



State of Play of the Blue Bioeconomy

Invitation to participate in the Blue Bioeconomy Forum

The Blue Bioeconomy can play a strategic role in meeting the future global challenges and could **improve food security and the wellbeing of humanity** as well as **contribute to non-food applications relevant for a more sustainable lifestyle**. Increased food production from the ocean could release **pressure that has been put on agriculture**, as well as **support activities** associated with the fishing and mariculture industries in meeting the challenges of feeding our future livestock e.g. supplying the required macro nutrients (proteins, fats, carbohydrates) and micronutrients (minerals, vitamins, essential fatty acids). Future marine research priorities may include improved techniques for mass production and processing of e.g. algae, seaweed and novel marine resources for sustainable food, feed or non-food products.

According to the European Commission's updated Bioeconomy Strategy *A sustainable bioeconomy for Europe* (October, 2018) "**Europe must improve and innovate the way we produce and consume food, products and materials within healthy ecosystems through a sustainable bioeconomy**". The strategy links sustainability with circularity and explicitly mentions the scaling up and market uptake of marine bio-based industries.

Exploring the opportunities that the Blue Bioeconomy can bring to society does not come without challenges. Various factors (technical and non-technical) can limit the European potential in the Blue Bioeconomy. We have identified a number of **key challenges**, classified into four themes, namely: **(i) Policy, environment and regulation; (ii) Finance and business development; (iii) Value chain, markets and consumers; (iv) Science, technology and innovation.**

This short overview is only a teaser for the state-of-play report that will be available soon. If you have comments or suggestions, please fill in the short questionnaire on <http://youropinion.bluebioeconomyforum.eu>

With these themes in mind, the Blue Bioeconomy Forum aims for a **wide consultation of the (Blue) Bioeconomy community**, to further detail the challenges and to help shape a roadmap to stimulate further development of the Blue Bioeconomy in Europe.

We invite you to take part in this process and join the BBF community! Join our **working groups** and event on **7 December 2018 in Amsterdam**
<http://event.bluebioeconomyforum.eu>

Key challenges of the Blue Bioeconomy

Policy, environment and regulation:

- National and global agreements need to provide more clarity on the status of Blue Bioeconomy components, e.g. Nagoya protocol on Access and Benefit Sharing (ABS) and the United Nations Convention on the Law of the Sea (UNCLOS).
- Environmental challenges are affecting marine resources: nutrient pollution, spreading of diseases, genotypical impacts on wild species, alien species invasion.
- Consistency, security and quality of biomass supply have to be balanced in ways that address environmental challenges and demands for sustainability.
- The licensing procedures managed by public authorities - concerning the location, development and operation of projects - are often complex, lengthy, and lack consistency.
- There is a complex European legislation regarding the use of novel food, but also regarding the authorisation of novel feed ingredients, and novel organisms in non-food sectors such as cosmetics.

Finance and business development:

- Financial risks of blue bioeconomy projects demonstrate low or volatile profitability and cash flow generation. This is due to, e.g., different safety rules of offshore work, more expensive license costs and IP hurdles.
- For blue biomass to reach significant contributions to e.g. protein production, investment in production infrastructure, processing and logistics will be needed.
- Publicly funded instruments are necessary to bridge the gap between research and commercialisation, including in cultivation systems. They must also be better adapted to the companies targeted and be better coordinated across the value chain.

Value chain, markets and consumers:

- Europe lacks a consumer history with bio-based products from the oceans, which hampers demand.
- There are logistical and technological challenges to build a sustainable production chain, including sustainable processing and application for side streams.
- Lack of valorisation and differentiation of Blue Bioeconomy products: this is true across the sector, from emphasising the potential of marine origin materials in drug discovery to lower value products. Side products (e.g. chitin) should be further valorised as well.
- Investment in the development of small-scale production and processing companies focusing on the introduction of lower trophic species into the feed value-chain is necessary.

Science, technology and innovation:

- To further develop the exploration of oceans, technological challenges and legal aspects need to be addressed.
- There is a need to organise and explore the thousands of already identified Marine Natural Products (MNP) and transform them into commercially viable products.
- There is a lack of experts and skills in key areas (e.g. processing stage, engineering)
- There remains an acute need to continue to create research and innovation capacity in both the research and enterprise sectors.
- More links between researchers, industry and the array of end-users are needed for stimulating innovation.