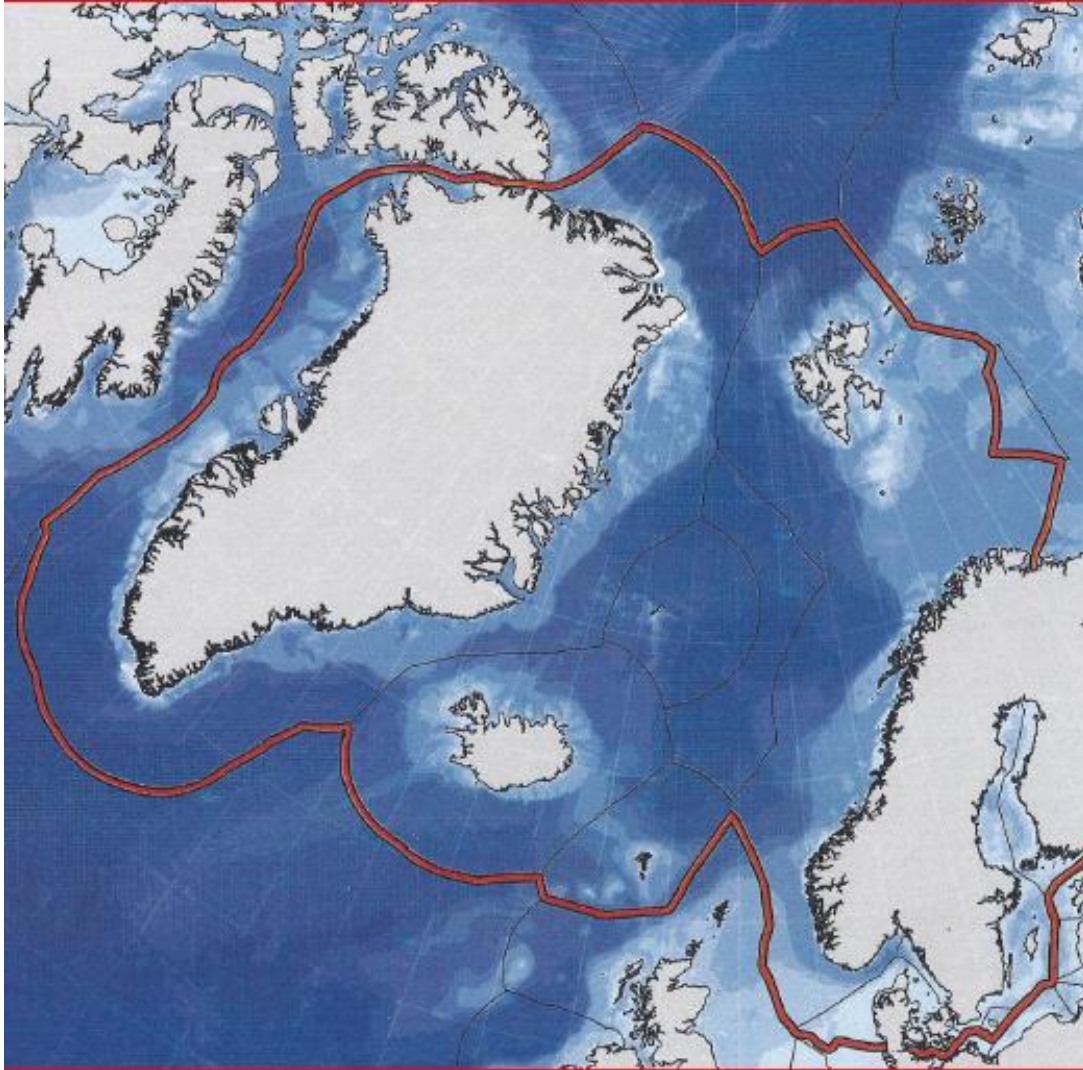


Growth in Blue Bioeconomy



Policy brief on Blue Bioeconomy in the North East Atlantic and the Arctic

By

The Nordic Marine Think Tank

1. About this Policy Brief

The brief is authored by the Nordic Marine Think Tank and the opinions and proposals presented are those of the Think Tank. The lead author is Hans Lassen, NMTT.

The brief is based on the outcome of the international conference - 'Growth in Blue Bioeconomy' - held 2-3 June 2015 in Tórshavn and hosted by the Faroese Government as a part of the 2015 Nordic Council of Ministers' Chairmanship Program. There were 15 invited presentations – listed at the end of the brief - and the conference was concluded by roundtable discussion by the four Nordic Ministers of Fisheries that attended the conference. A NMTT synthesis report, Hoydal (2015), was prepared as background for the conference. Information from that report is not repeated here, unless it has relevance to a specific recommendation. Readers are referred to the report. The Nordic Marine Think Tank arranged and moderated the conference.

The presentations at the conference are found at www.norden2015.fo and www.nnmt.org.

2. Observations at the international conference on 'Growth in Blue Bioeconomy'

Under Theme I, "Blue bioeconomy at the global and regional level", the conference was updated on global (FAO) and regional (Nordic Council of Ministers and Commonwealth of Nations) trends and initiatives in Blue Bioeconomy. Wallace Cosgrow, Minister of Fisheries, Seychelles, described the problems facing a small island developing state, with a very large EEZ. He also noted the similarities between Small Island States, SIS, in the developed part of the world and Small Islands Developing States, SIDS. He saw possibilities for cooperation between these two groups, SIS and SIDS.

Where developed countries may be most concerned with wealth creation from fisheries with due consideration of sustainability, in the less developed economies the importance of fisheries and aquaculture lies in food security, employment and poverty alleviation. It was noted that the speed of transfer of experiences from North to South is low, maybe because of lack of resources. Capacity building is always a big challenge.

Under Theme II, "Potential growth in marine Industries", OECD listed a number of points pursued in their Green Growth in Fisheries and Aquaculture strategy, especially economic efficiency and the importance of taking into account externalities. When trying to measure green growth lack of data was a general problem. It was noted that marine spatial planning, as a tool in ocean governance, is climbing up the international agenda.

Legasea is a Norwegian business cluster established in 2013 and part of the Norwegian government program: Norwegian Innovation Clusters. It focuses on innovation of high end marine ingredients in health and nutrition, based on trimmings, and aims at improving value creation, bringing innovation close to markets and sustainability to the entire seafood industry, which is predicted to be one out of three Norwegian industries that will have global impact in the future.

The Faroese Company Bakkafrøst aims at using residues from the Faroese fishing industry for quality salmon feed, thus securing that all residues from Faroese vessels are used ultimately for human consumption.

Several presentations covered much of the same ground as reported in the Synthesis report and will, therefore, not be repeated. However two presentations, by Dr Paterman and Professor Lange, emphasised the optimised utilisation of already exploited marine resources, innovative use of underutilised resources and residual biomass, as well as innovation across value chains, for example fisheries and tourism, fish and fashion, and the role of policies encouraging bioeconomy innovation.



Two Norwegian presentations under Theme III, “Obstacles to and promotion of Blue Bioeconomy”, dealt with the problem of sharing resources and avoiding conflicts. They traced conflicts today back to positions taken by coastal states in the North Atlantic in earlier negotiations. Lack of cooperation could be a major obstacle to growth in Blue Bioeconomy.

A Faroese presentation attempted to compare legislation, financial arrangements, market access and other factors in order to see if there was a level playing field for the Nordic Atlantic Countries¹. Lack of data made it difficult to make any firm conclusions.

At the Minister Roundtable the participants were: Jacob Vestergaard, Minister of Fisheries, Faroe Islands, Sigurður Ingi Jóhannsson, Minister of Fisheries and Agriculture, Iceland, Karl-Kristian Kruse, Minister of Fisheries, Hunting and Agriculture, Greenland and Fredrik Karlström, Minister of Fisheries, Åland. The ministers were asked to respond to the following 5 questions:

1. The Nordic Atlantic Countries should consider introducing legislation to get all parts of the fish, after bleeding, ashore for further processing. It should open up for processing at various levels of value adding.
2. The Nordic Atlantic Countries should agree on an action plan, with deadlines and road-maps, to set up cooperation with relevant bioeconomy panels and stakeholder fora, and to map regional and structural funding, especially aiming at seed money, to bridge the innovation gap.
3. The action plan should also investigate business models involving cooperation between a SME that only controls a small part of the value chain and national and multinational companies, having the ability to control the entire value chain.
4. The Nordic Atlantic Countries should exchange information and best practices, building up bio-based value chains, including biorefining and, most importantly, securing an uninterrupted supply of biomass.
5. Farming of macroalgae, and other marine species than salmon, calls for spatial planning and new legislation to secure licenses for these activities, as stable as those already in place for salmon farming.

The ministers reported on initiatives to make better use of the total biomass and what had been achieved so far. It can be concluded that there was a general feeling that all resources should be used, that cooperation is necessary, but there was little appetite as to make concrete political commitments at this stage. The emphasis should be on encouraging the right initiatives rather than continuing restrictions, as is the case with the discard ban. The importance and advantages of Nordic cooperation was stressed.

It was pointed out that clusters could attract attention, that it was important to get stakeholders with equal financing options together in transnational financing, that it was easier to get international funding through Nordic cooperation and that it was important to connect academia and businesses. These are possibilities, which should be explored.

It was agreed that it was necessary to combine legislation on marine spatial planning with environmental and other concerns, but it was acknowledged that marine spatial planning is very complicated in many areas.

3. Recommendations from other Nordic initiatives.

Reference is made to the recommendations in Future Opportunities for Bioeconomy - Focus on the West Nordic Region, TemaNord 2015:505. Three of these have relevance for blue bioeconomy. Three of the recommendations coming out of activities under the Icelandic Presidency of the Nordic Council of Ministers 2014 are highlighted below.

¹ The term Nordic Atlantic Countries covers Greenland, Iceland, Faroe Islands and Norway..



1. Create a West Nordic Bioeconomy panel ³

A West Nordic Bioeconomy panel/forum from academia, industry and commerce, non-governmental organizations (NGO's) and policy institutions should be formed to identify common key issues important for the West Nordic region, identify opportunities, advise industry, governments and the public and promote common key issues and policy. The small administrations in the West Nordic area are not likely to have resources to create national bioeconomy panels. The creation of this West Nordic Bioeconomy panel is important for active and targeted participation in larger context such as the proposed Nordic Bioeconomy panel, the existing European Bioeconomy panel in Brussels and national bioeconomy panels in Europe. Clear strategy and focus for the region is vital in working towards strengthening the bioeconomy, as well as opening up new opportunities for research and innovation in the region.

A key action is to establish stakeholder platforms, complementing the advisory activities of the West Nordic Bioeconomy panel, to discuss industrial opportunities, infrastructure and support system to enhance value creation from bioresources as well as to discuss the balance between use and protection of bioresources and how to secure biodiversity.

2. Establish an interdisciplinary CoE, Centre of Excellence for the West Nordic region

An interdisciplinary CoE will focus on the regions uniqueness, sustainability, energy and value streams, socio-economic aspects and rural development with active participation of all stakeholders. This CoE will link different expert groups and local/national knowledge centres together also through a virtual knowledge network/consortium. Comprehensive long term financing and political support is needed to realise this action.

3. Streamline and synergise Nordic research with European funding bodies

It is important to streamline and synergise research efforts for better use of the large variety of funding opportunities in Europe. Further, it is important to monitor calls under the EU Research and Innovation programme, Horizon 2020, and identify collaboration opportunities for innovation in the region. It is also important to use the West Nordic funding bodies to strengthen and promote projects of West Nordic regional interest that will lead to synergic effects with European and pan-European funding bodies.

4. Program focusing on "The Blue Bioeconomy"

Marine bioresources are the most important biological resources of the West Nordic countries, as fisheries contribute extensively to the GDP in all three countries. In order to have a positive impact on value creation in the West Nordic countries, investment in research, innovation and technology along with strengthening the fish stocks is needed. The aim of the action should be to create a blueprint on how to maximize opportunities in the Blue bioeconomy in the West Nordic countries. Cross-national collaboration between institutes and industry in the area will be increased by this action.

Three year chairmanship program focusing on the Blue bioeconomy led by the Faroe Islands will be initiated in 2015, focusing on the West Nordic region. The project will focus on four main themes: pelagic fish, white fish, algae and aquaculture.

Close collaboration will be between the innovation part of the Icelandic chairmanship program 2015–2016, and the Faroese program and the Arctic bioeconomy project I & II, to create synergy.

³ The Nordic Council of Ministers supports the proposal, but has requested that the name of the forum will not be the West Nordic Bioeconomy Panel, to minimize confusion with the new Nordic Bioeconomy Panel. It has been proposed that this Forum should be named: West Nordic Bioeconomy Stakeholder Platform/Forum. An application to NORA, Nordic Atlantic Cooperation, to fund the activities of the Forum, has been granted.



4. NMTT Recommendations

NMTT proposes that the Nordic Atlantic Countries **should**:

1. **Consider cooperating in establishing Bio-panels, stakeholder platforms and Centres of Excellence for the West Nordic Area and streamlining and synergising Nordic research with European funding bodies;**

Annotations

2. Reference is made to recommendations in “Future Opportunities for Bioeconomy - Focus on the West Nordic Region” summarised on page 3/4 of this brief. **Establish as common policy to ensure that all marine biomass from capture fisheries and aquaculture is processed. This may be accomplished through economic incentives and – if necessary- legislation;**

Annotations

There is a general consensus that all resources should be used and that cooperation is necessary, but there is little appetite to make very concrete political commitments at this stage. The emphasis should be on encouraging the right initiatives rather than continuing restrictions, as is the case with the discard ban. The importance of Nordic cooperations should be stressed.

3. **Should cooperate in solving logistic problems that may hinder transport of biomass to processing centres or if processing takes place locally in bringing the products to the market;**

Annotations

Logistic problems – collection and transport of the remnant biomass - have been identified as hindering progress in this direction. Cooperation between the Nordic Atlantic Countries to secure that the remnant biomass from fisheries, aquaculture and fish production is available for further processing is essential. This probably requires cooperation among the involved fleets and may require cooperation between the Nordic Atlantic Countries at government level.

4. **Cooperate on securing a continuous supply of biomass;**

Annotations

Facing increasing demands from a growing world population it is necessary to become more efficient and use biomass more efficiently. There is unused biomass in the form of discards and waste from fillet production from capture fisheries. This biomass is valuable and is a basis for bio-economic growth. Estimates suggest that biomass material is available at a scale that makes it possible to develop an industry.

Much research has already been done and the technology is available. Discards are banned or being banned throughout the Nordic Atlantic Countries and there is increasing attention on how to make use of other components of unused biomass such as trimmings from fillet production from aquaculture. The political process should be strong in promoting this use.

Growth is created through entrepreneurship either top-down or bottom-up. The bottom-up generated growth is supported through risk-willing funding of small enterprises, e.g. through seed money. Top-down approaches are supported by good logistics and infrastructure, stable working conditions, access to a well-educated work force and financial facilities. The political systems can and should deliver a level playing field, but this may require cooperation between the Nordic Atlantic Countries on harmonised legislation.

Resolution of the conflicts among the Nordic Atlantic Countries on allocations of fishing opportunities seems a precondition for improved cooperation between Nordic Atlantic Countries.



Nordic cooperation is well positioned to be activated to boost the blue bio-economic growth in the Nordic Atlantic Countries .

5. Establish as common policy that gives the Nordic Atlantic Countries access to bio-refineries in other Nordic Countries;

Annotations

Special projects focusing on opportunities in applying biotechnology for value creation in the Nordic Atlantic Countries should be initiated. One highly interesting aspect of the bioeconomy is the application of biotechnology to increase value from biomass and produce high value products from biomass, including products and chemicals now produced from fossil based resources. The development of next generation biomass resources to supplant fossil based feed-stocks may be one of the most important tasks of today's industrial biotechnology.

Climate conditions and unique geological aspects of the region make the high North a valuable source of unique extremophilic organisms for a wide spectrum of biotechnological application.

6. Cooperate in assisting Small and Medium Enterprises, SMEs, in the initial product development stages of the value chain, before up-scaling and commercialisation. This may be achieved by making seed money/ venture capital available nationally, through Nordic cooperation and/or in cooperation with Horizon 2020. Establishing Marine Clusters will support these processes;

Annotations

Bottom-up generated growth is supported through risk-willing funding for small enterprises, e.g. through seed money and/or venture capital. Obstacles can be addressed at the political level by making risk-taking capital available, facilitating access to markets and addressing regulations swiftly where technological changes makes old regulations impractical. There is a need for a joint Nordic effort in this field.

Most importantly there have to be policy initiatives to make it possible for SMEs to develop the initial product development stages of the value chain, before up-scaling and commercialising, by making seed money/venture capital available.

7. Cooperate to create level playing field for the fishing Industries between the Nordic Atlantic Countries;

Annotation

A comparison of legislation, financial arrangements, market access and other factors in order to see if there is a level playing field for the Nordic Atlantic Countries is not possible, because of lack of data. Nordic Cooperation should support projects that try to describe the situation.

8. Support cooperation between Small Island States, SIS, in the developed part of the world and Small Islands Developing States, SIDS, in the developing parts of the world;

Annotation.

At the conference it was pointed out that even if the circumstances for SIS and SIDS seemed quite different, there were distinct similarities with respect to the challenges facing small islands communities. The Nordic SIS, Greenland, the Faroe Islands and Iceland should explore the possibilities for cooperation with SIDS in matters related to Blue bioeconomy and other problems facing small islands communities.

9. Cooperating in supporting innovation across value chains.



Annotation.

In addition to establishing value chains, based on more efficient use of all marine biomass, innovation across value chains, for example fisheries and tourism, fish and fashion, should be encouraged through Nordic cooperation.

5. References

Hoydal Kjartan 2015: Synthesis Report Blue Growth in the North East Atlantic and Arctic. Available [6 June 2015] at <http://www.fisk.fo/media/6413/synteserapport-sidste-version-tema-nord-format-fin.pdf>. This report is part of the program of the Faroe Islands chairmanship of the Nordic Fisheries and Aquaculture Cooperation under Denmark's Presidency of the Nordic Council of Ministers in 2015.

Sigrún Elsa Smáradóttir et al. 2014. Future Opportunities for Bioeconomy in the West Nordic Countries

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6. Presentations at the Tórshavn Conference 2-3 June 2015

Theme I: Blue bioeconomy at the global and regional level.

I.1 Blue bioeconomy - unlocking the potential of seas and oceans. *Árni Mathiesen, ADG Fisheries and Aquaculture, FAO.*

I.2 Barriers experienced by developing island countries and how partnerships could help Blue bioeconomy. *Wallace Cosgrow, Minister of Fisheries, Seychelles.*

I.3 Blue Bioeconomy a Nordic Priority. *Geir Oddsson, Senior Adviser Nordic Council of Ministers (Fisheries and Aquaculture and Bioeconomy),*

I.4 Blue bioeconomy in the Commonwealth of Nations. *Julian Roberts, Senior Adviser, Commonwealth Secretariat (Ocean Governance)*

Theme II: Potential growth in Marine Industries.

II.1 OECD green growth and how do we measure it. *Carl-Christian Schmidt, Head of the OECD Fisheries Policies Division.*

II.2 New value chains to manufacture sustainable high end marine ingredients from residues. *Oddvar Skarbø, Project leader, The Norwegian biomarine business cluster LEGASEA™ Norway*

II.3 Potential in the residues from the pelagic fisheries in the North East Atlantic. *Odd Eliassen, Managing Director Havsbrún, the Faroe Islands.*

II.4 Potential growth in marine industries. Can we learn from Icelandic success and failure? *Sveinn Margeirsson, CEO Matís, Iceland*

II.5 EU Research and Innovation strategy and funding of blue growth.

Jacques Fuchs, Deputy Head of the Marine Resources Unit, Directorate-General for Research and Innovation.

II.6 Paving the way for growth in blue bioeconomy. *Christian Paterman, Director (ret) European Commission, Germany*

Theme III Obstacles to and promotion of Blue Bioeconomy

III.1 The Nordic Blue Bioeconomy: Making value from upgrading marine side streams and waste. *Lene Lange, Professor, Dr. scient., DTU, Denmark*

III.2 From Coastal State cooperation to Coastal State conflict. *Nils Torsvik, Fiskeribladet Fiskaren, Norway.*

III.3 Who owns the marine resources? *Peter Ørebech, Professor, UIT, Norges Arktiske Universitet*
III.4 Is there a level playing field? *Bogi Eliassen, Copenhagen Institute for Futures Studies.*



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