

# Future Opportunities for Bioeconomy in the West Nordic Countries

The bioeconomy is a larger part of the GDP in West Nordic countries compared to other Nordic countries. The marine bioresources are therefore of common interest to the West Nordic countries which calls for close cooperation within the region. The economies in the West Nordic countries can be reinforced by developing industries further based on sustainable and responsible utilization of available resources.

**The aim should be to create multiple value streams from each resource, to improve processes and to develop and apply new technologies with the goal of minimising waste and maximising value.**

The knowledge available in the West Nordic fishing industry has increased in the last decade and knowledge and technological transfer between the countries and increased cooperation would strengthen the West Nordic countries. It is important to maximise processing yields within the fisheries. However, substantial increase in value addition is likely to occur in synergy between fisheries and the biotechnology. Combining strong industry, such as the fishing industry, with research, development and innovation within the biotechnology sector will benefit the economy of the West Nordic countries as well as turn the region into an attractive area for young educated people.



The macro-algae are growing in abundance in the coastal waters of the West Nordic countries and have promising properties for future utilization. The macro-algae can be used as biorefinery feedstock for bioconversions to platform chemicals, speciality chemicals and energy carriers (e.g. ethanol or butanol) and bulk carbohydrates, proteins and derivatives can be funnelled into in various value streams.

Research into more efficient utilization of feed and new possibilities in feed production should be given greater attention. It is also important to explore opportunities across different sectors of the bioeconomy as well as new innovative sources of biomass for feed.

Agriculture in the West Nordic countries is challenging due to harsh weather conditions. More emphasis should be on research on new crop variants, such as grain or berries and their adaptation to the West Nordic environment. There are also unexploited possibilities in using greenhouses to produce locally grown vegetables. Along with research on new crop variants, further research on revegetation, soil conservation and grazing pressure in the West Nordic countries is needed along with research on effects of climate change on the Arctic and the living conditions there.

Opportunities within the bioeconomy are likely to have an impact on the inhabitants of the area and help reverse the trend of young educated people, especially women, moving from the rural areas to the larger towns, cities and other countries.

There are large unrealised opportunities within the different sectors in the West Nordic countries. However, when each sector is operating separately in "its own silo", the growth potential might be limited. If interdisciplinary cooperation is enhanced, the growth potential of the economy is far greater. Innovation, supported by strong infrastructure, is another key element in enhancing the bioeconomy, by exploring underutilized possibilities and growth opportunities within the West Nordic countries.

Finally the initiatives supporting bioeconomy in the West Nordic countries whether local, regional or Nordic will have most impact if they can be paralleled with European and other international research and innovation programs.

In the project actions where identified and a plan for their realization put forward, the main four actions identified are:

#### Action 1. Create a West Nordic Bioeconomy panel

A West Nordic Bioeconomy panel could be a platform for promoting common policy, to identify opportunities and set a common strategy for the region.

#### Action 2. Establish an interdisciplinary Centre of Excellence (CoE) 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.

#### Action 3. Launching the project Arctic bioeconomy II – Biotechnology

A special project focusing on opportunities in applying biotechnology for value creation in the West Nordic countries.

#### Action 4. Program focusing on "The Blue Bioeconomy"

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.



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TemaNord report: <http://bit.ly/TemaNordReport>



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