation, followed by discussion
17.00  Session 3: Aquaculture business models, industrial economics and externalities

a) A cross-sectorial perspective of ocean activities and externalities by Torger Reve, BI Norwegian Business School, Norway

There are many constraints on aquaculture production as this type of food system generates externalities for the ocean and coastal environment, as well as other marine users. Likewise other marine users impact aquaculture (e.g. agriculture and urban runoff, tourism activities). This session will highlight and discuss how the public sector needs to deal most efficiently with these externalities and the interdependencies among user groups in the future.

b) Future Prospects of Marine Aquaculture – Managing Risk and Uncertainty by Tom Rutter, Sunderland Marine Mutual Insurance Ltd, UK

Presentations, followed by discussion

18.00  Wrap up and end of first day

Wednesday, 10 September 2014

9.00  Session 3 cont.
Recalling the key messages from yesterday followed by discussion

10.00  Session 4. Aquaculture externalities and the role of the state

a) Sectoral interactions and externalities, the role of the Public Sector by Denis Lacroix, Ifremer and Philippe Ferlin, Chair of the OECD Fisheries Committee, both France

b) Case Studies: Insights on externality issues and the public sector from Indonesia i) aquaculture production, ii) spatial planning by Coco Kokarkin Soetrisno and Subandono Diposaptono, both Ministry of Marine Affairs and Fisheries, Indonesia

Presentations, followed by discussion

11.30  Session 5. Policy challenges

Roundtable discussion chaired by Carl-Christian Schmidt, Head of Fisheries Policy Division, OECD

What are the synergies for the co-use of marine space and how can we reap the benefits from the different ocean based activities. What are the key obstacles and opportunities for offshore aquaculture?

12.30  Wrap up and final conclusions
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Marine Harvest, Bergen, Norway

List of Participants

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Pedro Pousão-Ferreira
Researcher - Head of Aquaculture Research Station
Portuguese Sea and Atmosphere Institute (IPMA), Portugal

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